City of Benicia
Benicia Water Reuse Project

Final

Initial Study and
Mitigated Negative Declaration

Prepared for:
City of Benicia

Prepared by:

November 8, 2016

This page intentionally left blank

Table of Contents

Tables:

Figures

Acronyms and Abbreviations

ABAG	Association of Bay Area Governments
ACS	American Community Survey
AFY	Acre-feet per year
AMP	Archaeological Monitoring Plan
APE	Area of Potential Effect
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
Basin Plan	Water Quality Control Plan for the San Francisco Bay Basin
bgs	Below ground surface
BMPs	Best Management Practices
BO	Biological Opinion
BRA	Biological Resource Assessment
CAA	Clean Air Act
Cal Fire	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CAP	Clean Air Plan
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFGC	California Fish & Game Code
CGS	California Geological Survey
CHL	California Historical Landmark
CHRIS	California Historical Resources Information System
City	City of Benicia
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CY	Cubic Yards
CZMA	Coastal Zone Management Act
DAC	Disadvantaged Community
dBA	A-weighted decibel
DDW	Division of Drinking Water

DTSC	(California) Department of Toxic Substances Control
DWR	Department of Water Resources
EIR	Environmental Impact Report
EO	Executive Order
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHSZ	Fire Hazard Severity Zone
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
GHG	Greenhouse gas
gpm	Gallons per minute
HCP	Habitat Conservation Plan
HDD	Horizontal directional drilling
HMMP	Hazardous Materials Management Plan
hp	Horsepower
HPSR	Historic Properties Survey Report
IBC	International Building Code
IS/MND	Initial Study/Mitigated Negative Declaration
LF	Linear feet
LID	Low impact development
Lmax	Instantaneous maximum noise level
LRA	Local Responsibility Area
LUST	Leaking underground storage tank
MBTA	Migratory Bird Treaty Act
MG	Million gallons
mgd	Million gallons per day
MEI	Maximally exposed individual
MHI	Median household income
MLD	Most Likely Descendant
MND	Mitigated Negative Declaration
MS4	Municipal Separate Storm Sewer System
MT	Metric tons
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program

NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOT	Notice of Termination
NOx	Nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
O&M	Operations and maintenance
OSHA	(California) Occupational Safety and Health Administration
PG&E	Pacific Gas & Electric Company
PM	Particulate Matter
PPV	Peak particle velocity
proposed project	Benicia Water Reuse Project
Refinery	Valero Benicia Refinery
RMC	RMC Water and Environment
ROG	Reactive organic gases
ROW	Right-of-way
RWQCB	San Francisco Regional Water Quality Control Board
SFBAAB	San Francisco Bay Area Air Basin
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic air contaminant
UBC	Uniform Building Code
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
WDR	Waste discharge requirements
WBCEP	Working Group for California Earthquake Probabilities
WQO	Water Quality Objective
WWTP	Wastewater treatment plant

Glossary

Activated sludge	A biological process wherein a mass of microorganisms is grown in an aerated and mixed tank, or basin, to treat wastewater. The microorganisms oxidize/stabilize/ breakdown the wastewater under aerobic conditions, and grow into larger aggregated clumps ('flocs') that are settled out of the flow in a downstream sedimentation basin ('secondary clarifier'). The settled 'flocs' are recirculated back to the aerated tank to allow further oxidation/stabilization of the wastewater.
Aeration basin	A wastewater holding tank, or pond, with mechanical aeration where a biological mass of microorganisms is grown to oxidize/stabilize/breakdown wastewater.
Ancillary facilities	Miscellaneous support facilities that work in conjunction with the principal treatment processes. These facilities can include pumps, compressors, electrical and control facilities
Chlorine contact basin	The basin that 'slows' the process flow rate so that injected chlorine has sufficient time to disinfect the treated flow.
Disinfected, tertiary treated recycled water	Highly treated wastewater that has undergone three levels of treatment: primary (solids settling), secondary (oxidation/stabilization), tertiary (filtration) and disinfection (pathogen inactivation). These levels of treatment are needed for designated non-potable uses of the effluent.
Diurnal equalization	Temporary storage of incoming peak daily flows to provide a more uniform flow of effluent to downstream wastewater treatment processes.
Filter feed pump station	Pumps that move secondary effluent to the filtration facility.
Flow split	Structure designed to distribute flow between two or more feed channels.
Makeup water	Water needed to replace all water losses due to evaporation, leaks, wash down, or cooling tower systems.
Rotating biological contactor	A large rotating set of disks (usually plastic) on which a biological mass is grown to oxidize/stabilize/breakdown wastewater. As the set of disks rotates, it alternately submerges the biomass in the wastewater flow, then exposes the biomass to the atmosphere for aeration. It is

	used in the activated sludge process in place of an aeration basin.
Secondary clarifiers	A basin wherein the activated sludge biomass is separated from the treated flow by gravity settling. The 'clarified' flow is conveyed for further treatment (filtration and disinfection). Most of the settled biomass is returned to the aeration basin to allow further treatment of the wastewater flow. A small portion of this settled biomass is removed from the liquid process flow for further stabilizing treatment by digestion.
Secondary effluent	The clear 'clarified' flow from the secondary clarifiers where the activated sludge biomass solids have been removed from the wastewater.
Spoil	Excess soil from excavations.
Surge tank	Tank used as a reservoir to absorb sudden changes in pipeline pressures that can cause damage to plant equipment.
Tertiary filtration system	Filtration of wastewater that has already been treated by primary and secondary treatment processes. Produces and effluent very low in suspended solids and very low in turbidity (cloudiness). This process is often needed to allow downstream disinfection processes to achieve high levels of pathogen inactivation.
Tertiary Flocculation	Treatment process wherein the small suspended particles remaining after secondary treatment are induced to agglomerate into larger particles via chemical addition and gentle mixing. The agglomerated particles are more readily removed by downstream sedimentation or filtration.
Title 22 regulations	Title 22 of the California Code of Regulations, administered by the California Division of Drinking Water, which contains drinking water- and recycled water-related regulations covering the treatment and use of recycled water.
Title 22 separation	Standards outlined under Title 22 of the California Code of Regulations, administered by the California Division of Drinking Water, that require specific construction methods and physical separation of non-potable pipelines and potable water mains.
Title 22 unrestricted reuse requirements	Regulatory requirements under Title 22 of the California Code of Regulations, administered by the California

	Division of Drinking Water, for water quality that must be met for unrestricted use of recycled water.
Turnouts	Concrete or pipe structures that divert water from a main canal or distribution line to a smaller canal, distribution line, or user of the water
Wet well	Tank or basin used to feed pump intakes. Allows feeding of multiple pumps, and provides adequate suction conditions to maintain efficient pump operation.

Environmental Determination

1. **Project Title:** The Benicia Water Reuse Project
2. **Lead Agency Name and Address:** City of Benicia
3. **Contact Person and Phone Number:** Graham Wadsworth, Public Works Director
   250 East L Street
   Benicia, CA 945110
   707-746-4240
4. **Project Location:** City of Benicia
5. **Project Sponsor's Name:** City of Benicia
6. **General Plan Designation:** Industrial, Residential, Public and Semi-Public
7. **Zoning:** Industrial, Residential, Public and Semi-Public
8. **Description of Project:** The proposed 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.
9. **Surrounding Land Uses and Setting:** The City's existing WWTP is surrounded to the east and south by industrial uses with residential uses to the north and west. The proposed pipeline would be installed primarily within existing City Right-of-Way (ROW), which pass through residential, commercial, industrial, public, and open space land uses. The pipeline would continue onto the existing Valero Benicia Refinery, which is surrounded by industrial use to the north, east, and south, and undeveloped area to the west. A figure showing the project location is provided in *Chapter 2, Project Description*.
10. **Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.).** Multiple federal, state, and local agencies as listed in *Chapter 2, Project Description*.

Environmental Factors Potentially Affected

The proposed project could potentially affect ("Potentially Significant Impact" or "Less than Significant Impact with Mitigation Incorporated") the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion of each environmental factor and identifies where mitigation measures would be necessary to reduce all impacts to less than significant.

X	Aesthetics		Greenhouse Gas Emissions		Population and Housing
	Agricultural and Forestry Resources	X	Hazards and Hazardous Materials		Public Services
X	Air Quality	X	Hydrology and Water Quality		Recreation
X	Biological Resources		Land Use and Planning	X	Transportation/Traffic
X	Cultural Resources		Mineral Resources		Utilities and Service Systems
	Geology and Soils	X	Noise	X	Mandatory Findings of Significance

DETERMINATION: (To be completed by Lead Agency)

On the basis of this initial study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an environmental impact report is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT (EIR) is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, no further environmental documentation is required.

Graham Wadsworth 11/1/16

Signature Date

Graham Wadsworth City of Benicia

Printed Name For

Chapter 1 Introduction

This document is an Initial Study/Mitigated Negative Declaration (MND) that addresses the potential environmental impacts of the Benicia Water Reuse Project. This IS/MND has been prepared by the City of Benicia as lead agency under the California Environmental Quality Act (CEQA).

1.1 Project Background and Purpose

The City of Benicia's Water Reuse Project (proposed project) consists of producing and delivering approximately 2.0 million gallons per day (mgd) (2,240 acre-feet-per-year) of recycled water to the Valero Benicia Refinery (Refinery) and other customers within the City of Benicia (City) for non-potable uses. The proposed project would consist of upgrades at the City's existing wastewater treatment plant (WWTP), approximately 16,300 linear feet (LF) of pipeline installation, and a storage tank with a capacity of up to 2 million gallons (MG).

Due to the current drought and the uncertainty in the long-term reliability of the City's water supplies, in 2015 the City began to study the feasibility of producing and delivering approximately 2.0 mgd (2,240 acre-feet per year or AFY) of recycled water to the Refinery for use as cooling tower makeup water, and to other City customers for non-potable uses.

The proposed project would include construction of new recycled water infrastructure to treat and convey recycled water to the Refinery. The proposed project would consist of the following main components:

- Upgrades at the City's WWTP to produce recycled water that meets the California Division of Drinking Water's (DDW) Title 22 unrestricted reuse requirements and is protective of the Refinery's assets;
- Recycled water pump station and pump station-related appurtenances located at the WWTP;
- A recycled water distribution system to convey recycled water from the City's WWTP to the point of connection to the end users including a new recycled water pipeline totaling 16,300 linear feet;
- A recycled water storage tank located at either the Refinery, WWTP, or Corporation Yard sized to provide up to 2 million gallons of storage that would be used to meet peak recycled water demands.

A detailed Project Description, including figures and a list of potential permits and approval requirements, is provided in *Chapter 2, Project Description*.

1.2 CEQA Process

In accordance with Section 15073 of the CEQA Guidelines, this document is being circulated to local, state, and federal agencies and to interested organizations and individuals who may wish to review and comment on the report. The City of Benicia has circulated the IS/MND to the State Clearinghouse for distribution and a 30-day public review (September 16 – October 17, 2016). The City will evaluate comments received on the draft IS/MND, and will prepare responses to address any substantial evidence that the proposed project could have a significant impact on the environment. If there is no such substantial evidence, the City as lead agency will adopt the MND in compliance with CEQA. Written comments should be submitted to the City of Benicia by 5:00 PM, October 17, 2016.
Submit comments to:

Mr. Graham Wadsworth, Director of Public Works
City of Benicia
250 East L Street
Benicia, CA 94510
GWadsworth@ci.benicia.ca.us

This IS/MND and any comments received during the public review process will be considered by the City Council at a public hearing.

1.2.1 Scope and Use of this Document

This MND provides an assessment of the potential impacts to environmental resources that would result from implementing the proposed project. The discussion and level of analysis are commensurate with the expected magnitude and severity of each impact to environmental resources. This document primarily addresses the environmental effects of constructing and operating recycled water infrastructure and the effects of using the water supplies under consideration.

This document evaluates the potential for impacts to resource areas identified in Appendix G of the CEQA Guidelines. These resource areas include:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems
- Mandatory Findings of Significance

1.2.2 Impact Terminology

The anticipated environmental impacts are identified for each of the resource areas listed above. The level of significance for each resource area is described using CEQA terminology as specified below:

- **Potentially Significant.** Adverse environmental consequences that have the potential to be significant according to the threshold criteria identified for the resource, even after mitigation strategies are applied and/or an adverse effect that could be significant and for which no mitigation has been identified. If any potentially significant impacts are identified, an Environmental Impact Report (EIR) must be prepared to meet the requirements of CEQA.
- **Potentially Significant Unless Mitigation is Incorporated.** Adverse environmental consequences that have the potential to be significant, but can be reduced to less than significant levels through the application of identified mitigation strategies that have not already been incorporated into the proposed project.
- **Less than Significant.** Potential adverse environmental consequences have been identified. However, they are not so adverse as to meet the significance threshold criteria for that resource. Therefore, no mitigation measures are required.
- **No Impact.** No adverse environmental consequences have been identified for the resource or the consequences are negligible or undetectable. Therefore, no mitigation measures are required.

1.2.3 Recommended Level of Environmental Documentation

Based on the analysis presented herein, an MND is the appropriate level of environmental documentation for the proposed project.

Chapter 2 Project Description

2.1 Project Overview

The City of Benicia's Water Reuse Project (proposed project) consists of producing and delivering approximately 2.0 million gallons per day (mgd) (2,240 acre-feet-per-year or AFY) 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 (City) existing wastewater treatment plant (WWTP), approximately 16,300 linear feet (LF) of pipeline installation, and a storage tank with a capacity of up to 2 million gallons (MG). The storage tank would be located at either the WWTP, City Corporation Yard, or on the Refinery property.

2.2 Project Location

The proposed project would be located west of I-680 in the City of Benicia, California. The City is adjacent to the City of Vallejo to the west and unincorporated Solano County to the north. The Carquinez Strait is along the southern border of the City of Benicia, with the City of Martinez south of the strait. The existing WWTP and Refinery are shown in **Figure 2-1**.

2.3 Project Objectives

The objective of the proposed project is to supply approximately 2,240 AFY) of recycled water to the City and customers. The proposed project would:

- **Improve Water Supply Reliability.** Recycled water availability is less influenced by climatic or year-to year changes in hydrologic conditions than is surface water, and therefore provides additional dry-year reliability for users. Offsetting the Refinery's industrial water needs with recycled water would allow the City to have greater capacity for the residents' and businesses' minimum water needs if low raw water allocations occur for a sustained period of years.
- **Reduce Demand on Raw Water Supplies.** Using recycled water to serve non-potable demands such as irrigation and industrial processes would preserve raw water supplies, which can be treated to meet residents' demands for potable water. The proposed project would offset raw water usage by approximately 2,240 AFY.

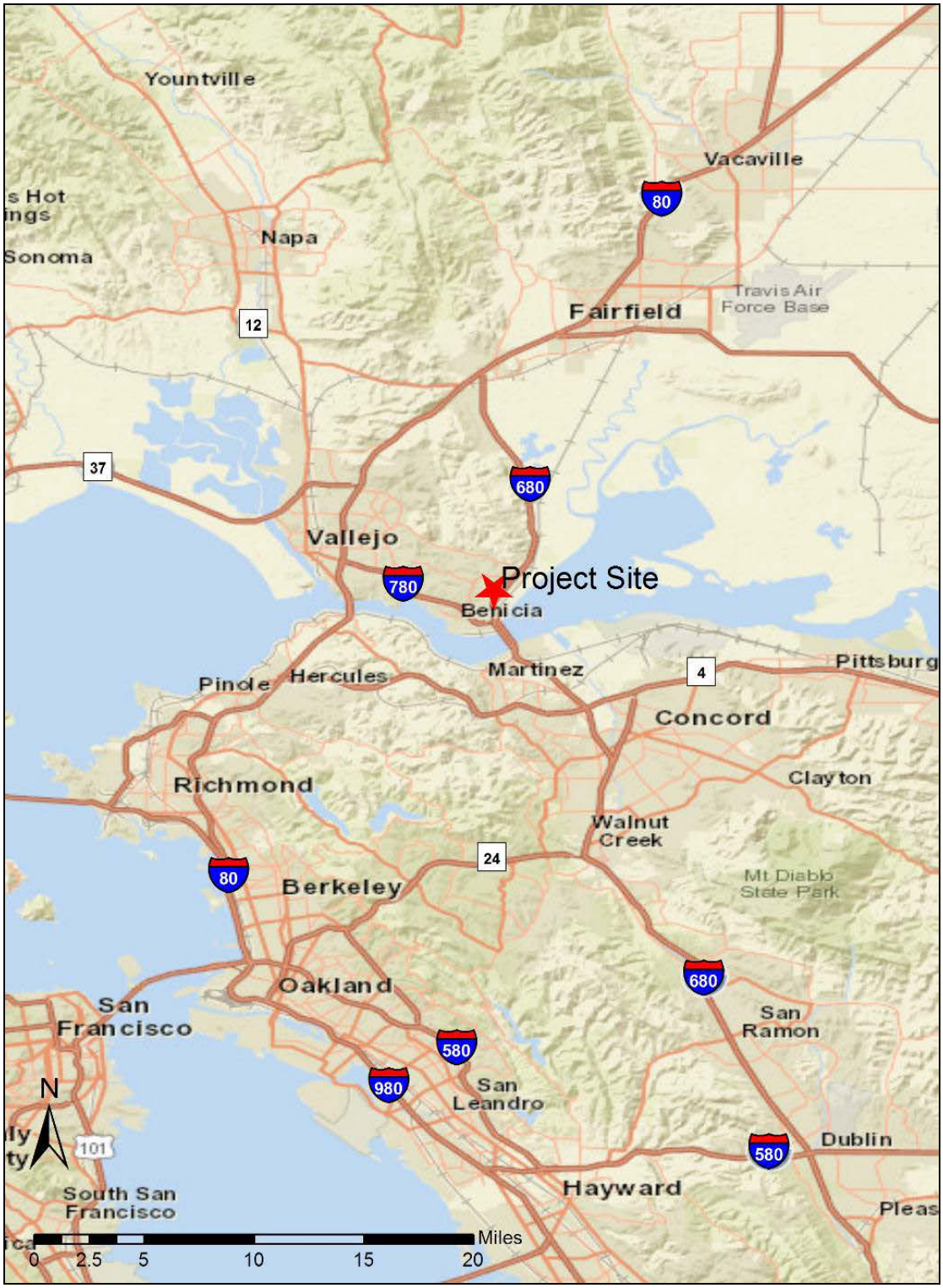
2.4 Existing Facilities and Supply

2.4.1 Water Supply and Demand

The City's annual average water demand in a non-drought year is approximately 10,900 AFY (City of Benicia 2011, 2016). Approximately half the demand is from residential customers (indoor and outdoor uses), municipal uses, commercial and light industrial uses; and the remaining half is from the contract with the Refinery, which obligates the City to provide water. The City supplies the Refinery with untreated raw water for various industrial processes, including cooling tower makeup water and boiler feed water.

The City's water supply is a blended supply from the State Water Project (SWP) and the federal Solano Project. The City has the ability to store/bank excess Solano Project water in City-owned Lake Herman and in Lake Berryessa (part of the Solano Project facilities), and to draw from those supplies as needed. In a normal, non-drought year, the SWP supplies approximately 75% to 85% of the City's demand and the Solano Project supplies the remaining demand.

Figure 2-1: Project Location Map



Due to current drought and statewide water shortages, in early 2014, the City's SWP allocation was reduced to five percent, resulting in a SWP water supply of 860 AF compared to a normal year SWP supply of approximately 7,500 to 8,500 AF. If low allocations occur for a sustained period of years, the City may be unable to supply the resident's minimum water needs and industrial water that the Refinery needs to continue operation of its facilities.

2.4.2 Benicia Wastewater Treatment Plant

The City owns and operates a 4.5-mgd WWTP at 614 East 5th Street (see **Figure 2-2**). The WWTP property is bounded by East 5th Street on the west, Limited Industrial zoned property on the east, East G Street on the north, and open mudflats on the south. The property is predominantly paved and consists of the WWTP process units, with some unpaved graded areas on the south and east and landscaped portions along the northern, eastern, and western boundaries (**Figure 2-3**). The property is surrounded by residences on the north and west and sparsely vegetated open areas on the south and east.

Sanitary wastewater collected by the City's collection system flows to the WWTP, which operates under an NPDES permit (NPDES No. CA 0038091) issued by the San Francisco Regional Water Quality Control Board (RWQCB). The WWTP provides secondary treatment of wastewater and has a permitted average dry weather design treatment capacity of 4.5 mgd. The WWTP includes influent screening and grinding, grit removal basins, primary sedimentation basins (clarifiers), biological secondary treatment via two parallel activated sludge basins followed by secondary clarification, chlorination and dechlorination. Secondary treatment of peak wet weather flows is provided in a rotating biological contactor followed by secondary clarification. The secondary treated wastewater from the WWTP is treated and discharged under the City's NPDES permit into the Carquinez Strait.

2.4.3 Valero Benicia Refinery

The Valero Benicia Refinery is located approximately three miles north of the WWTP (see **Figure 2-2**). Currently the Refinery treats raw water supplied by the City for various industrial processes, including cooling tower make-up water and boiler feed water.

2.5 Background and Need for Project

Due to the current drought and the uncertainty in the long-term reliability of the City's water supplies, in 2015 the City began to study the feasibility of producing and delivering approximately 2.0 mgd (2,240 AFY) of recycled water to the Refinery for use as cooling tower makeup water, and to other City customers for non-potable uses.

2.6 Proposed Project

The proposed project would include construction of new recycled water infrastructure at the City's WWTP and conveying it to the Refinery (see **Figure 2-2**). The proposed project would consist of the following main components:

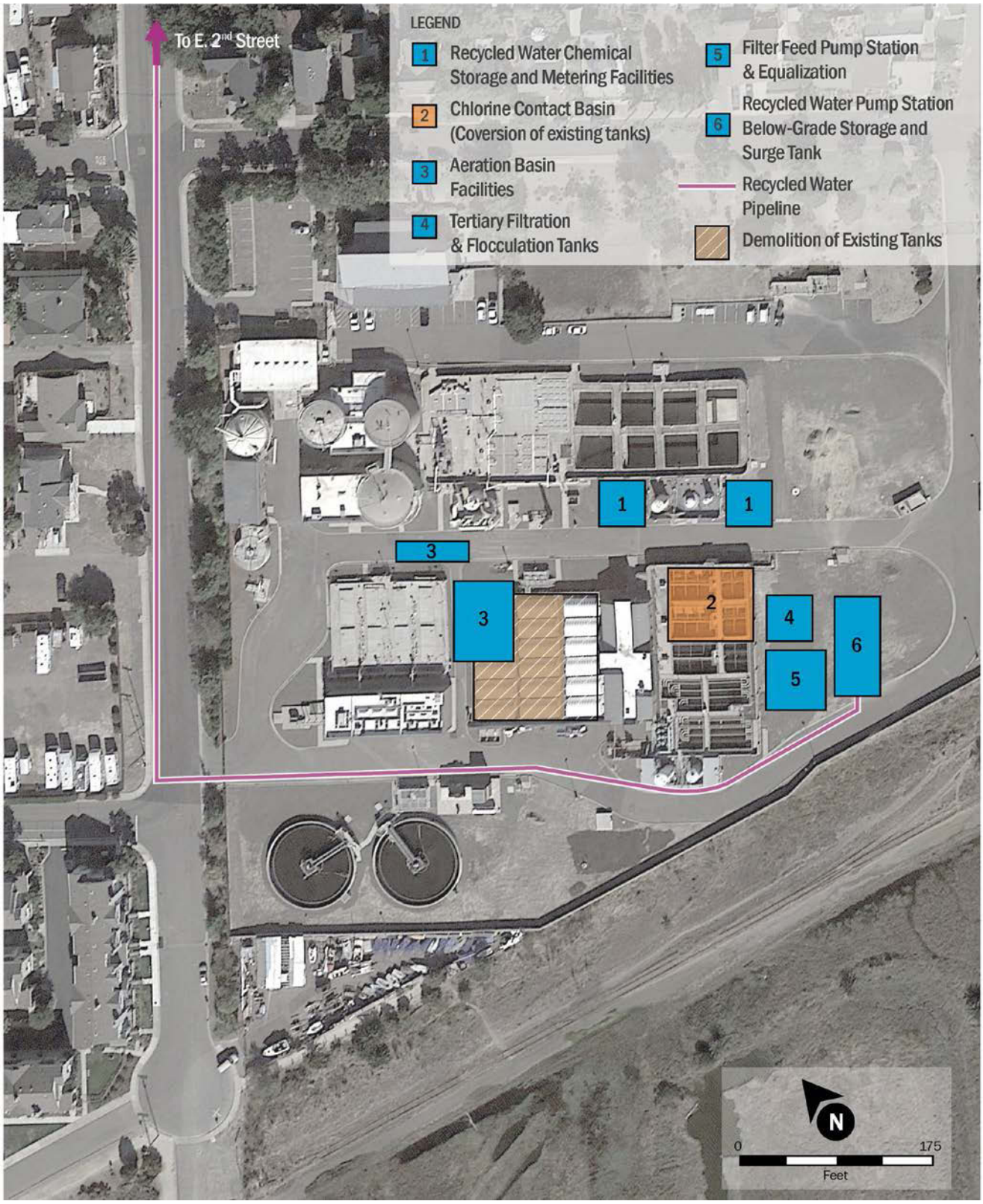
- Upgrades at the City's WWTP to produce recycled water that meets the California Division of Drinking Water's (DDW) Title 22 unrestricted reuse requirements and is protective of the Refinery's assets;
- Recycled water pump station located at the WWTP and pump station-related appurtenances;
- A recycled water distribution system to convey recycled water from the City's WWTP to the point of connection of the end users including a new recycled water pipeline totaling 16,300 linear feet;
- A recycled water storage tank located at either the Refinery, WWTP, or Corporation Yard sized to provide up to 2 million gallons (MG) of storage that would be used to meet peak recycled water demands.

Each of these components is described below.

Figure 2-2: Proposed Project Components

Source: Brown and Caldwell 2016

Figure 2-3: Recycled Water Treatment Facility and Upgrades at the WWTP



Source: Brown and Caldwell 2016

2.6.1 Recycled Water Treatment Facility and Upgrades at WWTP

The current treatment train at the WWTP does not produce tertiary treated recycled water suitable for unrestricted use. To implement the proposed project, upgrades at the WWTP would be required. The proposed improvements at the WWTP would provide ammonia and phosphorus removal, tertiary filtration, and disinfection to produce up to 2.0 mgd of recycled water. Wastewater flows in excess of the recycled water demand would continue to be discharged to the Carquinez Strait under the City's NPDES Permit.

Aeration Basin

One new 0.4 MG aeration basin would be constructed as shown in **Figure 2-3,** and would operate in parallel with the existing activated sludge system. A new flow split structure is assumed to distribute flows to the new and existing aeration basins. The new basin would be covered and vented to an odor control facility for the aeration basins.

Tertiary Filtration and Flocculation Tanks

Secondary effluent from the existing secondary clarifiers would be routed to a new filter feed pump station and pumped to a new tertiary filtration system. The filter feed pump station would be sized to provide diurnal equalization such that a near constant flow of up to 2.1 mgd could be treated through the filtration system. Flocculation tanks with an approximate volume of 0.13 MG would be constructed upstream of the tertiary filters. The flocculation tanks and tertiary filters would be located on the eastern portion of the WWTP site.

Chlorine Contact Basins

After tertiary filtration, the filtered effluent would then be routed to a chlorine contact basin to provide disinfection. Two existing tanks that are no longer used would be repurposed and serve as the recycled water chlorine contact basin.

Chemical Storage and Metering

Two new chemical storage facilities would also be constructed at the northeastern area of the WWTP:

- A 10,000-gallon tank for aluminum sulfate, with metering facilities
- A 10,000-gallon tank for sodium hydroxide, with metering facilities

These chemicals are needed to provide phosphorus and ammonia removal, respectively.

Recycled Water Pump Station and Surge Protection

A recycled water pump station would be constructed at the southeast area of the WWTP. Disinfected, tertiary treated recycled water would flow into the pump station "wet well", which is the holding tank from which recycled water is pumped into the distribution system. The pump station would include a potable water connection to allow for blending of recycled water with potable water, as needed to meet peak customer demands, or Refinery water quality specifications. Surge protection would be located at the WWTP, adjacent to the recycled water pump station, and would likely include a small aboveground surge tank and ancillary facilities.

Other Improvements

Electrical improvements to support the new recycled water facilities at the WWTP would include provisions for a new standby generator and installation of new motor control centers in existing buildings. Approximately 2,000 gallons of diesel fuel for the new standby generator would be stored at the WWTP with necessary containment.

2.6.2 Recycled Water Conveyance Pipeline

Recycled water generated at the WWTP would be conveyed to the Refinery through an approximate 16,300-LF, 14-inch diameter pipeline. From the WWTP, the pipeline would continue northeast along East 5th Street until either Hillcrest Avenue or the City's easement on an unpaved access road at the southwestern end of the Valero property, then northwest to East 2nd Street, then north along East 2nd Street, then onto Refinery property. The pipeline would be located below grade primarily within City Right-of-Way (ROW), as shown on **Figure 2-2** and would continue below grade on Refinery property until it reaches the existing pipe racks where it would transition to above-grade on the pipe racks.

Approximately nine air valves are anticipated to be required for the operation of the pipeline. These valves, which are used to release air from high points to prevent air binding that can reduce the pipeline capacity, would be located on 2 feet by 3 feet concrete pads with a steel cage enclosure. The location of the valves would be dependent on the location of intermediate high points but would be located along the pipeline on the side of the travel roadway and/or sidewalk. It is anticipated that up to four blow-offs may be installed, which would consist of a buried valve and connection to a nearby sanitary sewer.

2.6.3 Storage Tank

Three storage tank locations and sizes are being considered as part of the proposed project, which would provide storage of recycled water to provide for diurnal equalization and meet some peak day demand. Peak demand typically occurs from May through September. The storage tank sizes being considered are a 0.5-, 1.0- or 2.0-million-gallon tank located at either the WWTP, the City Corporation Yard, or the Refinery as shown on **Figure 2-2**. Storage at the City Corporation Yard would include a second, booster pump station at that location. The storage tank would be up to 15 feet in height, made of steel, and would be built on an approximately 32,400-square-foot concrete pad.

2.6.4 Turnouts

As shown in **Figure 2-4**, City customers would be provided recycled water for non-potable uses (primarily irrigation) at pipeline "turnouts" along the transmission line, which would provide a connection to each user. The turnouts would include a 2- to 6-inch turnout and meter located a minimum 10-feet from the potable water system to fulfill Title 22 separation requirements. A recycled water fill-station would also be constructed at either the WWTP and/or the City Corporation Yard to provide recycled water for non-potable uses (see **Figure 2-4**).

2.7 Construction

Construction of the proposed project would include site preparation, demolition, grading, and excavation activities. A total of approximately 43,000 cubic yards of soil would be excavated, and approximately 21,000 cubic yards of backfill would be imported. Approximately 210 piles would be constructed at the WWTP, and approximately 55 piles for the storage tank would be required to provide structural support for the facilities. The piles would be driven to depths between 50 to 70 feet below ground surface (bgs). Pile driving at the WWTP and storage tank site would require 180 and 60 days, respectively at a rate of approximately 1.5 piles driven per day. Construction of each of the main components is described below.

Figure 2-4: Potential Customers

Source: Brown and Caldwell 2016

2.7.1 Recycled Water Treatment Facility and Upgrades at the WWTP

Construction at the WWTP site would require demolition of two of existing tanks and site preparation, grading, and excavation for the new recycled water treatment facilities. Excavation depths would range between 2 to 20 feet bgs depending on the structure. Construction would consist of four phases, with Phases 2 and 3 likely overlapping:

- *Phase 1* – Demolish rotating biological contactor tanks and construct new aeration basin
- *Phase 2* – Retrofit existing aeration basins
- *Phase 3* – Construct filter feed pump station, filtration and disinfection facilities
- *Phase 4* – Construct recycled water pump station

Table 2-1 describes facilities to be constructed or demolished at the WWTP.

Table 2-1: Construction at WWTP

Structure	New/ Demolition	Excavation Depth (feet)	Approximate Footprint (square feet)	Estimated Excavated Volume (cubic yards)
Aeration Basin Splitter Box	New	10	375	139
Rotating biological contact tanks	Demolition	5	9,350	1,732
New Aeration Basin	New	20	3,375	2,500
Filter Feed Pump Station and Equalization	New	20	3,025	2,241
Flocculation Tanks	New	3	64	8
Tertiary Filters	New	5	450	84
Chlorine Contact Basin/RBC Secondary Clarifier Retrofit	New	NA	0	0
Alkalinity Storage and Metering	New	3	1,600	178
Alum Storage and Metering	New	3	1,600	178
Gravity Thickener Retrofit	New	NA	0	0
Recycled Water Pump Station and Equalization	New	18	4,225	2,817
Miscellaneous Yard Piping	New	6	7,000	1,556
Site Paving and Grading	New	2	37,500	2,778
TOTAL			**68,564**	**28,422**

2.7.2 New Pipeline Installation

Most of the pipeline would be installed below grade within City ROW. **Table 2-2** shows a summary of the pipeline length, excavation, and estimated excavation volume generated from the pipeline installation. Standard open cut trenching would be the primary method of installing the new pipeline, with an alternative of trenchless construction at the Interstate 780 (I-780) crossing. Each of these construction methods are described below.

Construction of the pipeline would require limiting on-street parking and temporarily reducing traffic lane widths to 10-feet. Minimal roadway closures and/or one-way traffic control limitations are expected to occur and would be temporary (no greater than one day in duration).

Table 2-2: Pipeline Construction

Structure	Diameter (inches)	Construction Method	Length (feet)	Excavation Depth (feet)	Estimated Excavated Volume (cubic yards)
Below Ground Pipeline	14	Open Trench Trenchless (at I-780 crossing)	15,575	5 - 14	9,740
Pipe rack at Refinery	14	N/A	710	0	0
TOTAL			**16,285**		**9,740**

Open Trench Excavation/Shoring

The majority of the new pipeline would be installed through standard open-cut trenching. Construction would involve cutting, removing and replacing pavement in existing paved roadways. After pavement is removed, a backhoe, excavator, or trencher would be used to dig trenches for pipe installation. Once at the required depth, the bottom of the trench would be compacted. In general, trenches would have vertical side walls to minimize the amount of soil excavated, and reduce the area needed for construction easements if required. Soils excavated from the trenches, if of suitable quality, would be stockpiled alongside the trench or in staging areas for later reuse in backfilling the trench. A crushed rock layer would be placed at the base of the trench after the compaction process has been completed. After placement of the crushed rock layer, the new pipeline would be installed and the pipe segments connected, and the trench would be backfilled with native soil or other suitable imported material. The backfill would be compacted, and the disturbed surface over the trench would be restored to pre-construction conditions.

For open-cut trenching, the maximum trench width for the 14-inch pipeline would be approximately 3 feet. The average trench depth would be approximately 5 feet, but may be as deep as 14 feet depending on the need to go under existing utilities. Where needed, the walls of trenches and pits would be sloped outwards or shored to prevent cave-ins, as required by federal Occupational Safety and Health Administration Title 8 regulations pertaining to excavations. The sides would most likely be shored using trench boxes.

The active work areas would be approximately 20 feet on either side of the trench, which would provide access for trucks and loaders for a total work area of about 45 feet. Standard installation of the pipeline would proceed at the rate of approximately 200 LF per day with an overall work zone length of about 400 to 500 feet. Pipeline trenches, in any given location, would be open for two to three days on average. During construction, vertical wall trenches would be temporarily "closed" at the end of each work day, by covering with steel plates or backfilled.

Trenchless Construction (Jack and Bore)

Jack and bore trenchless construction may be required at the I-780 crossing. Jack-and-bore involves use of a horizontal boring machine or auger to drill a hole, and a hydraulic jack to push a casing through the hole; the pipeline is then installed in the casing. The casing is jacked using a large hydraulic jack in a pit located at one end of the crossing. The proposed project would use a 24-inch casing pipe. For this construction method, pits would be dug on either side of the surface feature to be avoided (e. g. I-780). The jacking pit would be approximately 12 feet wide and 30 feet long, and the receiving pit would be 12 feet wide and 15 feet long. The depth is anticipated to be up to 14 feet, but may be less if there are no utilities to be avoided. The pits would be within the roadway and centered over the existing pipe.

Pipeline Installation Surface Restoration

The final step in the pipeline installation process would be to restore the ground surface. When the pipe is installed in a paved roadway, repaving would occur after pipeline installation and testing. New asphalt or concrete pavement would be placed to match the surrounding road type. For asphalt repaving, a temporary asphalt material may be installed to allow traffic to use the roadway immediately after pipeline

construction. A repaving crew would follow the pipe installation crew and prepare the road surface for repaving. Final repaving would be done after pipeline installation and testing is completed for a whole street width, lane width, or trench width.

2.7.3 Construction of Storage Tank

Construction of the storage tank at one of the three locations being considered would involve site grading and excavation, placement of compacted base rock, forming and pouring of concrete structures, installation of mechanical equipment, trenching for installation of connecting pipelines, connection of electrical supplies and controls, and backfill and restoration. The estimated excavation depth and volumes are in **Table 2-3** below.

Table 2-3: Storage Tank Construction

Structure	Height (feet)	Excavation Depth (feet)	Approximate Footprint (square feet)	Estimated Excavated Volume (cubic yards)
Tank (up to 2 MG)	15	NA	(within concrete pad area)	NA
Concrete Pad		4	32,400	4,800
TOTAL			**32,400**	**4,800**

2.7.4 General Construction Activities

Excavation during construction would generate spoil that would need to be hauled off site, and material would be imported to backfill excavations. Assuming a dump truck capacity of 10 cubic yards per truckload, and that all material would be hauled off site for disposal, expected hauling trips are as follows:

- 12 round trip hauling trips per day for pipeline construction (up to 90 days),
- 10 round trip hauling trips per day for the excavation activities at the WWTP (up to 60 days broken out over the entire construction duration), and
- 24 round trip hauling trips per day for the storage tank for a 20-day duration.

For all excavated areas, once filled and compacted, the area would be resurfaced to match the surrounding material. In addition, damage to all roads and unpaved areas would be repaired. Unpaved areas would be revegetated with native grasses indigenous to the disturbed area. Revegetation would occur after construction and prior to winter rains to stabilize disturbed areas against erosion.

2.7.5 Construction Staging, Workers, and Schedule

Construction of the proposed project would require equipment including, but not limited to: crane, pile driver, excavators, backhoes, front-end loaders, dump trucks, diesel generator, water tank, flat-bed trucks, compactors, double transfer trucks for soil hauling, concrete trucks, and paving equipment. Equipment and staging areas would depend on the proposed project component being constructed. Staging for the WWTP construction would located along the northeastern part of the plant in an area of approximately 6,000 square feet. For pipeline installation, it is anticipated that the contractor would be responsible for obtaining any remote staging and storage area for construction; however, the City may make up to 3,000 square feet of space available at the City Corporation Yard to the contractor for staging and storage. All staging for the storage tank construction would occur in the vicinity of the tank location.

Construction of the pipeline and storage tank would each require one crew consisting of laborers and operators. Construction at the WWTP would require two crews of laborers and operators. The typical crew size is 6 to 8 people, for a total of approximately 26 laborers/operators during concurrent construction. Construction activities would generally be limited to weekdays from 7 a.m. to 7 p.m. Nighttime construction is not expected to be necessary.

Construction is expected to begin in April 2018 and take approximately 21 months including site preparation and restoration (**Table 2-4**).

Table 2-4: Construction Schedule and Workers

Project Component	Timeline	Estimated No. of Workers
WWTP	April 2018 – December 2019	12
Pipeline	April 2018 – September 2018	6
Storage Tank	April 2018 – July 2018	8
TOTAL	**21 Months**	**26**

2.8 Operation and Maintenance

The new recycled water treatment facilities would require up to two new employees. Operation would consist of routine maintenance and inspections of the facilities. Maintenance of the pipelines would include only routine inspections and maintenance activities on an as-needed basis. Traffic during operation of the proposed project would consist of up to two additional employee commute trips per day and approximately four additional truck deliveries per month over existing vehicle trips.

2.8.1 Product Water

The recycled water generated by the proposed project would comply with the applicable DDW Title 22 requirements for unrestricted reuse. The recycled water would also adhere to the water quality specifications that are established in the recycled water agreement between the City and the Refinery.

2.8.2 Wastewater Discharge

The City would continue to discharge disinfected secondary or tertiary effluent to the Carquinez Strait that exceeds the recycled water demands. Treated wastewater that is discharged to the Carquinez Strait would comply with the requirements in the City's existing NPDES permit (CA 0038091). Stormwater runoff within the WWTP property is currently captured on site, conveyed to the treatment system, treated, and discharged under the City's NPDES permit. There would be no change to stormwater handling as a result of the proposed project.

2.8.3 Chemical Storage

Aluminum sulfate (alum) would be used to reduce phosphorus concentrations in the recycled water. Sodium hydroxide (caustic soda) would also be used, on an as-needed basis, to provide adequate alkalinity in the wastewater for biological ammonia removal. Reducing ammonia and phosphorus concentrations in the recycled water have been identified as critical specifications for application in the Refinery's cooling towers. Alum deliveries to the WWTP are expected to occur approximately every 14 days, and sodium hydroxide deliveries are expected to occur about once every 20 days. The chemical would be stored in above ground tanks in the chemical storage area as shown in Figure 2-3.

2.9 Right-of-Way Issues / Permits Required

The proposed facilities would be sited within City lands (primarily street rights of way and the existing WWTP) and the Refinery property. The proposed project would operate under either a statewide recycled water general permit or the RWQCB region-wide recycled water general permit (General Order 96-011 or the relevant adopted general order), which specifies the prohibitions, water quality requirements and limitations, and other provisions that must be met. (RWQCB 1996).

It is anticipated that the following permits would potentially be required:

- Caltrans Encroachment Permit for pipeline crossing under I-780
- San Francisco Bay Area Air Quality Management District (BAAQMD): General Permit to Construct and Permit to Operate (for emergency generator)
- Notice of Intent for coverage under Statewide Construction Stormwater Permit

In addition, the permits listed above, if the City applies for State Revolving Fund financing from the State Water Resources Control Board (SWRCB), additional federal consultation requirements would have to be met. SWRCB would be required to complete Section 106 Consultation with the State Historic Preservation Officer to ensure compliance with the National Historic Preservation Act. SWRCB would also complete Section 7 Endangered Species Act consultation with U.S. Fish and Wildlife Service.

This page intentionally left blank

Chapter 3 Environmental Checklist

3.1 Aesthetics

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☒	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☒	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion

Environmental Setting

The proposed project is located within the City of Benicia. The visual quality of the proposed project area is defined by an urban setting consisting of residential, commercial, and industrial uses, with undeveloped land alongside East 2nd Street north of West Tennys Drive. The City's General Plan designations for this undeveloped land are "General Industrial" and "Limited Industrial" use (City of Benicia 2005). There are no designated scenic highways located within the proposed project area (Caltrans 2016). Highway 37, which is located over 5 miles away from the proposed project area, is currently the only eligible State Scenic Highway in Solano County, and there are no other highways that are officially designated at this time. I-680, I-80, and Highway 37 are considered scenic roadways for Solano County in proximity to the proposed project area (Solano County 2008).

The City's shoreline is identified as a unifying visual element that is important for the City's sense of identity and place, as well as its history (City of Benicia 2005). Views across Carquinez Strait of the undeveloped hills are noted as reminiscent of California's native scenery.

The proposed project area is located within the viewshed of several important scenic views and vistas identified in the City's General Plan. These viewpoints include two locations along East 2nd Street between West Tennys Drive and Rose Drive, looking east over the Refinery property, and one viewpoint on West Seaview Drive looking southeast across East 2nd Street and in the general direction of the WWTP. Two of the possible storage tank locations are located east of East 2nd Street: the Corporation Yard site and the tank site at the Refinery. Views of these sites are shown in **Figure 3.1-1** through **Figure 3.1-3**. The exact location of the storage tank at the Refinery has not been determined, but the most visible portion of the site, which is adjacent to existing tanks near the refinery entrance, is shown in **Figure 3.1-3**. Other possible locations for the new storage tank are further from East 2nd Street, and at a lower elevation, and are thus less visible. A fourth viewpoint is located along I-780 at approximately the Military Cemetery along Birch Road. This viewpoint offers scenic views to the south, southeast, and

southwest. The WWTP is located within the viewshed of the I-780 viewpoint, however it is not visible from this viewpoint due to intervening development and trees. The City's General Plan also identifies three principal scenic routes from which people can view 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.

Figure 3.1-1: View of Existing Storage Tank at Corporation Yard from East 2nd Street Facing East

Source: Google Maps 2016

Figure 3.1-2: City Corporation Yard Facing East

Source: Nomad Ecology 2016

Figure 3.1-3: View of Valero Refinery Tank Location from East 2nd Street

Source: Google Maps 2016

Impacts

a, c) Construction of the proposed project would be visible from surrounding land uses and would temporarily alter the existing visual character and quality of the proposed project area, particularly where the proposed facilities are located within residential land uses. Specifically, the visual character in and around the WWTP, proposed pipeline, and potential storage tank sites at the City Corporation Yard and the Refinery would be temporarily modified due to the presence of construction equipment and materials, stockpiles of soil, and construction-related vehicles.

Scenic vistas in the proposed project area include views of the Carquinez Strait from the public access trail along the shoreline to the west of the WWTP property. These views are directed to the south towards the water and away from the proposed area, and would not be affected by the proposed project. Because of the intervening structures and existing on-site structures, there would be limited visibility of construction activities and the proposed changes to the WWTP property from nearby Turnbull Park. Construction activities at the WWTP would be confined to the site and would not be visible from the scenic vistas and views identified in the City's General Plan. Construction at the WWTP would not obstruct or impact views of the Carquinez Strait, Benicia-Martinez Bridge, or Contra Costa County across the strait from Benicia.

During installation of the tank and recycled water pipeline, construction activities would be visible from various scenic vistas that encompass the pipeline route, including East 5th Street, Hillcrest Avenue, the easement along the southern edge of the Refinery property, and East 2nd Street. Construction activities that would affect visual character along the proposed alignment would include, but are not limited to, open trenches, construction equipment, and storage of materials in staging areas. Of these, active construction (open trenches and heavy equipment used to install pipelines) would move along the route as construction progresses, and would be located within existing roadway rights-of-way and an existing easement. These activities would not create a significant impact to visual resources because they would be temporary in nature and are not located in an area that is the focus of the nearby scenic vistas (Carquinez Strait, Contra Costa County, and the Benicia-Martinez Bridge). Once pipeline construction is complete, all pipelines outside of the Refinery would be located belowground and disturbed surfaces would be restored to pre-project conditions.

Staging areas used to store materials and equipment would be required for pre-construction mobilization, construction, and post-construction demobilization activities. Staging areas may be

located adjacent to the proposed alignment, at the City Corporation Yard, the WWTP, or another suitable area off-site. Because staging areas would be present for the duration of construction activities, they would have a temporary impact to scenic vistas if located within the views provided by the vistas identified in the City's General Plan. As described in *Chapter 2, Project Description*, any damage to roads and unpaved areas would be repaired following construction and unpaved areas would be revegetated with native grasses indigenous to the disturbed area. Due to their temporary nature, the proposed project's construction activities would not substantially degrade the existing visual character of the proposed project area and surroundings.

Where aboveground facilities are proposed, the visual character would be permanently altered. Permanent alteration is associated with the inclusion of structures not present before the proposed project, which include the recycled water treatment facility and upgrades at the WWTP, and storage tank at one of three potential locations. Construction of the proposed facilities at the WWTP (basins, flocculation tanks, pump station) would involve converting existing tanks and constructing new facilities within the developed area of the WWTP (see **Figure 2-3**). The new structures would be similar in appearance and material to the existing WWTP structures and lower in height than a number of other on-site structures. The proposed structures at the WWTP would be screened or partially screened from surrounding areas by existing topography, structures, vegetation, and existing site facilities.

The proposed storage tank may be located adjacent to East 2nd Street (at the City Corporation Yard), at the WWTP, or at the Refinery. If the WWTP is selected as the preferred location for the storage tank, construction activities would be consistent with the nature of other construction activities at the WWTP, and the completed tank would be consistent with the existing visual character of the site. Impacts would be less than significant. If the Refinery is selected as the preferred location for the storage tank, construction activities would not be within the identified scenic vistas in the City's General Plan. In addition, the tank would be consistent with the existing visual character of the Refinery, which is an industrial complex already characterized by large scale tanks. There would be no impact to scenic vistas if the storage tank is located at the Refinery.

If the City Corporation Yard is selected as the preferred site for the tank, there could be a potential impact to scenic vistas, depending on the exact location selected for the tank. The City Corporation Yard is located on a slope, with an existing tank on site. The existing tank is located downslope from East 2nd Street, and only the roof of the tank is visible from the roadway (see **Figure 3.1-1**). The existing tank does not obstruct views from East 2nd Street. Immediately adjacent to, and south of the existing tank, the elevation ranges between approximately 40 and 60 feet below the elevation of the roadway (see **Figure 3.1-2**). If the proposed 30-foot-tall storage tank is constructed in this location, it would not be visible from the roadway. However, elevations further south and east from the existing tank on the City Corporation property vary to a greater degree, and proximity to the roadway would be a factor in visibility of the tank. Thus, there is a possibility that the tank would be visible from the scenic viewpoints on East 2nd Street. Implementation of **Mitigation Measure AES-1** would reduce potential impacts to scenic vistas from viewpoints on East 2nd Street to a less-than-significant level.

Mitigation Measure AES-1: Design, Vegetation, and Screening of Storage Tank

If the City Corporation Yard is selected for the storage tank location, the City shall implement the following design, vegetation, and screening measures to reduce any potential visual impacts:

- To the extent feasible, the tank shall be sited in a location that minimizes visibility of the tank from East 2nd Street.

- Earth tone color and/or texture treatment shall be applied to the storage tank to reduce potential visual contrast with the City Corporation Yard's existing structures and with the surrounding landscape.
- Installation of vegetation and/or fencing around the storage tank shall be considered for screening purposes to further reduce the proposed project's potential visibility from East 2nd Street.

b) There are no state scenic highways within the proposed project area. Highway 37 is currently the only eligible state scenic highway in Solano County with no highways that are officially designated at this time. Highway 37 is located over 5 miles away, and the proposed project area is not visible from this roadway. As described above, I-680, I-80, and Highway 37 in the proposed project area are considered scenic roadways for Solano County. Views of the proposed project area from these scenic roadways would be obstructed by topography (such as berms along I-680), structures and vegetation. Therefore, construction and operation of the proposed project would have no impact on scenic resources within a state scenic highway or scenic roadways.

d) As described in *Chapter 2, Project Description*, construction would generally be limited to weekdays from 7 a.m. to 7 p.m. and nighttime construction is not expected to be necessary. There is no anticipated construction-related impact associated with light and glare.

The proposed pipelines would not create any new source of light or glare following construction, because these facilities would be located underground in public ROW. The aboveground recycled water facilities at the WWTP and storage tank would require the installation of outdoor, permanent lighting for maintenance security purposes The WWTP site currently includes a variety of outdoor lighting fixtures. Exterior lighting associated with the proposed recycled water facilities and storage tank (should the WWTP be selected as the preferred storage tank site) would be similar in design to existing standards and consistent with existing lighting conditions. The new structures would include non-reflective and/or textured finished structures to minimize potential glare effects, and would create no additional impacts at the WWTP.

The Refinery is an already developed heavy industrial facility with extensive outdoor lighting. Thus, should this location be selected as the preferred site of the proposed storage tank, there would be no additional light or glare impacts.

The City Corporation Yard is located immediately north of a residential area. If this site is selected as the preferred storage tank site and depending on its location, a new source of light and glare may be created. However, the exterior lights would only be on when maintenance personnel are at the site. These lights would be directed downward and oriented so that lights would not be directly visible from the neighboring areas, or located on the sides of the storage tank away from neighboring residents, to minimize light and glare effects. These design features would reduce visibility of light and glare from surrounding areas, and potential impacts related to light and glare would be less than significant.

3.2 Agriculture and Forestry Resources

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for or cause rezoning of, forest land (as defined in Public Resource Code section 12220 (g)), timberland (as defined by Public Resource Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion

Environmental Setting

According to the Farmland Mapping and Monitoring Program (FMMP) map for Solano County, the project facilities are located within areas designated as "Urban and Built-up Land", "Grazing Land", and "Other Land" (California Department of Conservation 2015). There are no forestry resources in the vicinity of the proposed project area (CDFFP 2006).

Impacts

a-e) The proposed project would be constructed primarily within City ROW and not within agricultural or forest lands, it would not convert farmland, conflict with existing zoning for agricultural use/forest land, result in the loss/conversion of forest land, or involve other changes in the existing environment that could result in the conversion of Farmland or forest land. No impacts would occur.

3.3 Air Quality

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion

Environmental Setting

The proposed project area lies within the San Francisco Bay Area Air Basin (SFBAAB). The Bay Area Air Quality Management District (BAAQMD) is the local agency responsible for developing and implementing the clean air plan (CAP) for attaining and maintaining air quality in the SFBAAB within federal and state air quality standards. The BAAQMD regulates most air pollutant sources, except for motor vehicles, marine vessels, aircraft, and construction equipment, which are regulated by the California Air Resources Board (CARB) or the United States Environmental Protection Agency (USEPA). State and local government projects are subject to BAAQMD requirements if the sources are regulated by the BAAQMD.

Criteria Air Pollutants

The USEPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required USEPA to establish National Ambient Air Quality Standards for criteria pollutants, and the California Air Resources Board (CARB) has established the more stringent California Ambient Air Quality Standards (CAAQS) through the California CAA of 1988. Areas that do not meet the CAAQS for a particular pollutant are considered to be "non-attainment areas" (i.e., fails to meet standards) for that pollutant. The SFBAAB is designated as either in attainment[1] or unclassified for most

[1] "Attainment" status refers to regions that meet federal and/or state standards for a specified criteria pollutant. "Non-attainment" regions that not meet federal and/or state standards for a specified criteria pollutant. "Unclassified" refers to regions where not enough data exist to determine the region's attainment status for a specified criteria air pollutant.

criteria pollutants, with the exception of ozone[2], particulate matter (PM) 2.5, and PM10; the SFBAAB is designated as non-attainment for either the state or federal standards for these pollutants.

The BAAQMD has adopted State and Federal attainment plans for the proposed project area in the 2010 Clean Air Plan (BAAQMD 2010a). The BAAQMD has also developed the air basin's input to the State Implementation Plan (SIP), which is required under the CAA for areas that are out of attainment of air quality standards. CARB implements SIPs for criteria air quality pollutants within the SFBAAB and other air basins throughout California. These implementation plans are based on local General Plan buildout projections. The most current SIP, the 2005 Ozone Strategy, is a comprehensive document that describes how the SFBAAB will achieve compliance with the state one-hour air quality standards for ozone and how the region will reduce transport of ozone and ozone precursors to neighboring air basins.

The Bay Area CAP is prepared pursuant to the California CAA. The 2010 Clean Air Plan defines a control strategy that BAAQMD and its partners will implement to reduce emissions and decrease ambient concentrations of harmful pollutants and reduce greenhouse gas (GHG) emissions to protect the climate.

Toxic Air Contaminants

BAAQMD Regulation 2, Rule 5 sets cancer risk limits for new and modified sources of Toxic Air Contaminants (TACs) at the maximally exposed individual (MEI). An MEI is a location where a person could be exposed to the greatest risk from the combination of toxic air contaminants emitted from a given source or project based on a health risk assessment. MEI locations are typically determined to evaluate cancer risk, chronic and acute hazard index (BAAQMD 2010b). Acute and chronic non-cancer health hazards are expressed in terms of a hazard index, or HI, which is a ratio of the TAC concentration to an acceptable reference exposure level, which is a level below which no adverse health effects are expected, even for sensitive individuals (BAAQMD 2012).

Under Regulation 2, Rule 5, the BAAQMD Air Pollution Control Officer shall deny any permit to operate a source that results in an increased cancer risk of 10 per million or an increased chronic or acute HI of 1 at the MEI. This threshold is designed to ensure that the source does not contribute to a cumulatively significant health risk impact (BAAQMD 2010b). BAAQMD also requires implementation of Best Available Control Technology for Toxics for any new or modified source of TACs where the cancer risk is greater than 1 in one million and/or a chronic HI is greater than 0.20.

Impacts

BAAQMD developed the 1999 CEQA Guidelines to help local jurisdictions and lead agencies comply with the requirements of CEQA. The CEQA Guidelines were updated in June 2010 to include thresholds of significance adopted by the BAAQMD Board on June 2, 2010, and further updated in May 2012 (BAAQMD 2012). On March 5, 2012, the Alameda County Superior Court issued a writ of mandate ordering BAAQMD to set aside the criteria pollutant thresholds in its most recent CEQA Guidelines. In view of the court's order, BAAQMD is no longer recommending that the thresholds be used as a generally applicable measure of a project's significant air quality impacts and is relying on individual lead agencies to determine the appropriate air quality thresholds of significance to use in their CEQA analysis. Determination of impacts is based on the both the 1999 and 2012 BAAQMD CEQA Guidelines. However, 1999 operational thresholds were applied to both construction and operational emissions, due to a lack of construction-specific emissions thresholds.

Emissions calculated for the proposed project were compared to BAAQMD's mass daily thresholds for construction and operational activities for reactive organic gases (ROG), NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$. **Table 3.3-1** provides a summary of the maximum daily construction emissions for the proposed project, along with a summary of the BAAQMD thresholds. **Table 3.3-2** shows overall annual construction emissions for the proposed project, along with the Federal General Conformity thresholds.

[2] Ozone is a secondary air pollutant that is produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NOx).

Revised Table 3.3-1: Updated Maximum Daily Construction and Operational Emissions

Maximum Daily Construction Emissions (lbs./day)						
	ROG	**NOx**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Pipeline (instantaneous max)	4.4	27	38	0.00	5.9	2.2
WWTP Retrofits/Modifications	1.2	14	9	0.03	7.3	3.5
Storage Tank	2.3	27	14	0.05	2.5	1.1
Unmitigated Total	7.9	67	62	0.07	16	6.7
BAAQMD Thresholds 1999/2012 [1] [2]	80/54	80/54	-	-	80/82	-/54
Significant Construction Emissions	NO	YES	-	-	NO	NO
Mitigated Total (Phased Maximum)	5.6	40	47	0.07	13	5.7
Significant Construction Emissions After Mitigation	NO	NO	-	-	NO	NO
Maximum Daily Operation Emissions (lbs./day)						
Pipeline	-	-	-	-	-	-
WWTP Retrofits/Modifications	1.6	0.00	0.00	0.00	0.00	0.00
Storage Tank	0.84	0.00	0.00	0.00	0.00	0.00
Power Generation Emissions	NA	1.7	NA	0.09	NA	NA
Total	2.5	1.7	0.00	0.09	0.00	0.00
BAAQMD Thresholds 1999/2012 [1] [2]	80/54	80/54	-	-	80/82	-/54
Significant Operation Emissions	NO	NO	-	-	NO	NO

Note: [1] CEQA Guidelines (BAAQMD 1999) [2] CEQA Guidelines (BAAQMD 2012)
Emissions estimates updated after publication of Draft IS/MND based on refined construction equipment usage projections

Revised Table 3.3-2: Updated Proposed Project Annual Air Emissions

Overall Annual Construction Emissions (tons/year)						
	ROG	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
Pipeline	0.13	0.83	1.12	0.00	0.16	0.06
WWTP Retrofits/Modifications (2018)	0.05	0.52	0.30	0.00	0.73	0.37
WWTP Retrofits/Modifications (2019)	0.06	0.82	0.45	0.00	0.44	0.23
Storage Tank	0.04	0.45	0.25	0.00	0.03	0.02
Total	0.3	2.6	2.11	3.7-03	1.4	0.68
BAAQMD Thresholds 1999/2012 [1] [2]	15/10	15/10	-	-	15/15	-/10
Federal General Conformity Thresholds[2]	100	100	100	100	100	100
Significant Construction Emissions	NO	NO	NO	NO	NO	NO
Annual Operation Emissions (tons/year)						
Pipeline	-	-	-	-	-	-
Benicia WWTP Retrofits/Modifications	0.30	0.00	0.00	0.00	0.00	0.00
Benicia Storage Tank	0.15	0.00	0.00	0.00	0.00	0.00
Power Generation Emissions	NA	0.31	NA	0.02	NA	NA
Total	0.45	0.31	0.00	0.02	0.00	0.00
BAAQMD Thresholds 1999/2012 [1] [2]	15/10	15/10	-	-	15/15	-/10
Federal General Conformity Thresholds[2]	100	100	100	100	100	100
Significant Operation Emissions	NO	NO	NO	NO	NO	NO

Notes: [1] CEQA Guidelines (BAAQMD 1999) [2] CEQA Guidelines (BAAQMD 2012)
[2] USEPA 40 CFR § 93.153(b)

Table 3.3-1: Maximum Daily Construction and Operational Emissions

Maximum Daily Construction Emissions (lbs./day)						
	ROG	**NOx**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Pipeline (instantaneous max)	4.73	28.52	39.82	0.00	6.06	2.28
WWTP Retrofits/Modifications	1.39	13.28	11.22	0.02	1.14	0.71
Storage Tank	4.79	47.46	30.40	0.07	2.32	1.99
Unmitigated Total	10.91	89.26	81.45	0.10	9.52	4.97
BAAQMD Thresholds[1]	80	80	-	-	80	-
Significant Construction Emissions	NO	YES	-	-	NO	-
Mitigated Total (Phased Maximum)	6.18	60.75	51.05	0.10	7.20	2.98
Significant Construction Emissions After Mitigation	NO	NO	-	-	NO	-
Maximum Daily Operation Emissions (lbs./day)						
Pipeline	-	-	-	-	-	-
WWTP Retrofits/Modifications	1.66	0.01	0.12	0.00	0.00	0.00
Storage Tank	0.84	0.00	0.00	0.00	0.00	0.00
Power Generation Emissions	NA	1.67	NA	0.09	NA	NA
Total	2.50	1.68	0.12	0.09	0.00	0.00
BAAQMD Thresholds[1]	80	80	-	-	80	-
Significant Construction Emissions	NO	NO	-	-	NO	-

Note: [1]CEQA Guidelines (BAAQMD 1999)

Table 3.3-2: Proposed Project Annual Air Emissions

Overall Annual Construction Emissions (tons/year)						
	ROG	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**
Pipeline	0.12	0.82	1.06	0.00	0.16	0.06
WWTP Retrofits/Modifications (2018)	0.07	0.60	0.46	0.00	0.05	0.03
WWTP Retrofits/Modifications (2019)	0.07	0.69	0.61	0.00	0.06	0.04
Storage Tank	0.06	0.56	0.41	0.00	0.04	0.03
Total	0.32	2.67	2.54	3.35E-03	0.30	0.16
BAAQMD Thresholds[1]	15	15	-	-	15	-
Federal General Conformity Thresholds[2]	100	100	100	100	100	100
Significant Construction Emissions	NO	NO	NO	NO	NO	NO
Annual Operation Emissions (tons/year)						
Pipeline	-	-	-	-	-	-
Benicia WWTP Retrofits/Modifications	0.30	0.00	0.02	0.00	0.00	0.00
Benicia Storage Tank	0.15	0.00	0.00	0.00	0.00	0.00
Power Generation Emissions	NA	0.31	NA	0.02	NA	NA
Total	0.46	0.31	0.02	0.02	0.00	0.00
BAAQMD Thresholds[1]	15	15	-	-	15	-
Federal General Conformity Thresholds[2]	100	100	100	100	100	100
Significant Construction Emissions	NO	NO	NO	NO	NO	NO

Notes: [1]CEQA Guidelines (BAAQMD 1999)
[2]USEPA 40 CFR § 93.153(b)

a) The BAAQMD recognizes that construction equipment emits ozone precursors, but indicates that such emissions are included in the emission inventory that serves as the basis for regional air quality plans. Therefore, the proposed project's construction equipment exhaust emissions are not expected to prevent attainment or maintenance of the ozone, $PM_{2.5}$ and PM_{10} standards within the Bay Area.

The emissions reduction strategies in the 2010 Clean Air Plan and the 2005 Bay Area Ozone Strategy were developed, in part, based on regional population, housing, and employment projections prepared by the Association of Bay Area Governments (ABAG). The proposed project would not facilitate growth in the SFBAAB as it would not generate housing or substantial employment opportunities leading to increased population. The proposed project would result in up to two additional full time staff at the WWTP facility. As such, the proposed project would be consistent with the assumptions contained within the 2010 Clean Air Plan and the 2005 Bay Area Ozone Strategy and would not conflict with or obstruct implementation of those plans. Impacts would be less than significant, and no mitigation would be required.

With respect to conformity with the Federal CAA, as shown in **Table 3.3-2**, the proposed project's potential emissions are below the General Conformity thresholds and are well below 10 percent of the area's inventory specified for each criteria pollutant designated non-attainment or maintenance for the Bay Area. As such, further general conformity analysis is not required.

b) The proposed project's construction activities would generate dust and criteria pollutant emissions that could, but are not expected to, exceed BAAQMD 1999 standards. Construction and operational emissions have been quantified using the CalEEMod version 2013.2.2 and the Road Construction Emissions Model version 7.1.5.1.

Construction

Construction of the proposed project has the potential to affect air quality through the use of heavy-duty construction equipment, through haul truck trips, and through vehicle trips generated by construction workers traveling to and from the proposed project site. In addition, fugitive dust or particulate matter emissions would result from excavation, trenching, and other construction activities. Mobile source emissions would result from the use of construction equipment such as bulldozers, cranes, and excavators. Construction emission concentrations can vary from day to day, depending on the level of activity, the specific type of operation, and the prevailing weather conditions.

Construction of the proposed pipeline, storage tank and retrofits and upgrades at the WWTP would generate approximately 43,000 cubic yards of excavated soil, and would require approximately 21,000 cubic yards of backfill to be imported. Assuming a truck capacity of 10 cubic yards per truckload, this would total approximately 6,400 truck trips during the course of the 21-month construction period. The proposed pipeline construction would proceed at a rate of approximately 200 feet per day. The pipeline would be installed primarily by open cut trenching, with a trenchless portion to pass under I-780 and an above-ground portion on the Refinery property. For emissions modeling purposes, the trenchless portion was considered to be open cut trenching and the aboveground portion was considered a negligible source of emissions.

The air quality modeling assumed that excavation activities would require an average of 11 truck trips per day, 5 days per week, over the 21-month schedule.

Construction of the proposed project based on the timeline presented in **Table 2-4** would result in simultaneous construction of the proposed project components. **Table 3.3-1** shows anticipated criteria pollutant emissions that would be generated from implementation of the proposed project. The construction activities would generate dust on a temporary and intermittent basis. Because residential uses occur along the proposed pipeline alignment, unmitigated fine particulate matter

(PM_{10}) emissions could result in significant local effects. BAAQMD's 1999 CEQA Guidelines recommend that determination of significance with respect to construction impacts be based not on quantification of emissions and comparison to thresholds, but upon inclusion of feasible control measures for PM_{10}. However, the 2010 BAAQMD guidelines recommended quantitative construction thresholds, and although those thresholds were withdrawn by BAAQMD, quantitative construction thresholds are consistent with guidance provided by other nearby air districts, such as the Yolo-Solano Air Quality Management District (YSAQMD 2007). Thus, to reduce potentially significant local effects from fine particulate matter to less-than-significant levels, **Mitigation Measure AIR-1**, which includes the BAAQMD basic control measures, would be required.

As shown in **Table 3.3-1**, construction of the proposed project would not exceed the thresholds for any criteria air pollutants with the exception of NOx. Construction would result in 89.26 pounds per day of NOx emissions, which exceeds the threshold of 80 pounds per day. Implementation of **Mitigation Measure AIR-2** would reduce potentially significant NOx effects to less-than-significant levels by requiring the WWTP retrofits and storage tank to be constructed initially. Once the storage tank construction is complete, the pipeline installation would begin.

Implementation of **Mitigation Measure AIR-1** and **Mitigation Measure AIR-2** would ensure that the proposed project's construction emissions would not violate air quality standards and would not significantly contribute to an existing or projected air quality violation. Construction impacts would be less-than-significant with mitigation.

Mitigation Measure AIR-1: Dust Abatement Program

The City shall require the construction contractor(s) to implement a dust abatement program that includes, but is not necessarily limited to, the following BAAQMD-recommended measures as needed to control dust:

- Water all active construction areas at least twice a day.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, exposed stockpiles, and staging areas at construction sites.
- Sweep daily (with water or vacuum sweepers) all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily (with water or vacuum sweepers) if visible soil material is carried onto adjacent public streets.

Mitigation Measure AIR-2: Construction Schedule Phasing

The City shall include provisions in the bid specifications to phase the construction activities as follows:

Proposed Project Component	Timeline
WWTP	Months 1 through 21
Pipeline	Months 6 though 11
Storage Tank	Months 1 through 5
TOTAL	**21 Months**

Operation

Operational activities would include routine inspection and maintenance of the proposed storage tank, pipeline, and recycled water facilities at the WWTP. Pumping recycled water from the WWTP to new recycled water customers would require energy and generate indirect emissions from off-site Pacific Gas and Electric (PG&E) power generation facilities. Mobile operational emissions are anticipated to be minor, resulting from vehicle exhaust from commuting employees (no more than two additional employees would be required at the WWTP site) and four additional truck trips per month for chemical deliveries. As shown in **Table 3.3-1** and **Table 3.3-2**, daily and annual operational emissions would be minimal. Operations of the proposed project facilities would not result in the violation of any air quality standard or contribute substantially to an existing or projected air quality violation. Operational impacts would be less than significant, and no mitigation is required.

c) The 1999 BAAQMD CEQA Guidelines have set forth methodology to evaluate cumulative impacts. For any project that does not individually have significant air quality impacts, the determination of a significant cumulative impact should be based on an evaluation of the consistency of the project with the local general plan and of the general plan with the regional air quality plan. As demonstrated above, the proposed project's construction emissions would be less than significant with mitigation and less than significant for operations. The proposed project would be consistent with the adopted 2010 Clean Air Plan and the 2005 Ozone Strategy and would not result in a significant operational air quality impact. In addition, air quality policies in the City of Benicia's General Plan were developed based on BAAQMD Clean Air Plan guidelines designed to assist the region in attaining State and federal air quality standards (City of Benicia 1999). As such, the proposed project would be consistent with local and regional air quality plans and would not result in a cumulatively considerable net increase of any criteria air pollutants for which the SFBAAB is in non-attainment. Impacts are considered less than significant.

d) The WWTP facility is located on the southern end of the City, adjacent to the Bay, and the recycled water pipeline would be constructed primarily along East 5th Street and East 2nd Street. The pipeline would cross either at Hillcrest Ave or along the southern boundary of the Refinery property. The storage tank would be located at the WWTP, Refinery, or City Corporation Yard.

Sensitive receptors are those locations where sensitive populations are commonly found. Sensitive populations include children, seniors, people with health conditions, and other members of the general public that are at increased risk of negative health effects. Common sensitive receptors include schools, hospitals, retirement and nursing facilities, and child care centers. The proposed pipeline alignment is located within 0.25 mile of Robert Semple Elementary School, St. Dominic Elementary School, St. Dominic's Catholic Church, and residences.

Construction

The exhaust of large, heavy-duty diesel-powered equipment, which would be used during construction, is known to contain PM_{10}, which is a reference pollutant used to correlate with carcinogenic risk. Because the proposed project includes installation of pipelines near residences and other sensitive receptors, the proposed project could potentially expose sensitive receptors to PM_{10} and NOx emissions. However, as construction would be limited in duration and scale, sensitive receptors would not be exposed to diesel emissions for a prolonged period. In addition, implementation of standard dust control measures and construction phasing would be required (see **Mitigation Measure AIR-1** and **Mitigation Measure AIR-2**), so that criteria pollutant emissions and associated impacts to sensitive receptors would be reduced. Thus, the proposed project is not anticipated to emit carcinogenic or toxic air contaminants (TAC) that individually

or cumulatively exceed the maximum individual cancer risk of 10 in 1 million. Therefore, impacts of construction would be less than significant.

Operation

Operational emissions at the WWTP would not be expected to change, and the pipeline would not generate operational emissions. As noted in *Chapter 2, Project Description*, recycled water would be used at the Refinery's cooling towers. Cooling towers generate aerosols, and emissions from the cooling towers are regulated by the BAAQMD under the Refinery's existing air permit. Use of recycled water at the Refinery cooling tower would result in minor changes in emissions because recycled water has higher concentrations of total dissolved solids (TDS) than the existing raw water source, which would require a permit under BAAQMD's New Source Review Rule. Preliminary assessment of the changes in emissions indicates that issuance of a new air permit from BAAQMD will require a risk assessment for TACs and completion of an analysis of Best Available Control Technology for Toxics (BACT). The MEI would be determined as part of the risk assessment, but based on a preliminary assessment it is expected that the MEI would be a residence to the west of the refinery on McAllister Drive, Piercy Drive or Lansing Circle. All of these receptors are located about 0.6 mile from the cooling towers, and are thus not expected to be exposed to substantial amounts of cooling tower aerosols. The increase in operational emissions is considered potentially significant, but would be reduced to less than significant with implementation of **Mitigation Measure AIR-3**, which would require use of BACT at the cooling tower. Therefore operational impacts would be less than significant with mitigation.

Mitigation Measure AIR-3: Best Available Control Technology for Cooling Tower Emissions

The City shall not provide recycled water to Valero for cooling purposes until Valero has obtained an updated Title V permit from the BAAQMD that allows use of recycled water in the cooling towers. The City will confirm that Valero has implemented any Best Available Control Technology for Toxics (BACT) that are required by BAAQMD as part of the permit. If required, measures to reduce cooling tower emissions may include:

- Operational modifications to maintain TDS concentrations below a determined limit. Modifications could include reducing the cooling tower cycles or blending additional raw water with recycled water.
- Limiting the total water throughput of the cooling towers to a predetermined value over a 12-month period.

e) Sources that may emit construction-related odors generally include architectural coatings, solvents, and diesel powered on- and off-road equipment. Odors may be emitted during operational activities if diesel-powered equipment is used. Further, ROG, while diverse in nature, are known to be odorous compounds.

Due to the nature of the construction activities and the relatively small footprint of the various construction sites for the proposed project, there would be few pieces of diesel-powered equipment operating simultaneously during construction. Further, operations would not be anticipated to require the use of diesel-powered equipment, except for the use of a standby generator during short-term emergency situations.

Potential new sources of odor from the proposed project operations would be related to the aeration basin, flocculation tanks, chlorine contact basins, and chemical storage facilities. As described in *Chapter 2, Project Description,* the aeration basin would be covered and vented to an odor control facility. Thus, no odors would be expected from the proposed aeration tanks. The flocculation tanks would hold secondary treated wastewater; however because the water has

already passed through secondary treatment, no odors would be expected from the flocculation tanks. The chlorine contact basins and chemical storage facilities would be enclosed, containing any odors. In addition, as shown in **Table 3.3-1 and Table 3.3-2**, ROG emissions associated with operation and construction of the proposed project would be minimal. The proposed project would not create objectionable odors and would have a less than significant impact.

3.4 Biological Resources

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Discussion

Environmental Setting

A field survey of the proposed project area was conducted in March 2016 and a Biological Resources Assessment (BRA) and Wetlands Assessment were prepared by Nomad Ecology (Nomad Ecology 2016a, 2016b). The BRA documented the existing conditions, evaluated habitat suitability for special-status plants and wildlife species and sensitive natural communities, and assessed potential project impacts to

biological resources. The Wetlands Assessment assessed potential impacts associated with wetlands and aquatic resources within the proposed project area.

The BRA indicates that the proposed project area is highly disturbed by grading and soil fill, and that very little native soil is present within the proposed project area. Furthermore, the portions of the proposed project area that have native soil are disturbed on an annual basis due to site clearing and discing activities. The Wetlands Assessment states that although the site was surveyed for surface indicators of wetlands, no indicators of wetland hydrology or wetland vegetation were observed.

Critical Habitat

The proposed project is not located within any critical habitat designated by the United States Fish and Wildlife Service (USFWS).

Sensitive Natural Communities

There are four types of vegetation communities present within the proposed project area, including: ruderal, non-native grassland, northern coyote brush scrub, and urban mix. None of these vegetation communities is considered to be a sensitive natural community per statewide or federal criteria.

There are no aboveground features in the proposed project area that are considered to be a Water of the United States or Water of the State falling under United States Army Corps of Engineers (USACE) or Regional Water Quality Control Board (RWQCB) jurisdictions through the Clean Water Act and the Porter Cologne Water Quality Control Act. There are four drainages (all within culverts) located within the proposed project area, all of which drain into Suisun Bay. Three culverts that cross under East 2nd Street may qualify as jurisdictional features, because they may convey Waters of the United States. The fourth culvert originates in a residential community and passes under an unpaved access road near the southeast corner of the City Corporation Yard. All of these drainages are identified in the City of Benicia General Plan as sensitive biological resources (City of Benicia 1999).

Given the potential for jurisdictional features, a Wetland Assessment was prepared to document on-site resources that may be regulated by the USACE. The assessment found that based on aerial photo interpretation and site elevations, it is likely that the culverts ultimately drain to Suisun Bay, which is categorized as a Traditionally Navigable Water. Therefore, the drainages that flow through the culverts are likely tributaries to Traditionally Navigable Waters, which are regulated by the USACE. The proposed project area was also surveyed for wetland vegetation and hydrology, which are surface indicators of wetlands. The survey found no indicators of wetland hydrology or wetland vegetation on the surface, and therefore did not warrant soil investigations to determine the presence of wetland-related soil indicators. Ultimately, the Wetland Assessment concluded that no wetlands are present within the proposed project area; however, the culverts constitute potentially USACE jurisdictional Waters of the United States and Waters of the State as defined in the Clean Water Act and the Porter Cologne Water Quality Control Act (Nomad Ecology 2016b). Furthermore, there is no creek or riparian vegetation associated with the culverts, because the culverts are likely too deep to support habitat.

Plant Species

Based on habitats and plant communities that were either observed within the proposed project area or described in applicable databases and literature, there are 72 special-status plant species known to occur within the vicinity of the proposed project. Of the 72 special-status plant species, 17 are federal and/or state listed. However, due to a lack of suitable habitat, appropriate bedrock or soil substrates, elevation ranges, distributional limits, and their absence during the March 2016 site visit, the 72 potential special-status species were ruled out from occurring within the proposed project area. Therefore, no sensitive plant species, including those listed by federal or state agencies or deemed as California rare plants are considered to have the potential to occur within the proposed project area, and no further rare plant surveys are warranted.

Five plant species were observed within the proposed project area that are tracked by the California Invasive Plant Council and the California Department of Food and Agriculture due to their potential for invasiveness. Those species include: yellow star thistle (*Centaurea solstitialis*), fennel (*Foeniculum vulgare*), French broom (*Genista monspessulana*), Bermuda buttercup (*Oxalis pes-caprae*), and Himalayan blackberry (*Rubus armeniacus*). The California Invasive Plant Council has developed Best Management Practices (BMPs) to prevent spread of noxious weeds associated with construction of utility corridors (California Invasive Plant Council 2016), which would be applicable to the proposed project.

Fish and Wildlife Species

Based on the field investigation, review of available databases and literature, familiarity with local fauna, and on-site habitat suitability, a total of 68 special-status fish and wildlife species were considered in the BRA. Due to a lack of suitable habitat, local extirpations, lack of connectivity between areas of suitable habitat, incompatible land use, and habitat degradation, the 68 potential fish and wildlife species were ruled out from occurring within the proposed project area. Therefore, no special-status wildlife species, including federal or state-listed, proposed, candidate, or fully protected species have the potential to occur within the proposed project area.

Protection is afforded to migratory bird species per the Migratory Bird Treaty Act (MBTA), which makes it unlawful to pursue, hunt, take, capture, or kill any migratory birds except as permitted by regulations issued by the USFWS. This includes direct and indirect impacts, with the exception of harassment and habitat modification, which are not included unless they result in direct loss of birds, nests or eggs. In addition, the California Fish and Game Code (CFGC) established by the California Department of Fish and Wildlife (CDFW) extends protection to non-migratory birds identified as resident game birds and any birds in the orders Falconiformes or Strigiformes (birds of prey). Habitat is present within the proposed project area that has the potential to support protected nesting birds.

Wildlife Movement

The proposed project area is largely surrounded by residential development and industrial facilities (the Refinery). The residential and industrial components of the project area limit potential connectivity between open space areas, and therefore limit the utility of the project area as a movement corridor.

Local Policies and Ordinances

The City of Benicia has adopted a Tree Ordinance (Ordinance No. 08-03) that regulates the removal, alteration, and planting of certain trees. The ordinance requires a Tree Removal Permit from the Parks and Community Services Director for removing, trimming, or altering all trees with a diameter of 12 inches or more at 24 inches above the ground. Two 15-gallon trees are generally required for the replacement of each mature tree that is removed. In some cases, one or two 24-inch box trees, or a mature tree, is required for the replacement of one mature tree. In some cases such as dead or dying trees, thinning groups of trees, or removal of one tree in a group of healthy trees, tree replacement is not required. The General Plan also has policies that call for preservation of habitat for special-status species, protection of native vegetation and habitats, and protection/enhancement of wetlands.

Habitat Conservation Plans

The Solano Multi-Species Habitat Conservation Plan (HCP) covers portions of Solano County. The City of Benicia is not a participant in the HCP and the proposed project area is not within an area covered by the HCP.

Impacts

a) Due to the highly disturbed nature of the project area and the fact that very little native soil is present, the BRA concluded that no special-status plant, fish, or wildlife species have the potential to occur within the proposed project area. Therefore, no impact to special-status plant, fish, or wildlife species would occur.

b, c) Field surveys and research found that there are four culverts within the proposed project area that constitute potentially USACE jurisdictional Waters of the U.S. and Waters of the State as defined in the Clean Water Act and the Porter Cologne Water Quality Control Act. However, the Wetlands Assessment determined that there are no creek or riparian habitats or other sensitive natural communities present within the proposed project area. Furthermore, there are no potentially State jurisdictional riparian resources within the proposed project area. Construction of the pipeline along East 2nd Street would not affect waters of the U.S. within the culverts that cross the road because the pipelines would cross either under or over the culverts and would not affect the stream channel or any associated habitat. Therefore, impacts are considered less than significant and no mitigation is required.

d) The proposed modifications associated with the project are largely below-ground recycled water pipelines that would not interfere with aboveground wildlife movement. Aboveground features such as the proposed storage tank and recycled water facilities would be located in already developed areas, and would not reduce the utility of the proposed project area as a movement corridor. The BRA found that the proposed project area has very little existing utility as a movement corridor due to its developed nature, and the fact that there is a high level of human activity, vehicle traffic, presence of neighborhood pets, and associated light and noise pollution (Nomad Ecology 2016a).

Trees and shrubs in the project area have the potential to support protected nesting birds. As described above, disturbing or destroying active nests of migratory birds is a violation of the MBTA and the CFGC. If protected bird species are nesting within the proposed project area or nearby vicinity, construction of the proposed project could result in short-term impacts such as failure to breed, nest abandonment, reduced fecundity, and decreased survivorship from noise and movement of personnel and construction equipment. To avoid impacts to nesting migratory birds, proposed project-related activities should occur during the non-nesting season (September 1 – January 31) to the extent practicable. However, if construction activities must occur during the nesting season, the removal of vegetation during the breeding season is considered a potentially significant impact. Implementation of **Mitigation Measure BIO-1** would reduce potential impacts to nesting migratory birds to a less-than-significant level.

Mitigation Measure BIO-1: Protection of Nesting Birds

- If tree removal, pruning, or grubbing activities are necessary, such activities should be conducted during the non-nesting season (September 1-January 31) to avoid impacts to nesting birds. If work is conducted at this time, pre-construction surveys will not be necessary.
- If project construction begins during the breeding season (February 1 – August 31), preconstruction surveys shall be conducted for the proposed project area and adjacent habitats up to 300 feet from the proposed project boundary (survey area). Surveys shall be conducted by a qualified biologist no more than 72 hours prior to equipment or material staging, pruning/grubbing or surface-disturbing activities. The surveys shall entail a variety of search techniques, including incidental flushing of an adult from the nest, watching parental behavior (e.g., carrying nest material or food), systematically searching nesting substrates, and use of call-broadcasts. If work is conducted in stages, additional nesting bird surveys shall be conducted within 72 hours prior to work in the new areas. Therefore, if 72 hours has passed since the original survey and additional pruning/grubbing, staging, or surface-disturbing activities will occur, another survey must be conducted. If no active nests are found within the survey area, no further mitigation is necessary.

- If active nests (i.e. nests with eggs or young present) are found within the survey area, non-disturbance buffers shall be established at a distance sufficient to minimize disturbance based on the nest location, topography, cover, the nesting pair's tolerance to disturbance, and the type/duration of potential disturbance. No work shall occur within the non-disturbance buffers until the young have fledged as determined by a qualified biologist. Buffer size shall be determined in cooperation with CDFW and USFWS Migratory Bird Permit Office. If buffers are established and it is determined that project activities are resulting in nest disturbance, work shall cease immediately and CDFW and USFWS Migratory Bird Permit Office shall be contacted for further guidance.

e) Compliance with General Plan Policies

The project would not affect sensitive species, native vegetation or habitats, or wetlands, and is thus consistent with General Plan policies for protection of sensitive biological resources.

Protected Trees

The City of Benicia regulates the removal, alteration, and planting of protected trees through its Tree Ordinance (Ordinance No. 08-03). Protected trees include the following:

- All city property trees over 8 inches in diameter
- Street trees over 8 inches in diameter
- All heritage trees
- All designated protected trees
- All other trees over 12 inches in diameter
- California native trees that have a trunk diameter of 8 inches. Trees in this category include: blue oak, live oak, valley/white oak, willow, buckeye, box elder, California bay, and black walnut.

In accordance with the City of Benicia's Tree Ordinance, the pruning, cutting, girdling, poisoning, or any other action causing or aiding the death or disfigurement of a protected tree is prohibited without a tree removal or pruning permit. Removal of or damage to protected trees would be considered a significant impact.

Street trees are planted along the East 5th Street, Hillcrest Avenue, and East 2nd Street. The WWTP property has a large area in the southeast corner that is planted with many tree species including pear and plum. The City Corporation Yard is landscaped with trees, including large patches of date palm. There is also a small planting of Monterey pine just south of the Refinery entrance along East 2nd Street. There is a willow tree along the outfall of the culvert adjacent to the City's easement on an unpaved access road at the southwestern end of the Refinery property (south of the City Corporation Yard). The roots of the willow tree are not within the project area, but a branch of this tree overhangs an area where the proposed pipeline would be installed. Although the project area is primarily urban and construction would generally occur within City ROW, it is possible that the aforementioned trees could be pruned or even potentially removed as a result of construction of the proposed project. Therefore, in accordance with the City of Benicia's Tree Ordinance, a Tree Removal Permit would be required from the Parks and Community Services Director. **Mitigation Measure BIO-2** would require a pre-construction assessment for protected trees, preparation of a Tree Removal Permit, and preparation of a replacement plan, if applicable. All of these measures would ensure that potential impacts to protected trees are reduced to less-than-significant levels.

Mitigation Measure BIO-2: Preservation of Protected Trees

- Prior to the commencement of construction activities, an arborist or botanist shall assess trees within the proposed project area and adjacent to the proposed project area to determine whether or not they qualify as protected trees per the City of Benicia's Tree Ordinance. If the trees are determined not to be subject to the ordinance, no further mitigation is necessary.
- Prior to the commencement of construction activities, an arborist or botanist shall assess potential impacts to identified protected trees within and adjacent to the proposed project area, including staging areas and access routes. If feasible, the proposed project footprint shall be modified to avoid the root zone and identify the boundary of tree protection zone of protected trees. Prior to the commencement of construction activities, the contractor shall secure a Tree Removal Permit that articulates all requirements necessary to meet the City of Benicia's Tree Ordinance.
- During construction, the contractor shall conduct work per the terms of the Tree Removal Permit, and shall coordinate with the Parks and Community Services Directors, as needed, to ensure that any necessary tree replacement activities take place in accordance with the City of Benicia Tree Ordinance.

Invasive Weeds

Because there are several species of invasive plants present in the project area, construction of the project has the potential to result in the introduction or spread of noxious weeds and invasive plants. This would be considered a significant impact, which would be minimized by implementation of **Mitigation Measure BIO-2**, which would require BMPs to prevent the spread of invasive plant species.

Mitigation Measure BIO-3: BMPs to Prevent Spread of Noxious Weeds

- All equipment shall arrive clean and free of excess material prior to being brought onto the project site.
- A qualified biologist shall identify locations of noxious weeds and a containment area to be used to wash, blow off, or clean vehicles and equipment after entering areas occupied by invasive weeds. This area could be a parking lot, roadway, or other area where inspection and cleaning shall not impact surrounding areas.
- Prior to leaving areas identified by a qualified botanist as harboring invasive weeds, workers shall inspect their clothing, shoes, vehicles, and equipment for invasive plant seeds or plant parts. If invasive plants are found workers shall use compressed water or air to remove invasive plant seeds or plant parts. Any invasive plant seeds or plant parts found in the containment area shall be gathered, placed in plastic bags, and taken to an appropriate disposal facility.
- Contractors shall be educated on the importance of identifying invasive plants and their management during Worker Environmental Awareness Training.
- If weed populations cannot be removed, they shall be flagged for avoidance, as feasible.
- Avoid, treat, or contain any weed populations near work areas that may be impacted or disturbed by construction activity.
- Certify that all construction material sources used for supplies of filter fabric, sand, gravel, rock, and mulch are weed-free prior to obtaining or transporting any material.
- Obtain and use only certified weed-free straw or use fiber roll logs for sediment containment.

- Install stormwater BMPs to prevent erosion in work areas and the potential transport of weedy material onto or off of the project site.

f) The proposed project is not be located within any of the covered activity zones included within the Solano Multi-Species HCP. Therefore, there would be no conflicts with the provisions of an adopted habitat conservation plan.

3.5 Cultural Resources

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Discussion

Environmental Setting

A field survey of the proposed project area was conducted in March 2016 and associated Historic Property Survey Report (HPSR) was prepared by Basin Research Associates (Basin Research 2016). The cultural resources investigation of the proposed project area was conducted to determine the potential impacts to archaeological and historical resources within the Area of Potential Effects (APE) for the proposed project. The APE includes all areas where direct or indirect impacts may occur, including active pipeline work areas approximately 20 feet on either side of the pipeline trench, and the sites upon which the proposed storage tanks would be located, including a maximum excavation depth of four feet. The HPSR involved a search of the cultural resource records housed at the California Historical Resources Information System (CHRIS) of the Northwest Information Center (NWIC), including an identification of all previous cultural resources work and previously recorded cultural resources within a 0.5-mile radius of the APE. The CHRIS search included a review of the California Register of Historical Resources (CRHR), the National Register of Historical Places (NRHP), the California Points of Historical Interest list, the California Historical Landmarks list, the Archaeological Determinations of Eligibility list, and the California State Historic Resources Inventory list. An archaeological analysis of the proposed project alignment was completed in 2016, including database researches and a field survey.

Historical Resources

No local, state or federal historically or architecturally significant structures, landmarks, or points of interest have been identified within or adjacent to the proposed project. One NRHP-listed property and two California Historical Landmarks (CHL) are within 0.5 miles of the project:

- A portion of the NRHP-listed "Benicia Arsenal, Benicia Barracks" is within 0.5 miles of the proposed project.
- The Benicia Arsenal is also California Historic Landmark No. 176 with the marker located at the main gate of the Port of Benicia at the intersection of Adams and Jefferson streets.
- The Benicia Arsenal District (P-48-001572) consists of four discontiguous districts that are located east of the proposed pipeline alignment in the vicinity of Pine Lake.

- The site of the Former Benicia Barracks (P-48-001573) is CHL No. 177, and the marker for the site is located at 711 Hillcrest Avenue

One historic era resource has been recorded in the proposed project area. P-48-000516, the Benicia Arsenal Igloo Bunker #C-425, is mapped within the APE at the Refinery site where the storage tank and booster pump station may be located. The underground concrete bunker is within the restricted access portion of the Refinery property and described as a generic and non-unique World War II era ammunition storage bunker. The bunker has been evaluated as not appearing to be significant under any NRHP or CRHR criteria. As such, it has been recommended that the resource be determined ineligible for listing on the NRHP or CRHR at the national, state, and local levels of significance. A similar munitions bunker is located within the City Corporation Yard. It has not been formally recorded but is similar to typical World War II era ammunition storage bunkers. It does not appear to be eligible for the NRHP, similar to the evaluation of P-48-000516 at the Refinery.

No known NRHP and/or CRHR listed, determined eligible, or pending properties have been identified within the various pipeline alignment.

Archaeological Resources

Seven reports with a focus on archaeological research are on file with the CHRIS/NWIC that include or are immediately adjacent to the proposed recycled water pipeline alignment. No prehistoric, combined prehistoric/historic, or historic period archaeological sites have been recorded or reported in or adjacent to the proposed alignment. No resources identified by contemporary Native Americans are known for the proposed project. No Hispanic or American era archaeological resources have been recorded or reported within the project alignments.

The HPSR concluded that the proposed project area has a low sensitivity for exposing subsurface prehistoric or historic archaeologic materials within the alignment for the proposed pipeline during construction. This conclusion was based on the general absence of recorded prehistoric and historic archaeological sites within and/or adjacent to the alignment, the fact that most of the proposed pipeline would be located within a previously disturbed corridor, and because construction excavations over the past approximately 160-170 years have not resulted in the exposure of any significant subsurface cultural resources within the APE. Furthermore, no evidence of significant prehistoric or historically significant archaeological resources or potentially significant architectural resources was observed during the field survey conducted for the proposed project.

The Native American Heritage Commission (NAHC) was contacted regarding potential on-site resources of importance. Consultation is pending as a result of this coordination effort. The Yocha Dehe Wintun Nation requested consultation with the City regarding the project, and the City has contacted Mr. James Sarmento, Cultural Resources Manager for the Yocha Dehe Wintun Nation, to set up a meeting with tribal representatives. As of August 23, 2016, tribal representatives have not expressed any particular concerns regarding the impacts of the project.

Paleontological Resources

Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide and the enormous number of organisms that have lived through time, preservation of plant or animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils – particularly vertebrate fossils – are considered to be nonrenewable resources. Because of their rarity, and the scientific information they can provide, fossils are considered highly significant records of ancient life.

Rock formations that are considered of paleontological sensitivity are those rock units that have yielded significant vertebrate or invertebrate fossil remains. These include, but are not limited to, sedimentary rock units that contain significant paleontological resources anywhere within its geographic extent. The

project area is underlain by Holocene floodplain deposits. These types of sediments would not likely yield significant paleontological remains because they are surface deposits and are not considered fossil-bearing rock units.

Impacts

a, b, c) No known NRHP and/or CRHR listed, determined eligible, or pending properties have been identified within the various pipeline crossings or proposed sites for storage tanks and other appurtenances. Furthermore, no prehistoric or historic archaeological resources have been recorded within or adjacent to the APE. As such, it is unlikely that unexpected discoveries of unique archaeological discoveries would occur during construction of the proposed project based on the archaeological and geoarchaeological data, as well as the disturbed nature of the proposed project area.

Fourteen (14) recorded resources, including five that are approximately located/mapped by the CHRIS/NWIC, have been recorded within 0.5 miles of the proposed project. The discontiguous Benicia Arsenal District (P-48-001572), five other components of the Benicia Arsenal, and the former site of Benicia Barracks (P-48-001573), are among the 14 resources recorded within 0.5 miles of the proposed project. These resources are within 0.5 mile, but located outside of the APE. No construction work, staging, or other proposed-project activities that could affect the resources are anticipated to occur within their vicinity.

Two historic structures, consisting of munitions bunkers formerly associated with the Benicia Arsenal, are present within the potential locations and staging areas of the storage tank that may be constructed within the Refinery or the City Corporation Yard. As describe above, P-48-000516 within the Refinery property has been formally recorded and does not appear to be significant as an individual structure or as a contributor to a historic district under any of the NRHP and/or CRHR criteria. The bunker that is located within the City Corporation Yard has not been recorded or evaluated, but it does not appear eligible for the NRHP, similar to the evaluation of P-48-000516 at the Refinery. Despite the characterization of these structures, both would be avoided during construction of the proposed project.

It is unlikely that construction or operation of the proposed project would significantly impact prehistoric or historic archaeological resources, or paleontological resources. Consultation with Native American tribes is pending, and the outcomes of consultation may result in recommendations for mitigation. It is possible that the proposed project could encounter previously undiscovered historic, archaeological, or paleontological resources. Implementation of **Mitigation Measure CUL-1** would ensure that any resources discovered during construction are dealt with appropriately. With implementation of mitigation, impacts on historic, archaeological, and paleontological resources would be less than significant.

Mitigation Measure CUL-1: Accidental Discovery of Archaeological or Paleontological Resources

- The City of Benicia shall note on any construction plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources including prehistoric Native American burials.
- The City of Benicia shall retain a Professional Archaeologist and Paleontologist on an "on-call" basis during ground disturbing construction for the project to review, identify and evaluate cultural resources that may be inadvertently exposed during construction.
- In the event any archaeological or paleontological resources are discovered during project-related excavations, construction work within 25 feet of the discovery shall be redirected and a qualified archaeologist or paleontologist contacted to assess the resource and determine measures needed to preserve or record any site determined to be potentially

significant. The archaeologist shall review, identify and evaluate any discoveries to determine if they are historical properties.

- If the Professional Archaeologist or Paleontologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource and/or paleontological resource, they shall notify the City of the evaluation and recommend mitigation measures. Mitigation measures may include avoidance, preservation in-place, recordation, additional archaeological testing and data recovery among other options. The completion of a formal Archaeological Monitoring Plan (AMP) may be recommended by the Professional Archaeologist if significant archaeological deposits are exposed during ground disturbing construction. Development and implementation of the AMP and treatment of any significant cultural resources shall be undertaken by the City.
- A Monitoring Closure Report shall be filed with the City of Benicia at the conclusion of ground disturbing construction if archaeological, paleontological, and/or Native American monitoring of excavation was undertaken.

d) No evidence exists to indicate that burials or any large prehistoric or historic occupation existed within the project area; therefore, the project would likely not disturb any human remains. In the event that undiscovered burials are encountered during construction, implementation of **Mitigation Measure CUL-2** would reduce any impacts related to the accidental discovery of human remains to a less-than-significant level.

Mitigation Measure CUL-2: Accidental Discovery of Human Remains

- In accordance with Public Resource Code Section 5097.98, should human remains be found on the site no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains shall be disturbed until the following measures are implemented. The treatment of human remains and any associated or unassociated funerary objects discovered during any soil-disturbing activity within the proposed project site shall comply with applicable State laws. This shall include immediate notification of the Solano County Sheriff-Coroner and the City of Benicia.
- In the event of the coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission, who shall appoint a Most Likely Descendent (MLD), is required (PRC Section 5097.98).
- The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.
- The City of Benicia, archaeological consultant, and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The California PRC allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project shall follow PRC Section 5097.98(b) which states that ". . . the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

3.6 Geology and Soils

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Place new structures in or otherwise adversely affect areas requiring special management due to hazards, including: unstable soil areas including fault zones, liquefaction zones, areas subject to landslides and expansive soil areas.	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Discussion

Environmental Setting

The City of Benicia is located in the San Francisco Bay Area, which is a seismically active region. The proposed project is located at the southern end of the City, west of I-680, and north of the Carquinez Strait. The City primarily consists of rolling hills, with elevations ranging from sea level along the City's southern border adjacent to the Carquinez Strait to approximately 1,160 feet (City of Benicia 1999). The Green Valley fault is the only active fault in proximity to the proposed project area and trends northwestward on the northeastern edge of the City (City of Benicia 1999).

The Alquist-Priolo Earthquake Fault Zoning Act and Seismic Hazards Mapping Act directs the State Geologist to delineate regulatory zones (known as Zones of Required Investigation) to reduce the threat to public health and safety and to minimize loss of life and property posed by earthquake-triggered ground failures, which include surface fault rupture, strong ground shaking, liquefaction, and landslides. Local agencies must regulate most development within these zones, and require a geotechnical investigation of the site. A review of the State of California's Alquist-Priolo Earthquake Fault Zone Maps shows that the proposed project area is not located in any Zone of Required Investigation as delineated by the California Geological Survey (CGS) (CGS 2015). Although the majority of the City, including the proposed project area, is not located in a zone regulated by the CGS, strong to violent ground shaking is possible due to the close proximity to seismically active fault zones. Additionally, several developed areas along the Benicia waterfront are underlain by soft sediment, increasing the potential for amplification of ground shaking during an earthquake (City of Benicia 1999).

The City of Benicia General Plan Community Health and Safety Element shows that the proposed project is located within areas identified as vulnerable to earthquake-induced liquefaction and landslides, and containing expansive soils and bedrock. The predominant soil in the City is the Dibble and Altamont Series of expansive clay formations (City of Benicia 1999). Most areas within the City are susceptible to liquefaction due to expansive soils such as Bay Mud along the shores of the Carquinez Strait and Suisun Bay, and alluvium in the flat lying valleys (City of Benicia 1998). Potential landslide hazard areas are generally located on unstable hillsides and are relatively rare in the developed portions of the City (City of Benicia 1999).

The Working Group for California Earthquake Probabilities (WBCEP) estimates that there is a 72 percent probability that a magnitude 6.7 or greater earthquake will occur in the San Francisco Bay Area within 30 years (USGS 2013). ABAG has prepared a regional shaking hazard map and indicates that all of the City is susceptible to strong to violent shaking (ABAG 2016a). ABAG has classified the Modified Mercalli Intensity[3] Shaking Severity Level of ground shaking within the proposed project area due to an earthquake on the Green Valley fault as "Moderate" and "Strong" (ABAG 2016b). The proposed project area could therefore experience strong ground shaking from an earthquake. The intensity of ground shaking in the proposed project area depends on a number of factors such as earthquake magnitude, distance to fault, depth of earthquake, physical characteristics of underlying soil and bedrock, and local topography. Earthquake hazards produced by ground shaking include damage to structures, and secondary ground failures.

Impacts

a) A project that places development in an existing or future hazard area is not considered under CEQA to have a significant impact on the environment, unless the project would exacerbate the environmental hazard or condition. This analysis therefore focuses on whether seismic impacts could cause the proposed project's facility to fail, and if that failure would cause a secondary impact that could exacerbate an environmental hazard. As described above, the proposed project area is within a region of high seismic activity and other related geologic hazards. Seismic events could result in secondary seismic impacts associated with unstable soils such as lateral spreading, liquefaction, and subsidence. If not designed correctly, a seismic event could result in structural failure of the storage tank and recycled water facility at the WWTP, misalignment of the pipelines, failure of joints, and recycled water leakage underground from the pipelines. Leakage from the pipelines could saturate the soils, such that it contributes to conditions for liquefaction, lateral spreading, and subsidence. The structural failures could thus result in increased risk to safety. However, geotechnical analysis required as part of the California Building Standards Code during the design phase would incorporate appropriate standard engineering practices and specifications in the facility design to minimize risk of structural failure in a seismic event, and would reduce secondary impacts that may occur as a result. Therefore, impacts would be less than significant.

b) Construction activities involving soil disturbance, such as excavation, stockpiling, and grading could result in increased erosion and sedimentation to surface waters. As described in *Chapter 2, Project Description*, construction activities associated with the proposed project would disturb a large amount of soil, as the primary method of pipeline installation would be via open cut trenching. Construction of the proposed project would be required to comply with Construction General Permit (Order Nos. 2009-0009-DWQ and 2010-0014-DWQ), which is issued by the State Water Resources Control Board (SWRCB). The Construction General Permit requires the development of a Storm Water Pollution Prevention Plan (SWPPP), which outlines best management practices (BMPs) the City would use to reduce erosion and topsoil loss from storm water runoff. Compliance with the Construction General Permit would ensure that construction of the facilities associated with the proposed project implements the BMPs, and therefore would not result in substantial soil erosion or the loss of topsoil. Impacts are considered less than significant, and no mitigation is needed.

c) The proposed project would not include septic-related waste. Therefore, there would be no impact related to septic tanks or alternative wastewater disposal methods.

[3] The Modified Mercalli Intensity (MMI) estimates the intensity of shaking from an earthquake at a specific location or over a specific area by considering its effects on people, objects, and buildings. At high intensities (MMI ≥ 6), earthquake shaking damages buildings.

3.7 Greenhouse Gas Emissions

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion

Environmental Setting

As described in *Section 3.3 Air Quality*, BAAQMD is the agency principally responsible for comprehensive air pollution control in the SFBAAB. Climate change and GHG emissions have been addressed through a series of state legislation and executive orders, including the following:

- California Global Warming Solution Act (AB 32) – Requires that the state reduce emissions of GHG to 1990 levels by 2020.
- Executive Order S-3-05 – Sets emission reduction targets: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.
- Executive Order S-01-07 – Mandates a statewide goal be established to reduce carbon intensity of California's transportation fuels by at least 10 percent by 2020.
- Executive Order B-30-15 – Sets emissions reduction targets to 40 percent below 1990 levels by 2030, in order to ensure California meets its 80 percent below 1990 levels by 2050.
- Title 24 – Established standards to allow consideration and possible incorporation of new energy efficiency technologies and methods.
- AB 1493 – Requires CARB to develop and adopt regulations that reduce GHG emitted by passenger vehicles and light duty trucks.
- The Western Regional Climate Action Initiative – Signed by five states, including California, to collaborate to identify, evaluate, and implement ways to reduced GHG emissions in the states collectively and to achieve related co-benefits.

The City of Benicia adopted its Climate Action Plan in 2009 (City of Benicia 2009). This document includes a GHG inventory for the City's municipal operations. The City's GHG emissions reduction goal is equivalent to that established in AB 32, to reduce GHG emissions to 2000 levels by the year 2020, and the plan outlines strategies that can be taken to reduce GHG emissions.

To provide GHG emission guidance to local jurisdictions within the SFBAAB, BAAQMD developed CEQA GHG significance thresholds in 2010. BAAQMD identified screening levels of 1,100 metric tons of CO_2e[4] emissions per year (BAAQMD 2012) for operational emissions for projects other than

[4] CO_2e is the concentration of carbon dioxide that would cause the same amount of radiative forcing as a given mixture of carbon dioxide and other greenhouse gases.

stationary sources. BAAQMD has not established GHG significance thresholds for construction, but construction-related GHG emissions can be compared to BAAQMD's operational threshold for non-stationary sources.

Quantification of GHG emissions for the proposed project was based on the carbon dioxide equivalent (CO_2e) outputs generated during construction and operations using the Road Construction Emissions Model, CalEEMod, and electricity emissions-based calculations from PG&E.

Impacts

a, b) Applicable plans, policies, and regulations associated with reducing the emissions of GHGs include BAAQMD's proposed thresholds of significance for GHG as described above. The total GHG emissions for construction of the proposed project are estimated to be 606 $MTCO_2e$/year, which is below the interim threshold of 1,100 $MTCO_2e$/year set by BAAQMD (BAAQMD 2009) for non-stationary sources. The annual GHG emissions for operating the proposed project are estimated to be 146 $MTCO_2e$/year, well below the threshold of 1,100 $MTCO_2e$/year established by BAAQMD.[5] Given that the BAAQMD threshold is established based upon implementation of AB 32, the proposed project would meet GHG reductions goals established in AB 32. As such, the proposed project would not generate GHG emissions that would have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts would be less than significant and no mitigation is required.

[5] As described in *Section 3.3 Air Quality*, the Alameda County Superior Court issued a writ of mandate ordering the BAAQMD to set aside the criteria pollutant thresholds in its most recent CEQA Guidelines. Thus, BAAQMD is no longer recommending that the thresholds be used as a generally applicable measure of a project's significant air quality impacts and is relying on individual lead agencies to determine the appropriate air quality thresholds of significance to use in its CEQA analysis. For the purposes of this analysis, because the BAAQMD 1999 CEQA Guidelines do not contain thresholds for GHGs, the current thresholds have been used here.

3.8 Hazards and Hazardous Materials

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☒	☐	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☒	☐	☐

Discussion

Environmental Setting

Hazardous Materials

The proposed project area is predominantly designated for residential and industrial uses with small areas of commercial, public, and open space uses (City of Benicia 2005). Hazardous materials presently used within the proposed project area in association with the aforementioned land uses may include household hazardous materials that are common to residential areas and hazardous materials common to industrial uses, specifically oil refineries.

Interstate 780 and I-680 traverse the City to the northwest and northeast, respectively. The City contains a wide range of industries where toxic materials are routinely used. The oil refineries in the vicinity of the City transport crude oil and other hazardous materials used in the refinery process. Additionally, the City's General Plan identifies small dry cleaning operations and major refineries as sources of Toxic Air Contaminants (TACs) (City of Benicia 1999).

An online regulatory agency database records search was conducted in May 2016 to identify reported hazardous materials spills and releases. Environmental databases reviewed include the SWRCB GeoTracker and the California Department of Toxic Substances Control (DTSC) EnviroStor. Properties on which previous or ongoing activities have resulted in a reported release of hazardous materials into soil and groundwater, as identified by DTSC and SWRCB, are located within one-quarter mile of the proposed project area. Listed properties do not necessarily represent a potential risk to the proposed project area; many of the identified sites have been remediated and their cases have been closed.

The EnviroStor database identifies sites that have known contamination or sites for which there may be reasons to investigate further. Specifically, the database lists the following site types: Federal Superfund sites (National Priority List); State Response (including Military Facilities and State Superfund); Voluntary Cleanup; Evaluation; School Investigation; Non-operating; Post-closure; Tiered Permit; and Corrective Action. Based on the EnviroStor database search, one cleanup site is located within one-quarter mile of the proposed project area and identified as Exxon Co. USA – Benicia, located at 3400 East 2nd Street. The status of the site is shown as inactive.

The GeoTracker database provides regulatory data regarding sites with leaking underground storage tanks (LUSTs), fuel pipelines, and public drinking water supplies; these sites also meet the Cortese List requirements. The SWRCB GeoTracker identified nine sites within one-quarter mile of the proposed project area. Seven of the GeoTracker sites were listed as closed, and therefore do not present any potential impacts. The remaining two are cleanup sites: Exxon Marketing Terminal located at 3410 East 2nd Street is open and inactive, and the Valero Benicia Refinery (formerly Exxon), at 3400 East 2nd Street is open and in remediation (this is the same site that is listed in the EnviroStor database as Exxon Co. USA). All of the identified sites in the project area are thus associated with the Valero Refinery property.

The Solano County Department of Environmental Management is the Certified Unified Program Agency (CUPA) for all cities in Solano County, including the City of Benicia. The Department regulates the use, storage and disposal of hazardous materials in Solano County under the Hazardous Materials Program by issuing permits, inspecting facilities, investigating complaints, and consulting with both the business community and the public. As a part of the program, businesses that handle hazardous materials[6] over 55 gallons, 500 pounds or 200 cubic feet of gas are required to prepare a Hazardous Materials Management Plan (HMMP) to address emergency response to incidents. The HMMP must include an inventory of hazardous materials that is updated annually (Solano County 2016). The WWTP handles hazardous materials in excess of the limits above. The City maintains a Spill Prevention Plan for the WWTP

[6] Hazardous materials may be new or waste materials that are toxic, reactive, ignitable or corrosive.

operations that includes details on chemicals stored and handled at the WWTP and the precautions and steps to prevent and control any spills on site.

Fire Hazards

Fires have the potential to cause significant losses to life, property, and the environment. The California Department of Forestry and Fire Protection (Cal Fire) designates the City of Benicia as a Local Responsibility Area (LRA) for fire protection (Cal Fire 2016). According to the California Department of Forestry and Fire Protection's Fire Hazard Severity Zone (FHSZ) and ABAG Fire Hazard maps, the majority of the City is located in a Local Responsibility Area (LRA) Unzoned Fire Hazard Severity Zone (FHSZ) (Cal Fire 2007). The majority of the proposed project area is located within a Wildland-Urban Interface Fire Threatened Community (ABAG 2016). The City includes extensive open space, primarily consisting of grasslands. These open space areas are in close proximity to residential and industrial uses, creating fire safety concerns (City of Benicia 1999).

Emergency Response and Access

The City's Fire Department employs Hazmat First Responder personnel as well as firefighters who are trained as Hazmat Technician Specialists in the event of hazardous materials releases. The Refinery also maintains an on-site fire brigade that provides first response in the event of hazardous materials releases. The City has adopted an Emergency Operations Plan that assesses the potential losses associated with inadvertent or intentional releases of hazardous materials that could affect the public and identifies responsibilities for city departments and coordination with Solano County and regional emergency response providers (City of Benicia 2007).

The City's Emergency Operations Plan designates major arterial roads as the principal routes for evacuating people during an emergency to areas north of the City. These arterials would also serve as the principal routes for moving emergency equipment and supplies. Routes parallel to I-780 are important routes in the event the freeway overpasses collapse or are blocked (City of Benicia 1999).

Impacts

a, b) Construction

Construction of the proposed project could temporarily increase the transport and use of materials generally regarded as hazardous. It is anticipated that limited quantities of miscellaneous hazardous substances, such as gasoline, diesel fuel, hydraulic fluids, paint, and other similar materials would be brought onto work sites, used, and stored during the construction period. The risks associated with the transport, use, and storage of these materials during construction are anticipated to be relatively small. However, there is potential for an accidental release of hazardous materials during construction, which could result in exposure of workers and the public to health hazards. In addition, inadvertent release of large quantities of these materials could adversely impact soil, surface waters, or groundwater quality. This could be a significant impact. Implementation of **Mitigation Measure HAZ-1** would reduce risks associated with hazardous materials used during construction to a less-than-significant level.

Construction of the proposed project would require excavation and trenching of subsurface materials at the WWTP, along the proposed pipeline alignment, and at the selected storage tank site. Subsurface soils excavated during construction could potentially be contaminated with hazardous substances from releases in the area, which could be a significant impact. This is of particular concern for construction at the Valero Refinery, which is an identified site with existing contamination that is undergoing remediation. In the event contaminated soil or groundwater is encountered during excavation activities, implementation of **Mitigation Measure HAZ-2** would reduce the impact to a less-than-significant level.

Mitigation Measure HAZ-1: Hazardous Materials Management and Spill Prevention and Control Plan

Before construction begins, the City shall require its construction contractor to prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a project-specific contingency plan for hazardous materials and waste handling. The Plan shall be applicable to construction activities, and shall establish policies and procedures according to applicable codes and regulations, including but not limited to the California Building and Fire Codes, and federal and California Occupational Safety and Health Administration (OSHA) regulations. Elements of the Plan shall include, but not be limited to the following:

- A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, and temporary hazardous waste storage areas;
- Notification and documentation of procedures; and
- Spill control and countermeasures, including employee spill prevention/response training.

Mitigation Measure HAZ-2: Contingency Plan for Contaminated Soil or Groundwater

The City of Benicia shall coordinate construction within the Refinery site with Valero to ensure that construction activities are consistent with any ongoing site remediation. The City shall require its construction contractors follow the procedures below in the event contaminated soil or groundwater is encountered (either visually or through odor detection) during excavation activities:

- Stop work in areas of contamination;
- Notify the San Francisco Bay Regional Water Quality Control Board and the California Department of Toxic Substances Control;
- Contain the areas of contamination;
- Perform appropriate clean up procedures; and
- Segregate, profile, and dispose of all contaminated soil. Required disposal method shall depend on the type and concentration of contamination identified. Any site investigation or remediation shall be performed in accordance with applicable regulations.

Operation

The proposed project would not change handling and storage of chemicals that are already used at the WWTP. The proposed project would require use of new chemicals, including aluminum sulfate and sodium hydroxide. Each of these chemicals would be stored in separate 10,000-gallon tanks at the WWTP. Although there would be an increase in the chemical storage and usage, these chemicals would be stored within new storage facilities. None of these chemicals are considered acutely hazardous, and the tanks provided for storage, either inside or outside buildings, would have standard containment measures. Aluminum sulfate would be delivered to the WWTP every two weeks and sodium hydroxide would be delivered approximately once every 20 days.

As described above, the City maintains a Spill Prevention Plan for the WWTP as required under the CUPA's Hazardous Materials Program. The plan provides specific measures that the City staff would implement in the event of a spill such as diverting the spill to holding basins until a disposal method is chosen, or containment of the spill and contacting a hazardous waste management company for cleanup and disposal of the spill. The plan also lists contact information for the appropriate regulatory agencies and the local emergency response team that should be notified in the event of a spill. The City also maintains a Hazardous Materials

Inventory that lists specific information on chemicals used on site including their chemical properties and storage and usage on site. Both the Spill Prevention Plan and the Hazardous Materials Inventory would be updated to include the new chemicals to be used for the proposed project. Regulatory compliance in the form of preparation and implementation of these documents along with spill control practices as a part of operation of the proposed project would reduce the likelihood of a chemical release and would ensure that any release of chemicals would not significantly affect the public or public property. Thus, proposed project operations would not create a significant hazard to the public or the environment involving release of hazardous materials, and impacts would be less than significant.

c) Three schools (St. Dominic Elementary School, Liberty High School, and Robert Semple Elementary School) are located within one-quarter mile of the proposed project construction sites. As described above, construction and operation of the facilities would require the use of hazardous materials, which could result in accidental releases during their handling and storage. In addition, hazardous materials could be encountered during construction and excavation that could pose a threat to workers, the public, or the environment. Because of the possibility of accidental release, the proximity to schools and other sensitive receptors, potential impacts would be considered significant. However, with compliance of the City's Emergency Operations Plan and implementation of **Mitigation Measures HAZ-1** and **HAZ-2**, potential impacts would be reduced to a less-than-significant level.

d) Within the proposed project area, there is one property that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 ("Cortese List"); the Exxon Marketing Terminal located at 3410 East 2nd Street. As described previously all but three of the 10 properties of potential concern have been completed and closed. The open cases include the Exxon Marketing Terminal located at 3410 East 2nd Street and the Valero Benicia Refinery and the Exxon Co. USA – Benicia, both of which are located at 3400 East 2nd Street. All three of these sites are located on the Refinery property, along the East 2nd Street alignment and at one of the potential locations of the storage tank.

Given that a portion of the proposed pipeline would occur below grade and the storage tank may be located at the Refinery, which contains two sites listed for potential hazardous materials contamination, **Mitigation Measure HAZ-3** would require further investigation prior to construction at the Refinery along the East 2nd Street border and within the Refinery site. With **Mitigation Measure HAZ-3,** impacts to the public or environment due to release of hazardous materials from a listed hazardous material site would be reduced to less-than-significant levels.

Mitigation Measure HAZ-3: Characterization of Contamination at Valero Property

During the design phase, the City or its contractor shall conduct a Phase I Environmental Site Assessment (ESA) for soil and groundwater contamination in areas where the proposed pipeline and storage tank are located in the vicinity of known open cleanup sites. The recommendations set forth in the Phase I ESA shall be implemented before construction begins. Follow-up sampling may be conducted, if needed, to characterize soil and groundwater quality.

Prior to construction, contractors shall be informed of the location of potential areas of hazardous materials that may be encountered during construction, and shall ensure that safety precautions are in place to avoid or minimize exposure to potentially contaminated soils, and to reduce the potential for accidental damage to underground storage tanks that could cause accidental release of hazardous materials into the environment.

e, f) There are no airports or private airstrips within the City. The nearest airport to the proposed project is located in the City of Concord, approximately six miles southeast of the proposed

project area. As such, the proposed project would not expose people residing or working within two miles of an airport to safety hazards.

g) During construction, installation of the pipelines along roadways may require temporary lane or road closures that could impede emergency response. The City's Emergency Operations Plan identifies major arterial roadways as principal routes for emergency evacuation. Roadways designated as major arterial roadways within the proposed project area include Military East, which intersects the East 5th Street alignment, and East 2nd Street, along the entire length of the East 2nd Street alignment. Although there would be potential for temporary lane and road closures along emergency evacuation routes, closures would be no greater than one day in duration. As part of the Traffic Management Plan (**Mitigation Measure TRA-1** in *Section 3.16 Transportation and Traffic*), strategies for maintaining emergency access shall be developed. Specifically, police, fire, and other emergency service providers would be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. Potential impacts during construction are considered to be less than significant with implementation of the Traffic Management Plan. Operation of the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. With implementation of **Mitigation Measure TRA-1**, impacts would be reduced to a less-than-significant level.

h) According to the California Department of Forestry and Fire Protection's Fire Hazard Severity Zone (FHSZ) and ABAG Fire Hazard maps, the majority of the City is located in a Local Responsibility Area (LRA) Unzoned Fire Hazard Severity Zone (FHSZ) (Cal Fire 2007). Although the proposed project area is an Unzoned FHSZ, the City acknowledges that the undeveloped open space/grassland areas in conjunction with dry conditions and winds can create hazardous situations (City of Benicia 2015). Portions of the proposed project would be located adjacent to grassland areas (i.e. East 2nd Street) and the use of spark producing construction machinery could potentially create hazardous fire conditions and expose people to wildlife risks. Implementation of **Mitigation Measure HAZ-4** requiring fire safety practices during construction would reduce impacts associated with wildland fires to a less-than-significant level.

Mitigation Measure HAZ-4: Implement Fire Safety Construction Practices

The City shall require the construction contractor to implement fire safety construction practices, including but not limited to:

- Clearing dried vegetation or other material that could ignite during construction from staging areas, welding areas, or other areas slated for construction.
- Construction equipment that includes a spark arrestor shall be equipped in good working order.
- Construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, such as accidental sparks.
- Construction equipment, including those with hot vehicle catalytic converters, shall be kept in good working order and used only within cleared construction zones.
- During construction, the construction contractors shall require vehicles and crews working at the project site to have access to functional fire extinguishers.

3.9 Hydrology and Water Quality

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion

Environmental Setting

Hydrology and Drainage

The existing WWTP is approximately one tenth of a mile from the Carquinez Strait (over 500 feet), and across the road from wetlands bordering the strait. The WWTP currently discharges secondary treated wastewater into the strait. The City's Urban Water Management Plan includes maps of watersheds within the City. The WWTP and proposed pipeline alignment between the WWTP and East 2nd Street is located within the East 3rd and "H" Street Watershed, while the proposed pipeline alignment along East 2nd Street and the proposed storage tank sites at the City Corporation Yard or the Refinery would be located within the Sulphur Springs Watershed (City of Benicia 2011). These watersheds drain to the Carquinez Strait and Suisun Marsh, respectively.

Water features within the proposed areas of construction include three intermittent creek channels that cross East 2nd Street in culverts south of Rose Drive. There is also an intermittent creek that runs along the eastern edge of the City Corporation Yard to join with Sulphur Springs Creek as it passes out of the Refinery complex and crosses under I-680.

Water Quality

Urbanized areas can contribute to non-point source pollution of surface waters. Examples of common contaminants include sediment, nutrients, trace metals, oil and grease, pesticides and herbicides, organic matter, and soil debris/litter. Runoff is carried into storm drains, discharged into creeks and channels, and eventually discharged into San Francisco Bay.

The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) establishes water quality objectives (WQOs) for surface waters, and also establishes specific WQOs for selected water bodies. In 2011, the USEPA approved a revised list of impaired water bodies prepared by the State of California pursuant to provisions of Section 303(d) of the Clean Water Act. Both the Carquinez Strait and Suisun Marsh are listed on the 303(d) list of impaired water bodies. The Suisun Marsh is listed as impaired for mercury, nutrients, organic enrichment/low dissolved oxygen, and salinity/TDS/Chlorides. In addition, Suisun Slough, which is a receiving water from the Suisun Marsh, is listed as impaired for diazinon, while Suisun Bay is listed for chlordane, DDT, dieldrin, dioxin compounds, furan compounds, invasive species, mercury, PCBs, and selenium. The Carquinez Strait is listed on the 303(d) list of impaired waterbodies as impaired for chlordane, DDT, dieldrin, dioxin compounds, furan compounds, invasive species, mercury, PCBs, and selenium (SWRCB 2010).

Flooding

The City's General Plan indicates that the WWTP is partially located within a flood hazard zone (City of Benicia 1999). The Federal Emergency Management Agency (FEMA) maps the WWTP as partially within a flood hazard area. FEMA's National Flood Insurance Program (NFIP) Flood Insurance Rate Map (FIRM) also indicates that the southernmost portion of the proposed pipeline and the WWTP is within the 100-year flood zone (FEMA 2009).

Groundwater

In the vicinity of the proposed project, there is only one groundwater basin identified by DWR's Bulletin 118 (DWR 2013). This basin, the Suisan-Fairfield Valley Groundwater Bain (Basin Number 2-3), covers 208 square miles, and lies east of the proposed project area. The basin lies near the proposed project area, but does not extend under the proposed project area. The western portion of the basin drains to Suisun Bay. The surface area over this portion of the groundwater basin is drained by Green Valley Creek, which runs east of I-680 and east of the proposed project area (DWR 2014). The City currently does not use groundwater as a potable water source (City of Benicia 2011).

Impacts

a, f) Construction

Project construction would involve activities such as excavation, grading, and backfilling within the WWTP property, storage tank site, and along the proposed pipeline route. Construction activities could violate water quality standards by exposing and disturbing soils, potentially resulting in increased erosion and siltation in and downstream of the proposed project area. Project construction would involve use of chemicals and solvents such as fuel and lubricants for motorized heavy equipment. Inadvertent spills of such chemicals into nearby ditches or waterways could cause an adverse water quality impact if not stored or handled properly.

Construction activities of one acre or more are subject to the permitting requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges associated with Construction and Land Disturbance Activities (Construction General Permit) Order No. 2009-0009-DWQ).

The City or its contractor would be required to submit a Notice of Intent to the San Francisco RWQCB and prior to construction. The Construction General Permit requires the preparation and implementation of a formal SWPPP which must be completed before construction begins. The SWPPP includes specifications for BMPs implemented during project construction to control sedimentation and other pollutants in stormwater runoff, and defines conditions for complying with the SWRCB NPDES permit requirements. Implementation of the SWPPP starts with the commencement of construction and continues through project completion. Upon completion of the project, the sponsor must submit a Notice of Termination to the RWQCB to indicate that construction is complete.

The proposed project is also subject to the City's Grading and Erosion Control Ordinance (Chapter 15.28 of the Municipal Code). This section of the municipal code includes requirements for grading, excavation, and filling to reduce runoff and erosion, and to avoid creation of nuisances as well as provisions to enforce safety measures. Compliance with the Construction General Permit for all activities along the proposed pipeline alignment, new storage tank, and improvements at the WWTP, development and implementation of a SWPPP (**Mitigation Measure HYD-1**), compliance with the City's Grading and Erosion Control Ordinance, and implementation of **Mitigation Measure HAZ-1** would reduce potential water quality impacts to a less-than-significant level.

Mitigation Measure HYD-1: Preparation and Implementation of a Stormwater Pollution Prevention Plan (SWPPP).

The City and/or its contractor shall prepare the SWPPP and submit a notice of intent (NOI) to the San Francisco Bay Regional Water Quality Control Board (RWQCB) prior to construction activities, as required by the RWQCB. Implementation of the SWPPP shall start with the commencement of construction and continue through the completion of the project. The objectives of the SWPPP are to identify pollutant sources (such as sediment) that may affect the quality of stormwater discharge and to implement best management practices (BMPs) to reduce pollutants in stormwater. A notice of termination (NOT) application shall be filed at the end of construction. The City or the construction contractor shall install erosion and stormwater control measures on the construction site such as silt fences, fiber rolls and other BMPs, particularly at locations close to storm drains and water bodies. Erosion control materials shall be selected to use material that shall not entangle or trap wildlife (i.e. tightly-woven, non-monofilament netting) Disturbed areas shall be repaved or revegetated with an appropriate mixture of native seeds. The BMPs shall also include practices for proper handling of chemicals such as avoiding fueling at the construction site and overtopping during fueling and installing containment pans. Equipment shall be properly maintained and free of

leaks and servicing and maintenance areas shall be contained to prevent spills from entering nearby drainages. Spill containment kits shall be kept on site at all times during construction.

Operation

Operation of the proposed recycled water treatment facilities would generate reject water or process wastewater discharges from ammonia and phosphorous removal, and tertiary filtration. As stated in *Chapter 2, Project Description,* tertiary effluent in excess of recycled water demands would continue be disposed into the Carquinez Strait through the City's existing outfall along with the secondary treated effluent from the WWTP. The blended discharge (i.e., the process discharge and the WWTP effluent) would be subject to the City's NPDES permit. The NPDES permit limits are protective of the beneficial uses of the receiving waters, in this case the Carquinez Strait and San Francisco Bay. Therefore, compliance of the blended discharge with the NPDES permit limits (i.e., standards for constituent concentrations and toxicity levels) would ensure a less-than-significant impact to receiving water quality.

Following treatment at the proposed facilities at the WWTP property, the recycled water would be conveyed to the Refinery for use at the cooling towers (see *Chapter 2, Project Description*). Aerosols are emitted as upward-moving air within the cooling tower comes into contact with downward cascading water. While most of the water droplets larger than 100 micrometers in diameter are stripped from the discharged air stream by drift eliminators, a certain fraction of smaller droplets or aerosols is discharged from the tower as drift. If pathogens are present in the cooling tower water, then aerosolized pathogens could be released into the ambient atmosphere in the drift (ESA 2007). The drift could cause an adverse public health impact.

Pursuant to Water Code section 13521, DDW has established uniform statewide recycling criteria for each type of use of recycled water. DDW guidelines for producing and using recycled water are codified in California Code of Regulations, Title 22, Division 4, Chapter 3 entitled "Water Recycling Criteria" (Title 22). The Title 22 Requirements are designed to protect public health from pathogens. The recycled water would be generated by advanced treatment (tertiation filtration, ammonia and phosphorus removal, and disinfection) of the secondary-treated wastewater (see *Chapter 2, Project Description*) prior to use at the cooling towers at the Refinery. This advanced treatment, particularly the disinfection process, would remove pathogens in the water. The proposed facilities would be designed such that the recycled water would meet the Title 22 criteria set by the DDW for unrestricted reuse requirements of the tertiary disinfected water and also to meet stricter water quality standards set by the Refinery.

The proposed project would operate under either a statewide recycled water general permit or the RWQCB region-wide recycled water general permit (General Order 96-011 or the relevant adopted general order), which specifies the prohibitions, water quality requirements and limitations, and other provisions that must be met. Since the proposed treatment facilities would be designed such that the recycled water would comply with the DDW guidelines codified in Title 22, and compliance with the statewide or region-wide recycled water general permit, the quality of the recycled water would not be expected to present a significant public health concern. The impact would be less than significant. Use of the recycled water for landscape irrigation purposes by other potential City customers would comply with SWRCB's adopted General WDRs for Landscape Irrigation Uses of Municipal Recycled Water (Recycled Water General Permit Order No. 2009-0006-DWQ). Compliance with the WDRs set forth in the Recycled Water General Permit would ensure the reasonable protection of surface water within the project area.

Through compliance with the NPDES permit, Title 22, and applicable general permits, operation of the project would not violate any water quality standards or waste discharge requirements, or otherwise degrade water quality. Impacts associated with the proposed project operations would be less than significant.

b) The proposed project does not include groundwater pumping or recharge, and would have no impact to aquifer volumes or groundwater table levels. The proposed project area is close to, but does not overly, the existing Fairfield-Suisun Groundwater Basin. There would be no impacts to groundwater supplies or aquifers.

c, d, e) Construction

Project construction activities could cause soil erosion and a temporary increase in stormwater runoff. Construction would be conducted in compliance with City's Grading and Erosion Control Ordinance, the State's General Construction Permit (Order No. 2009-0009-DWQ). Preparation of the SWPPP in accordance with the Construction General Permit, as specified in **Mitigation Measure HYD-1,** would require erosion-control BMPs at the construction sites, which would reduce potential water quality impacts to less-than-significant levels.

Operation

The WWTP property is predominantly paved and includes structures housing the existing treatment process units. The property includes some unpaved graded areas on the north and east and landscaped portions along the north and western boundaries of the site. The proposed project facilities would be built on paved and unpaved graded areas, and would result in an increase in impervious surface area. Due to the increased impervious surfaces at the WWTP, there would be an increase in the storm water runoff; however, new localized drainage facilities would be constructed such that runoff would be collected by the existing on-site storm drains and discharged through the City's outfall following treatment at the WWTP. The proposed facilities would not substantially alter the existing drainage pattern of the WWTP site.

The proposed recycled water pipeline would be underground except for a small portion of aboveground pipe at the Refinery, with any disturbed areas restored to pre-project conditions following construction. In addition, the proposed pipeline would be constructed within existing roadway right-of-ways, which have drainage and stormwater systems designed to handle runoff from the roadways. Thus the pipeline would not create additional soil erosion or alter drainage of the area following construction.

The proposed storage tank would include a 32,400-square-foot concrete pad, resulting in new impervious surface. If the proposed storage tank is located at the WWTP or the Refinery, it would be located on sites that are already predominantly paved, with existing systems in place to capture and handle on-site runoff and drainage. Thus, runoff from the proposed storage tank would not alter the existing drainage patterns at the WWTP or the Refinery.

The installation of the tank pad could affect drainage at or immediately adjacent to the proposed storage tank if the City Corporation Yard is selected as the preferred location. New localized drainage facilities would be constructed at the storage tank site and routed to the existing drainage system. Due to its distance from an existing stream, creek, or other waterway, and the necessity of maintaining site integrity (to prevent damage to the tank itself), construction of the proposed tank the City Corporation Yard would not substantially alter the existing drainage pattern of the site in a manner that would result in substantial erosion or siltation.

Because the proposed project would have a discrete location that has 5,000 square feet or more of newly constructed contiguous impervious area, it would be subject to the post-construction measure requirements of Chapter 15.64 of the Municipal Code (Storm Water Management and Discharge Control). These requirements could include low impact development design and site design measures to ensure that runoff flows would not substantially increase from pre-construction levels. The proposed project would thus not alter existing drainage patterns such that it increases the rate or amount of surface runoff resulting in on- or off-site flooding, results in an

exceedance of the capacity of the existing stormwater drainage systems, or creates additional sources of polluted runoff. Thus, this impact is considered less than significant.

g) FEMA flood mapping and the City's General Plan identified the southernmost portion of the existing WWTP as being located within the 100-year flood zone. No other portion of the proposed project is located within a flood zone. The proposed project would not construct housing; therefore, it would have no impact related to placing housing within a 100-year flood zone.

h, i) The proposed pipelines would be located almost entirely underground and would not impede or redirect flows, nor expose people or structures to a significant risk of loss, injury or death involving flooding.

The proposed project would be limited to the implementation of recycled water treatment and conveyance facilities within the City (WWTP and City Corporation Yard) and Refinery property, and along existing roadways and would not involve development of residential housing. The project facilities would not impede or redirect flood flows. Further, given that the above-ground structures are non-habitable structures, the proposed project would not subject people or structures to a substantial risk of flooding. No impact is expected.

The proposed project would not expose people to risks of flooding, dam, or levee failure. The WWTP is the only component of the proposed project that would require staffing long-term, and is not located downstream of an existing dam or levee. There would be no impact.

j) The proposed project area is not located within a tsunami inundation area (CGS 2009). Additionally, the influence of an ocean-borne tsunami wave would dissipate prior to reaching the City, because of the distance of the project area from the Golden Gate in San Francisco Bay. Seiches form in enclosed bodies of water. There are no large enclosed water bodies in the proposed project area that would be subject to seiche. There would be no impact. The risk from seiche is considered minimal because there are no enclosed water bodies in the immediate vicinity. The possibility of mudflow is minimal because the project area is relatively flat with no steep slopes. The proposed project would not exacerbate the risks to tsunami, seiche, or mudflows and no impact would occur.

3.10 Land Use and Planning

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Physically divide an established community?	☐	☐	☒	☐
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable HCP or NCCP?	☐	☐	☐	☒

Discussion

Environmental Setting

The proposed project is located within the City of Benicia. Existing land uses in and around the project area include residential, commercial, public, open space, and industrial uses (City of Benicia 2005). The WWTP property is surrounded by single-family homes immediately to the north (on East G Street) and west (on East 5th Street). An approximately 230-unit mobile home park, Rancho Benicia, is located across East 5th Street from the WWTP property. The Benicia Marina and the Marina Condominium development are located to the southwest of the property. Undeveloped land zoned for industrial use is located to the south and southeast.

The proposed pipeline alignment along East 5th Street runs primarily through low density residential, with some medium and high density residential, general commercial, and two public / quasi-public land uses. The proposed pipeline alignment along the City's easement on the Refinery property is surrounded by low density residential to the south and west, and open space – general and limited industrial to the north and east. The Linda Vista Street – Hillcrest Avenue alignment option is surrounded solely by low density residential with the exception of one open space – park land use.

Parks/recreation areas and schools located adjacent to or within one-quarter mile of the proposed project area include the following:

- ***Parks/Recreation Areas:*** Turnbull Park, Maria Field and Ribeiro Field, and Duncan Graham Park.
- ***Schools:*** St. Dominic Elementary School, Liberty High School, and Robert Semple Elementary School.

Plans, Policies, and Regulations

The City's General Plan is a comprehensive, long-range plan for the physical development of the City. The City recognizes and values the need for infrastructure and improvements to existing infrastructure to meet the needs of its residents.

The Community Development and Sustainability Element identifies the following goals, policies, and programs:

> **Goal 2.36:** Ensure an adequate water supply for current and future residents and businesses.

- Policy 2.36.2: Continue to pursue and secure adequate water sources of the highest quality available.
    - Program 2.36A: Pursue use of reclaimed wastewater—especially for major industrial users—where feasible.
- Policy 2.36.4: Encourage public and private uses to minimize water use and to recycle processed water whenever and wherever feasible.

Goal 2.40: Ensure adequate wastewater treatment capacity to serve all development shown in the General Plan.

- Policy 2.40.2: Promote use of reclaimed wastewater where feasible.

The City has also developed a Climate Action Plan that identifies actions to reduce greenhouse gas emissions. The plan includes actions to reduce emissions related to water and wastewater and specifically identifies the proposed project as a way to decrease the demand on water supply. Strategy WW-3.3, Water Reuse Project, specifies that the City should develop a recycled water system, beginning with Valero.

Impacts

a) The proposed project facilities would be installed primarily within City ROW, on City-owned property, and on Refinery property. One of the pipeline alignment options would be installed along an easement along the south side of the Refinery property. Construction of the proposed project would temporarily affect adjacent land uses (through increased dust, noise, and traffic). The presence of construction-related equipment and workers would temporarily change the existing character of the vicinity to that of a construction zone but would not physically divide the existing community because construction activities are anticipated to be minimal, lasting no longer than one day in duration at any particular point along the pipeline route, and access would be maintained for residents and businesses along the proposed alignment throughout construction of the proposed project. Construction activities within the WWTP and at the tank sites would confined to the site and would not divide the community.

Impacts to adjacent land uses would cease upon completion of construction and would not permanently impact the existing surrounding land uses or neighborhoods. The proposed facilities would not result in changes to land uses in the project area. The proposed pipelines would be installed primarily below grade, and, as noted above, all above-ground facilities would be located on City owned property or at the Refinery, and therefore would not serve as a barrier within the existing community.

In addition, construction and operation of the proposed project would not permanently interfere with the pedestrian, bicycle, or vehicle circulation of the neighborhood or community, as they would either be located underground below existing roadways, within industrial areas, or on City property, away from pedestrian, bicycle, or vehicle circulation. Impacts would be less-than-significant and no mitigation is required.

b) The City's WWTP site is designated in the Benicia General Plan for Public/Quasi-Public land uses, and zoned Public and Semi-Public (PS) (City of Benicia 2005), which is intended for a variety of uses serving the public including education, police, fire, water, and sewer (City of Benicia 2016). According to the Benicia Municipal Code (Chapter 17.40 PS Public and Semi-Public District), minor utilities and major utilities (with a use permit) are permitted in the PS zone. The proposed improvements to the WWTP within the boundaries of the existing WWTP would therefore be consistent with applicable land use policies and regulations.

The proposed pipeline alignment would be located underground primarily within City ROW and would not result in any significant, long-term land use and planning impacts. The majority of the

pipeline would be constructed immediately adjacent to areas designated Single Family Residential, Medium Density Residential, Planned Development, General Commercial, Public and Semi-Public, Open Space, Limited Industrial, and General Industrial. One potential segment of the alignment would be located along the Refinery property from East 5th Street to East 2nd Street, which is located in the Open Space zone. The Open Space zone permits minor utilities and major utilities (with a use permit). Because the proposed pipeline alignments would be constructed within the ROW and an existing easement, construction of the proposed pipeline would be consistent with applicable land use policies and regulations.

The proposed storage tank and associated equipment would be constructed in either the Public and Semi-Public zone or the General Industrial zone, which permit major utilities with approval of a use permit. As described in *Chapter 2, Project Description*, the storage tank would be up to 15 feet in height, which is below the maximum structure height in both the Public and Semi-Public zone and the General Industrial zone. As such, construction of the proposed storage tank would be consistent with applicable land use policies and regulations.

The proposed project would not conflict with the policies of the City of Benicia and would not result in substantial alterations to the built character of the proposed project area. There would not be any significant, long-term, land use and planning impacts associated with implementation of the proposed project. Due to the importance of infrastructure improvements within the City, and the fact that proposed infrastructure for the proposed project would be largely constructed within public ROW and City property, the proposed project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.

The project is consistent with the Climate Action Plan, which specifies that the City should develop a project to provide recycled water beginning with the Refinery.

c) There are no existing habitat conservation or natural community conservation plans in the City of Benicia, therefore the project area is not located within an adopted HCP or Natural Community Conservation Plan (NCCP). There would be no impact.

3.11 Mineral Resources

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion

Environmental Setting

According to the Benicia General Plan, a deposit of igneous rock is the only regionally significant mineral resource within the City's Planning Area. The Sulfur Springs Mountain Deposit was identified by the State of California as a Mineral Resource of Regional Significance pursuant to the Surface Mining and Reclamation Act (SMARA) (City of Benicia 1999). The Sulfur Springs Mountain Deposit is located approximately two miles to the northwest of the Refinery. A portion of the deposit is located within the City's Planning Area, but outside the City limits. The active quarry within the deposit is located outside of the City's Planning Area. There are no significant mineral deposits or active mining operations within the City limits.

Impacts

a, b) As described above, there are no significant mineral deposits or active mining operations within the City limits. The proposed project facilities are not located in areas identified as containing state, regional, or locally important mineral resources. As such, the proposed project would not result in the loss of availability of known mineral resources and no direct or indirect impacts to mineral resources would occur.

3.12 Noise

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c) A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☒	☐	☐
d) A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒

Discussion

Environmental Setting

The primary sources of noise in the proposed project area are from traffic and industrial-related uses. As described in *Section 3.16, Transportation and Traffic*, nearby major roadways include I-680 to the east of the proposed project area, and I-780, which transects the East 5th Street alignment. Other major roadways include East 2nd Street and East 5th Street.

Construction Noise

Construction noises primarily arise from the use of equipment such as excavators, jackhammers, compactors, pile drivers, trucks, and other machinery. The potential for an impact is determined by the

proximity of sensitive receptors[7] to construction activities, estimated noise levels associated with construction equipment, the potential for construction noise to interfere with daytime and nighttime activities, and whether construction noise at nearby receptors would exceed local noise ordinance standards. Typical construction activities (e.g. jackhammering and use of earthmoving equipment) generate maximum noise levels (without noise controls) ranging from 75 dBA[8] Lmax[9] to 90 dBA Lmax at 50 feet from the source, with slightly higher levels of about 81 to 96 dBA Lmax at 50 feet for pile-driving activities (FHWA 2013). The rate of attenuation (*i.e.,* reduction) is about 6 dBA for every doubling of distance from a point source. Similarly, vibration impacts are a function of the associated activity and equipment and the distance to the nearest receptor.

For this analysis, a peak particle velocity (PPV) descriptor is used to evaluate construction-generated vibration for building damage and human complaints. PPV is the vibratory ground motion in inches per second adjusted for distance. Specific criteria used in the analysis of groundborne vibration and noise are as follows:

- Vibratory equipment and impact pile drivers (pertains to cosmetic or structural damage of buildings): 0.2 in/sec PPV
- Activities causing annoyance (pertains to nighttime construction only): 0.012 in/sec PPV

Local Noise Standards

The City of Benicia Municipal Code Chapter 8.20, Noise Regulations, and General Plan Chapter 4, Section D, Noise, set forth the noise standards applicable to the proposed project area. According to the General Plan, noise levels in noise sensitive areas (i.e., nursing homes, churches, theaters, residential uses, parks, libraries, and schools) have existing noise levels in the range of 51 dB to 63 dB Ldn (City of Benicia 1999). The City notes that traffic on local roadways, industrial activities, and neighborhood activities are contributing factors for background noise levels in the majority of the City. East 5th Street and East 2nd Street lie within the 60 dB Ldn noise contours.

The Benicia Municipal Code Section 8.20.140 Machinery, Equipment, Fans and Air Conditioning states:

> "It is unlawful for any person to operate any machinery, equipment, pump, fan, air conditioning apparatus, or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any property to exceed the ambient base noise level by more than five decibels."

The City does not implement limitations specific to construction noise, but instead limits hours of construction activities to less sensitive daytime hours.

[7] Noise-sensitive land uses and/or receptors include: residences of all types, schools, hospitals, convalescent facilities, rest homes, hotels, motels, and places of worship. Sensitive uses from a noise perspective include places where there is a reasonable expectation that individuals could be sleeping, learning, worshipping, or recuperating.

[8] The decibel scale is used to quantify sound intensity. Because sound can vary in intensity by more than 1 million times within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. Because the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human response is factored into sound descriptions in a process called "A-weighting," expressed as "dBA." The dBA, or A-weighted decibel, refers to a scale of noise measurement that approximates the range of sensitivity of the human ear to sounds of different frequencies. On this scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA. A 10-dBA increase in the level of a continuous noise represents a perceived doubling of loudness.

[9] Lmax is the instantaneous maximum noise level measured during the measurement period of interest.

The Benicia Municipal Code Section 8.20.150 Construction of Buildings and Projects states that, "It is unlawful for any person within:

A. A residential zone;
B. A district within the Downtown Mixed Use Master Plan; or
C. A radius of 500 feet from a residential zone or downtown mixed use district;

to operate equipment or perform any outside construction or repair work on buildings, structures, or projects or to operate any pile driver, power shovel, pneumatic hammer, derrick, power hoist, or any other construction type device, 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 and Sundays, in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance unless beforehand a permit therefor has been duly obtained from the city manager or his designee."

The City's General Plan indicates that a project would result in a significant noise impact if it results in an increase in ambient noise levels of 5 dB or more in areas with ambient noise of less than 60 Ldn, results in an increase in ambient noise levels of 3 dB or more in areas with ambient noise of 60 to 65 Ldn, or results in an increase in ambient noise levels 1.5 dB or more in areas with ambient noise of more than 65 Ldn.

Ambient base noise levels for the various zones within the City are provided in **Table 3.12-1** below.

Table 3.12-1: Ambient Base Noise Level

Sound Level A, decibels						
		Community Environment Classification				
Zone	Time Period	Very Quiet (rural, suburban)	Quiet (suburban)	Slightly Noisy (suburban, urban)	Range of Baseline Levels	Baseline Level
R1 and R2	10:00 p.m. to 7:00 a.m.	40	45	50		
R1 and R2	7:00 p.m. to 10:00 p.m.	45	50	55		
R1 and R2	7:00 a.m. to 7:00 p.m.	50	55	60		
R3 and R4	10:00 p.m. to 7:00 a.m.	45	50	55		
R3 and R4	7:00 a.m. to 10:00 p.m.	50	55	60		
Commercial	10:00 p.m. to 7:00 a.m.				55-60	
Commercial	7:00 a.m. to 10:00 p.m.				60-65	
M1	Anytime					70
M2	Anytime					75

Source: City of Benicia Municipal Code, Title 8 Health and Safety, Section 8.20 Noise Regulations.

The General Plan also establishes performance standards for noise-sensitive land uses that may be affected by stationary noise sources during typical hours of operation (see **Table 3.12-2)**. Stationary noise sources include industrial operations, outdoor recreation facilities, HVAC units, and loading docks. These standards apply to long-term operational noise from a stationary source.

Table 3.12-2: Noise Level Performance Standards for Noise-Sensitive Land Uses Affected by Stationary Noise Sources

	Exterior Hourly Leq dB		Interior Hourly Leq dB	
Land Use	**Daytime 7 a.m. to 10 p.m.**	**Nighttime 10 p.m. to 7 a.m.**	**Daytime 7 a.m. to 10 p.m.**	**Nighttime 10 p.m. to 7 a.m.**
Residential, Transient Lodging	55	50	40	35
Hospitals	-	-	40	35
Nursing Homes	55	50	40	35
Theaters, Auditoriums	-	50	35	35
Churches	55	50	40	40
Schools and Libraries	55	50	45	45

Source: City of Benicia General Plan 1999.

Impacts

a, c, d) Construction

Construction activities associated with the proposed project would result in temporary and intermittent noise increases at sensitive receptors near construction activities. Construction noise created by excavation and use of heavy equipment would temporarily increase noise levels in the vicinity of the proposed project. As noted above and depending on the equipment, the maximum instantaneous noise (Lmax) resulting from construction activities would range from 75 dBA Lmax to 96 dBA Lmax at 50 feet from the source, with pile driving having the highest noise level. The rate of attenuation (i.e., reduction) is assumed to be about 5 dBA for every doubling of distance from a point source. The highest maximum instantaneous noise levels would be associated with pile driving activities. Pile driving would occur at the WWTP for the recycled water facility and upgrades, and at the proposed storage tank site.

As described in *Chapter 2, Project Description,* construction activities would generally be limited to weekdays from 7 a.m. to 7 p.m. and nighttime construction is not expected to be necessary. The proposed project would therefore comply with Municipal Code Section 8.20.150 requirements, as construction would not occur during the restricted times.

Construction noise has the potential to generate noise such that it would result in an increase in ambient noise levels in excess of 5 dB or more in areas with ambient noise of less than 60 Ldn. Construction-related noise represents a substantial temporary or periodic increase in existing ambient noise levels. The pipeline installation would potentially occur within 50 feet of residential areas. As shown in **Table 3.12-1**, the use of any construction equipment within 50 feet of residential uses would exceed the level of significance threshold by increasing ambient noise levels for residential zones by 5 dB or more

Jack and bore trenchless construction is required at the I-780 crossing of the East 5th Street alignment. Trenchless construction methods require the use of construction equipment that typically produce noise levels greater than equipment used for open trench methods, such as pile drivers, and have the potential to produce excessive groundborne vibrations. Additionally, given the close proximity (within 50 feet) to residences, particularly along the East 5th Street segment, the Linda Vista Street/Hillcrest Avenue segment and the portion of the East 2nd Street segment from Hillcrest Avenue to the intersection of the easement segment, construction of the proposed project has the potential to produce excessive groundborne vibrations with open trench construction methods.

Pipeline installation is anticipated to occur at a rate of approximately 200 feet a day, such that pipeline construction would not be in one location for long durations of time. Longer durations of

time are needed for the trenchless construction activities, construction of the recycled water facility and improvements at the WWTP, and new storage tank. Because of the range of equipment noise levels, the duration of construction at discrete locations, and the proximity to sensitive receptors, the proposed project would expose sensitive receptors to elevated daytime noise levels and has the potential to generate substantial temporary or periodic increase in ambient noise levels; thus noise impacts are considered potentially significant. Implementation of **Mitigation Measure NOI-1** would reduce construction noise impacts to a less-than-significant level.

Mitigation Measure NOI-1: Implement Noise Control Measures during Construction

To reduce noise during construction, the City shall require its construction contractor to implement the following noise control measures:

- **Limit Construction Hours.** Construction hours shall be limited to times authorized under the City of Benicia's Municipal Code §8.20.150, 7:00 a.m. – 7:00 p.m. on weekdays and 8:00 a.m. – 8:00 p.m. on Saturdays and Sundays.
- **Locate Staging Areas away from Sensitive Receptors.** The City shall require the contractor to select staging areas as far as feasible from sensitive receptors.
- **Temporary Sound Wall.** A temporary sound wall shall be installed at the WWTP property that will separate the active construction zone from the residences along East G Street. The wall shall be installed immediately north of the proposed pump station site. The wall shall be no less than eight feet tall and shall include plywood no less than one-half inch thick.
- **Idling Prohibition and Enforcement.** The City shall prohibit unnecessary idling of internal combustion engines. In practice, this would mean turning off equipment if it would not be used for five or more minutes.
- **Equipment Location, Mufflers, and Shielding.** The City shall require its contractors to locate stationary noise-generating construction equipment such as air compressors and generators as far as possible from homes and businesses. Mufflers and/or temporary noise barriers shall be used as necessary to reduce sound level limits to the extent feasible.
- **Vibration Monitoring and Measures.** The City shall require its contractors to conduct vibration monitoring at any residences or buildings located less than 50-feet from construction activities. Ground vibration level at the nearest residential structure to the construction site shall be monitored using vibration sensor(s) or velocity transducer with adequate sensitivity capable of measuring peak particle velocity level in the frequency range of 1 Hz to 100 Hz. If the vibration level due to construction activities exceeds 0.2 inch/second, the contractor shall make modifications/revisions to construction methods for approval by the City of Benicia.
- **Pre-Construction Notification**. Prior to construction, written notification to residents within 100 feet of the proposed project segment(s) undergoing construction shall be provided, identifying the type, duration, and frequency of construction activities. Notification materials shall also identify a mechanism for residents to register complaints with the City if construction related noise impacts should occur.

Operation

The proposed project would result in two new stationary noise sources at the WWTP: the filter feed pump station and the recycled water pump station. Based on a similar project, the projected pump noise levels would be expected to generate unabated noise levels of up to 73 dBA at 50 feet (ESA 2007). This would result in attenuated noise levels at the nearest residences along East G

Street of up to 57 dBA. Enclosed pump stations with noise reduction features would reduce noise levels by 5 to 20 dBA depending on the material. As shown in **Table 3.12-2,** the exterior noise level standard for residences is 55 dBA during daytime and 50 dBA during nighttime. Operation of the proposed project would be expected to be in compliance with the City's nuisance noise ordinance and the General Plan noise level performance standards for noise-sensitive land uses. Implementation of **Mitigation Measure NOI-2** would require noise reduction features and would ensure that operational noise impacts are less than significant.

Mitigation Measure NOI-2: Noise Reduction Features

The City shall include noise reduction features as part of the proposed project to ensure that noise levels associated with proposed filter feed pump station and recycled water pump station would be in conformance with applicable City performance standards (General Plan Table 4-4) and ordinances (Section 8.20.140 of the Municipal Code). Noise reduction features shall include, but not be limited to, the following:

- The proposed pump stations shall be enclosed within a structure or shielded from nearby residences such that pump noise is reduced by at least 5 to 10 dBA and resultant exterior noise levels are 55 dBA or less at the property line of the WWTP.

Regarding mobile noise, a doubling of traffic is generally needed to cause an audible increase in noise levels. The proposed project would result in up to two additional employees at the WWTP site and four additional truck deliveries per month, which would not result in doubling of traffic on any of the surrounding roadways. As such, the project-related vehicle traffic would not cause an audible increase in roadway noise and the project area ambient noise environment would not be substantially increased. The impact would be less than significant.

b) Operation of the proposed project would not result in perceivable vibration at sensitive receptor locations. Construction activities such as excavation, spoil transport and pile driving would generate vibration. The level of groundborne vibration that could reach sensitive receptors would depend on the distance to the receptor, what equipment is used, and the soil conditions surrounding the construction site. Buildings that could be affected by construction activities are located adjacent to the proposed pipeline. Based on anticipated equipment proposed for use and the vibration level data provided in **Table 3.13-3**, vibration levels generated by the majority of proposed equipment would be equal to or below the 0.2 in/sec PPV criterion applied to assess the potential for cosmetic or structural damage, and would not result in significant impacts.

Table 3.13-3: Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 feet (in/sec)
Pile Driver (Vibratory)	upper range	0.734
	Typical	0.170
Clam shovel drop		0.202
Hydromill (slurry wall)	in soil	0.008
	in rock	0.017
Vibratory Roller		0.210
Hoe Ram		0.089
Large bulldozer		0.089
Caisson drilling		0.089
Loaded trucks		0.076
Jackhammer		0.035
Small bulldozer		0.003

Typical vibratory pile-driving vibration levels would also be below the 0.2 in/sec PPV criterion but may at times exceed the 0.2 in/sec PPV criterion when levels reach the uppermost range of measured vibration levels (0.734 in/sec PPV). In general, cosmetic or threshold damage to residential buildings can occur at vibrations greater than 0.5 in/sec PPV. As described in *Chapter 2, Project Description*, construction of the proposed project would require piles to provide structural support for the facilities. The recycled water facility and upgrades at the WWTP would require approximately 210 piles, and the proposed storage tank would require 55 piles. The nearest residences to the pile driving activities would be along East G Street, and immediately south of the City Corporation Yard if that location is selected for the storage tank. Continuous vibration caused by vibratory pile drivers and large vibratory rollers/compactors could cause structural damage if the continuous vibration is greater than 0.2 in/sec PPV. Because groundborne vibration levels could exceed the established thresholds for short periods of time, impacts would be considered potentially significant and would require the implementation of vibration controls (**Mitigation Measure NOI-3**). Implementation of this measure would reduce impacts to a less-than-significant level.

Mitigation Measure NOI-3: Noise Reduction Features

The construction contractor shall ensure that surface vibration associated with pile driving activities would be kept under 0.2 in/sec PPV for continuous vibration (e.g. vibratory equipment) at the closest receptors to ensure that cosmetic or structural damage does not occur.

e, f) There are no airports or airstrips within the City. Thus, the proposed project would not expose people residing or working within the proposed project area to excessive noise levels. No impacts would occur.

3.13 Population and Housing

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

Environmental Setting

The 2015 population of the City of Benicia was estimated at 26,644 (City of Benicia 2016). The City's draft 2015 Urban Water Management Plan (UWMP) estimates an increase in population over a 20-year span, resulting in an estimated 2040 population of 33,661 (City of Benicia 2016). According to the draft 2015 UWMP and the General Plan, the City has nearly reached build-out and development within the City is anticipated to primarily consist of infill projects.

The City's WWTP currently produces secondary treated water, which is then discharged to the Carquinez Strait. The proposed project's upgrades to the WWTP would provide tertiary treated recycled water suitable for unrestricted use. The recycled water would allow the City to use this local water source to offset the Refinery's industrial water needs. The extension of the recycled water distribution system would not create new water demands but would replace an existing demand with recycled water.

Impact

a) The proposed project consists of upgrades to the City's WWTP and expansion of the recycled water distribution system. The proposed project is intended to deliver tertiary treated water to the Refinery and other City customers for non-potable uses that are currently served by purchased raw water. Provision of recycled water would not indirectly induce population growth because it would not produce additional water supply. Instead, the proposed project would replace the current purchased water supply with locally-produced recycled water. The proposed project would not directly induce population growth within the City's service area by proposing new homes and businesses. Impacts would therefore be less than significant.

b, c) The proposed project would be constructed primarily within City ROWs, on City property, and on the Refinery property. Thus, the proposed project would not displace any existing housing or people, necessitating the construction of replacement housing elsewhere. No impacts would occur.

3.14 Public Services

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

Discussion

Environmental Setting

The Benicia Fire Department provides fire suppression, fire prevention, basic and advanced life support medical services, technical rescue services, disaster preparedness, and weed abatement services within City limits (City of Benicia 1999). Law enforcement services are provided by the City of Benicia Police Department within the City's sphere of influence. The City of Benicia Parks and Community Services Department maintains parks and recreational facilities within City limits. Benicia Unified School District administers the public school system within the City (City of Benicia 1999). The Refinery maintains an on-site fire brigade that provides first response fire, medical, and hazardous materials, and rescue services for the Refinery.

Impacts

a) The proposed project would not change existing demand for public services (e.g., fire and police protection, schools, parks, or libraries) because population growth would not result from construction of the proposed project (see *Section 3.13 Population and Housing)*. Operation and maintenance of the proposed project would require no more than two new employees at the WWTP, which would not substantially increase the need for new staff from any public protection services entities (e.g., police and fire), nor would it increase the need for any other public services including schools and parks. The proposed project would not require additional equipment or resources for any public service providers, therefore, the proposed project would have a less than significant impact on public services, and no mitigation is required.

3.15 Transportation/Traffic

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transit?	☐	☒	☐	☐
b) Conflict with applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☒	☐	☐

Discussion

Environmental Setting

Local Circulation System

I-680 which runs south to north, and I-780 which runs east to west, provides regional access to the proposed project area from surrounding highways and areas. The City's General Plan identifies five basic

roadway types: Freeways, Major Arterial, Minor Arterial, Collector Streets, and Local Streets.[10] The proposed pipeline alignment would potentially be constructed along the following roadway segments:

- East 5th Street (Minor Arterial Roadway): from the WWTP to Hillcrest Avenue;
- East 5th Street (Minor Arterial Roadway): from Hillcrest Avenue to the City's easement on an unpaved access road;
- Hillcrest Avenue (Minor Arterial Roadway): from East 5th Street to East 2nd Street;
- Unpaved Access Road: from East 5th Street to East 2nd Street; and
- East 2nd Street (Major Arterial Roadway): from Hillcrest Avenue to the Refinery property (approximately 300 feet beyond the intersection of East 2nd Street and Rose Drive).

Bicycle and Pedestrian Facilities

The City's bicycle facilities consist of the following: Class III facilities are bike routes that share the roadway with other vehicles (no designated lane), Class II facilities are bike routes that are painted on the side of a roadway and intended exclusively for bicycle use, and Class I facilities are dedicated paths separated from automobile traffic for bicycle and pedestrian use. Pedestrian facilities are mainly comprised of a network of sidewalks, which may be located on one or both sides of public streets. There are no Class I bicycle facilities within the proposed project area. The bicycle and pedestrian facilities within the proposed project area are listed below:

- East 5th Street: Class III bicycle facilities, sidewalks on one or both sides (variable)
- Hillcrest Avenue: Class III bicycle facilities, sidewalks on both sides
- Unpaved Access Road: no bicycle or pedestrian facilities
- East 2nd Street: Class II bicycle facilities, gravel sidewalks on both sides

An off-street segment of the San Francisco Bay Trail is located along the perimeter of the Benicia Marina and a designated on-street paved Bay Trail segment runs along East 5th Street adjacent to the WWTP property.

Public Transit

The proposed project area is served by public transit. Within the City, bus transportation is provided by SolTrans, which also provides regional connections to the larger Bay Area Rapid Transit (BART) system. There are three local bus routes within the City: Route 15 runs along East 2nd Street and Route 17 runs along both East 2nd Street and East 5th Street. Route 20 runs along a portion of East 5th Street within the proposed project area. The Solano Express provides regional express bus service in Solano County, and runs along a small portion of East 5th Street within the proposed project area.

Project Area Access

Local access to the WWTP is provided by East 5th Street, a two-lane street that is designated as a minor arterial (City of Benicia 1999). Access to the Refinery and City Corporation Yard is provided by East 2nd Street, a four-lane street that is designated as a major arterial.

[10] Freeways are intended to serve regional and sub-regional travel. A Major Arterial is a roadway which connects freeways to minor arterials, other major arterials, and collector streets. A Minor Arterial is a roadway which connects major arterials to collectors and local streets. Arterials generally provide two to four travel lanes. Collector streets are generally two lanes wide and connect local streets to minor and major arterials. The function of local streets is to provide access directly to abutting property (City of Benicia 1999).

Impacts

a, b) The proposed project would be constructed primarily within City ROW, within an unpaved access road located within a City easement, and within City and Refinery property. As described in *Chapter 2, Project Description,* the recycled water pipeline would be installed below grade, and largely via standard open cut trenching. The portion of the pipeline along East 5th Street that crosses I-780 might be installed via trenchless construction. The active work areas would be located approximately 20 feet on either side of the trench, which would require limiting on-street parking and temporarily reducing traffic lane widths. Roadway closures and/or one-way traffic control limitations are expected to occur but would be minimal and temporary in nature (no greater than one day in duration at any one location).

Traffic impacts during project construction would be associated primarily with worker vehicles and haul trucks, and with lane reductions caused by construction activity in the ROW. The increased traffic could result in a reduction of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles. In addition, lane closures associated with pipeline construction would occur along streets and intersections during construction. Lane reductions could further reduce the roadway capacities, especially during peak hours. For most pipeline segments, construction would use the open-trench method, and thus only a small segment would be closed at one time during construction activities (construction of pipelines would proceed at a rate of 200 feet per day).

Anticipated construction-related vehicle trips include construction workers traveling to and from the proposed project work areas, haul trucks, and other trucks associated with equipment and material deliveries. Assuming a conservative approach of the concurrent pipeline installation, WWTP improvements, and storage tank construction, the total number of construction trips would be 46 round trips per day, and up to 26 worker round trips per day. Construction crews would be working in different locations (the WWTP, pipeline alignment, storage tank site, Refinery), such that the traffic generated by construction workers would be spread out within the project area. The trips associated with hauling of material off site for disposal and delivery of equipment/material would occur throughout the day. Any construction-related traffic occurring between 7:00 AM and 9:00 AM or between 4:00 PM and 6:00 PM would coincide with peak hour traffic and could temporarily impede traffic and transit flow. Travel during these time frames would primarily consist of workers traveling to and from the proposed project area, because deliveries would likely occur throughout the day.

The WWTP, City Corporation Yard, and the Refinery would continue to be accessed from existing entrances. Access to the proposed pipeline area would vary depending where the installation is occurring. The proposed pipeline would traverse residential areas and may require temporary roadway closures no greater than one day in duration. Given the short-term nature of construction and because impacts would move as work progresses (rather than one area being shut down for an extensive period), construction-related traffic impacts are not expected to be substantial. However, to ensure appropriate traffic controls are implemented and impacts are less than significant, preparation and implementation of a Traffic Management Plan would be necessary. The Traffic Management Plan would require the City and its construction contractor to address and mitigate impacts associated with the temporary closures of traffic lanes, parking lanes, or other public ROW. Implementation of **Mitigation Measure TRA-1** would ensure construction-related traffic impacts are reduced to a less-than-significant level.

Operation of the proposed project would require up to two new employees, which would result in two additional employee commute trips per day and approximately four additional truck deliveries per month compared to existing conditions. The incremental increase in traffic compared to existing conditions would be minimal, and would not result in significant long-term impacts.

Mitigation Measure TRA-1: Develop and Implement Traffic Management Plan

Prior to construction or the issuance of applicable permits, the contractor shall submit a Traffic Management Plan to the City of Benicia for review and approval. The contractor shall work with the City of Benicia to ensure that the City concurs with the provisions and requirements of the Traffic Management Plan. This plan shall:

- Show the impact of various construction stages, including proposed lane closures, detours, staging areas, and routes of construction vehicles entering and exiting construction sites.
- Describe traffic control measures that will be implemented to manage traffic and reduce potential traffic impacts in accordance with stipulations of the most recent version of the California Manual of Uniform Traffic Control Devices (CMUTCD). Traffic control measures may include, but are not limited to, flag persons, warning signs, lights, barricades and cones to provide safe passage of vehicular (including cars and buses), bicycle and pedestrian traffic, and access by emergency responders.
- Demonstrate the location of transit stops and transit and bicycle routes that would be temporarily impacted by construction activities, and shall recommend places to temporarily relocate transit stops and transit and bicycle routes, if necessary.
- Require written notification of the timing, location, and duration of construction activities, and the location of lane closures or detours (if any) to all emergency service providers (fire, police, and ambulance) prior to road closure. Emergency service vehicles will be given priority for access.

c) The proposed project would not affect air traffic patterns; therefore, there would be no impact.

d) The proposed project would not create or substantially increase a traffic hazard due to a design feature. The proposed project would temporarily change the configuration of intersections and roadways within the proposed project area, in particular when lane closures would be required during pipeline installation within the ROW. Construction along any one segment of roadway would occur at a rate of approximately 200 feet per day, thereby limiting lane closures to the affected segment. Because lane closures could increase conflicts between vehicles, bicyclists, and pedestrians, potential impacts are considered significant and would require mitigation. With the implementation of the Traffic Management Plan (**Mitigation Measure TRA-1**), such hazards caused by the changed configurations would be reduced to a less-than-significant level. As described in *Chapter 2, Project Description,* upon completion of construction activities, disturbed areas would be restored to pre-construction conditions and roadways would be repaved. All intersections and roadways would be restored to pre-construction conditions and impacts associated with increased hazards would be less than significant.

e) Lane closures and other potential traffic impacts caused by construction activities associated with the proposed project would have potential to impede emergency response to those areas, or to areas accessed via those routes. The City's Emergency Operations Plan identifies major roadways such as East 2nd Street as principal routes for emergency evacuation. Implementation of **Mitigation Measure TRA-1**, which requires development and implementation of a Traffic Management Plan, would include specific traffic control measures to address emergency access routes and notify emergency service providers of road closures and detours. With implementation of this mitigation measure, potential impacts to emergency access during construction would be reduced to less-than-significant levels. Upon completion of construction activities, all intersections and roadways would be restored to pre-construction conditions, and no impact to emergency access would occur during project operation.

f) The proposed project involves construction and operation of infrastructure that would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

As described above, construction could disrupt traffic, bicycle, and pedestrian, however impacts would be temporary. Implementation of **Mitigation Measure TRA-1** would include provisions for detours to be provided for the alternative modes of travel, reducing impacts to a less-than-significant level. Roadways would be restored to match the surrounding road type once construction is complete.

The pipeline would be located primarily within City ROW and below grade. The recycled water facility and WWTP upgrades would be located within the existing site. The locations being considered for the proposed storage tank are developed areas within City and Refinery properties. The proposed project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. There is no impact from project operations and no mitigation is required.

3.16 Utilities and Service Systems

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) 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?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

Environmental Setting

The City provides potable and non-potable water, and wastewater collection and treatment services to customers within the City boundary. The City's potable water delivery system consists of a water treatment plant with a capacity of 12 mgd, and six reservoirs throughout the City that are capable of storing up to 12.8 MG to provide potable water storage during peak demand periods. The primary sources of potable water are State Water Project (SWP) water purchased from the Solano County Water Agency, water from Lake Berryessa via the Solano Project, and the Lake Herman reservoir (City of Benicia 2016). Raw water is delivered to the City via a raw water transmission system, which is comprised of two pump stations and approximately 75,000 feet of pipe. The City's annual average water demand in a non-drought

year is approximately 10,900 AFY (City of Benicia 2011, 2016). Approximately half the demand is from residential customers (indoor and outdoor uses), municipal uses, commercial and light industrial uses; and the remaining half is from the Refinery. The Refinery contracts with the City for raw water supply for its industrial uses, such as cooling water. The Refinery's water demand averages approximately 4,900 AFY, however the contract allows for deliveries between 3,560 to 5,800 AFY (City of Benicia 2016). The City's primary non-potable systems consist of delivery infrastructure to supply raw water to the Refinery.

The City's wastewater collection system consists of approximately 150 miles of pipelines and 24 lift stations. The majority of the collection system relies on gravity flow through pipelines that convey wastewater to be treated at the 4.5-mgd WWTP. The WWTP currently operates under an NPDES permit (NPDES No. CA 0038091). Under this permit, the City treats wastewater collected within its service area at the WWTP and discharges the secondary treated water to the Carquinez Strait. The City's existing WWTP has a stormwater collection system that transfers the collected stormwater to the treatment plant.

Solid waste and recycling services are provided by Republic Services. Solid waste collected within the City is transferred to the transfer station in Martinez and ultimately disposed of at the Keller Canyon Landfill.

Impacts

a) Please refer to *Section 3.9 Hydrology and Water Quality* for a discussion of wastewater treatment requirements. This impact would be less than significant.

b - e) The proposed project itself consists of upgrades and new facilities at the existing WWTP to produce recycled water that would offset the use of potable water. The environmental effects are evaluated throughout this document; collectively, this analysis demonstrates that construction of new water and wastewater facilities or expansion of existing facilities would not significantly impact the environment so long as identified mitigation measures are implemented. The proposed project would not require or result in the construction of new water or wastewater facilities. Therefore, impacts would be considered less than significant.

As discussed in *Section 3.13 Population and Housing*, the proposed project would provide recycled water within the proposed project area. This section also discussed that the proposed project would upgrade wastewater treatment processes to tertiary treatment to provide recycled water from the City's WWTP, to serve existing demands that are currently supplied by purchased raw or potable water. Given that the proposed project was designed to meet existing demands, it is anticipated that there would be adequate capacity to serve those projected demands; thus impacts are considered less than significant and no mitigation is required.

Stormwater in the City is currently collected by existing storm drainage facilities and conveyed to creeks and waterways that ultimately flow to the Carquinez Strait or Suisun Bay. Stormwater within the WWTP site is collected, combined with wastewater flows, and treated before discharge. The proposed project would not alter the current stormwater drainage facilities as there would not be a substantial increase in impervious surfaces. Therefore, the proposed project would not result in or require expansion of stormwater collection facilities, and no impacts would occur.

The proposed project is a recycled water system project. No potable water supplies would be delivered to customers as part of the proposed project. The recycled water supply from the proposed project of approximately 2,240 AFY would offset roughly half of the Refinery's current average demand on the City's water supply. The provision of recycled water would offset existing water usage at the Refinery, would provide recycled water to other City customers for non-potable use, and would reduce dependence on raw water supplies purchased from the State Water Project, which is a beneficial impact. As such, the proposed project would not require new or expanded water entitlements. No impact would occur.

f) The main contributor to solid waste generated by the proposed project would be the excavation and disposal of soil, as well as demolition of some facilities from the WWTP site. Solid waste generated by the proposed project would likely be hauled to the Republic Services transfer station in Martinez, approximately six miles to the southeast. Solid waste collected at this transfer station would then likely be hauled to the Keller Canyon Landfill, which can accept up to 3,500 tons per day. It has a remaining capacity of approximately 63.4 million cubic yards, with an expected closure date of December 2030 (CalRecycle 2016). A total of approximately 43,000 CY of excavated materials would be off hauled from the WWTP site, pipeline construction, and storage tank construction. Using a conservative assumption that all excavated soil would be off hauled, the material would constitute 0.06 percent of the remaining capacity of the landfill. The landfill would have sufficient permitted capacity to accommodate the proposed project's solid waste disposal needs. Solid waste would be disposed of in accordance with all applicable federal, state, and local statutes and regulations. Once constructed, operation and maintenance activities would generate minimal solid waste. For these reasons, implementation of the proposed project would not exceed permitted capacity at local landfills. The impact would be less than significant and no mitigation is required.

g) Solid waste generation would be limited to construction-related activities. Solid waste generated during operation and maintenance of the WWTP would not be significantly more than what is produced by the current facility, thus no additional long-term solid waste generation would be associated with the proposed project. The proposed project would therefore comply with all federal, state, and local regulations related to solid waste and no impacts would occur.

3.17 Mandatory Findings of Significance

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the Project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion

Impacts

a) The potential biological impacts of the proposed project are discussed in *Section 3.4 Biological Resources*, above. The potential impacts to cultural resources from the Proposed Project are addressed in *Section 3.5 Cultural Resources*, above. As described in these sections, the proposed project could potentially impact nesting birds, protected trees, and previously undiscovered cultural resources. With implementation of the mitigation measures identified in this document, the proposed project would not have the potential to adversely affect the environmental resources in the vicinity of the proposed project area. Thus, the proposed project would not degrade the quality of the environment, or affect any habitat, wildlife population or plant communities, and would not eliminate important examples of major periods of California's history or prehistory. Implementation of mitigation measures included herein would reduce the potential biological and cultural resources impacts to less-than-significant levels.

b) The CEQA Guidelines defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or increase in environmental impacts. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the proposed project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (Guidelines, Section 15355(a)(b)).

There are projects currently under environmental review in the City, however the majority are outside of the proposed project's vicinity and consist of use permits, sign permits, and design review. There is one major cumulative project within 0.5 mile of the proposed project:

- Valero Crude by Rail Project: Valero proposes to install, operate, and maintain new equipment, pipelines, and associated infrastructure as well as new and realigned segments of existing railroad track within the Refinery boundary to allow the Refinery to receive a portion of its crude oil feedstock deliveries by tank car. An EIR was prepared for this project, however the Planning Commission declined to certify the Final EIR and denied the use permit application in February 2016. Valero appealed the Planning Commission's decision, and the City Council has continued the hearing to September 2016 (City of Benicia 2016). Construction of the project is estimated to take 25 weeks, however due to the appeal, the timing of this project is currently unknown.

Cumulative projects would result in a variety of construction-related impacts, including increase in dust, noise, traffic, potential for erosion and hazardous material contamination, and degradation of nearby waterways. The geographical context of these environmental resource issues is localized, but would expand to the region if appropriate mitigation measures are not implemented to contain site-specific impacts (*e.g.,* localized erosion could cause downstream water quality degradation). The Valero Crude by Rail Project would be constructed within the Refinery property and would overlap geographically with the proposed project only along a small portion of the pipeline alignment that crosses the Refinery property and at the potential storage tank site at the Refinery. However, it is possible that cumulative projects, without mitigation measures, would result in significant, cumulative impacts to the environment.

As described in *Sections 3.1 – 3.17* of this document, implementation of the proposed project could potentially result in significant impacts; however, those impacts would be reduced to less-than-significant levels with implementation of mitigation measures. The implementation of mitigation measures identified throughout this report would ensure that the proposed project's contribution to cumulative impacts would not be cumulatively considerable. The proposed project's contribution to construction-related cumulative impacts would be further reduced by the short-term duration of the proposed construction activities. Thus, implementation of the proposed project in combination with other past, current or reasonably foreseeable projects within the proposed project vicinity is not expected to result in cumulatively considerable impacts. None of the environmental impacts identified in this document are significant, and the proposed project would not cause any incremental impacts to become substantial. Therefore, the proposed project would not contribute to cumulatively considerable impacts.

Operation of the proposed project would not result in any long-term effects, and as such it would not contribute to any cumulative impacts that are common for development projects. As such, no cumulative impacts would occur.

c) As discussed in *Sections 3.1 – 3.17*, construction activities associated with the proposed project have the potential to result in impacts on aesthetics, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, recreation, and transportation and traffic that could affect human beings. However, with implementation of the mitigation measures identified in the individual resource sections, all potentially significant project-related impacts would be less than significant.

This page intentionally left blank

Chapter 4 Federal Cross-Cutting Environmental Regulations Evaluation

This section describes the status of compliance with relevant federal laws, executive orders, and policies, and the consultation that has occurred to date or will occur in the near future. The topics are based in part on the SWRCB's Clean Water State Revolving Fund Program Federal Cross-cutting Environmental Regulations Evaluation Form for Environmental Review and Federal Coordination.

4.1 Federal Endangered Species Act

Section 7 of the Federal Endangered Species Act (FESA) requires federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species. Under Section 7, a project that could result in incidental take of a listed threatened or endangered species must consult with the USFWS to obtain a Biological Opinion (BO). If the BO finds that the project could jeopardize the existence of a listed species ("jeopardy opinion"), the agency cannot authorize the project until it is modified to obtain a "nonjeopardy" opinion. *Section 3.4 Biological Resources* explains that while 72 special status plant species and 68 special-status fish and wildlife species were considered as part of the Biological Resources Assessment, all of the potential species were ruled out from occurring within the proposed project area due to lack of suitable habitat, local extirpations, lack of connectivity between areas of suitable habitat, incompatible land use, and habitat degradation. Therefore, no FESA listed species have the potential to occur within the proposed project area. The proposed project would not contribute to cumulatively considerable impacts and the lead agency would be in compliance with the FESA.

4.2 National Historic Preservation Act (NHPA), Section 106

The purpose of the NHPA is to protect, preserve, rehabilitate, or restore significant historical, archeological, and cultural resources. Section 106 requires Federal agencies to take into account effects on historic properties. Section 106 review involves a step-by-step procedure described in detail in the implementing regulations (36 Code of Federal Regulations Part 800). As described in *Section 3.5 Cultural Resources*, a cultural resource assessment for the proposed project was conducted. The analysis includes a Section 106 evaluation for the proposed project and will be submitted through the consultation process with the State Historic Preservation Officer (SHPO). Concurrence by SHPO would ensure compliance with the NHPA.

No cultural resources were identified within the project site during the cultural resources assessment. Therefore, no impacts to historical resources under CEQA and no effects to historic properties under the NHPA for the proposed project are expected. Based on the potential to encounter unknown archaeological or paleontological resources, specific measures would be implemented during construction in the event of accidental discovery. Implementation of **Mitigation Measure CUL-1** would reduce the potential impact to cultural resources to a less-than-significant level.

4.3 Clean Air Act

U.S. Congress adopted general conformity requirements as part of the Clean Air Act (CAA) Amendments in 1990 and the USEPA implemented those requirements in 1993 (Sec. 176 of the CAA (42 U.S.C. § 7506) and 40 CFR Part 93, Subpart B). General conformity requires that all federal actions "conform" with the State Implementation Plan as approved or promulgated by USEPA. The purpose of the general conformity program is to ensure that actions taken by the federal government do not undermine state or local efforts to achieve and maintain the national ambient air quality standards. Before a federal action is taken, it must be evaluated for conformity with the State Implementation Plan. All "reasonably

foreseeable" emissions predicted to result from the action are taken into consideration. These include direct and indirect emissions, and must be identified as to location and quantity. If it is found that the action would create emissions above de minimis threshold levels specified in USEPA regulations (40 CFR § 93.153(b)), or if the activity is considered "regionally significant" because its emissions exceed 10 percent of an area's total emissions, the action cannot proceed unless mitigation measures are specified that would bring the proposed project into conformance. As described in *Section 3.3 Air Quality*, the proposed project area lies within the San Francisco Bay Area Air Basin. The results of the air quality modeling showed that pollutant emissions would not exceed Federal General Conformity significance thresholds. Accordingly, the lead agency would be in compliance with the CAA.

4.4 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA), passed by Congress in 1972 and managed by the National Oceanic and Atmospheric Administration's (NOAA) Office of Ocean and Coastal Resource Management, is designed to balance completing land and water issues in coastal zones. It also aims to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." Within California, the CZMA is administered by the Bay Conservation and Development Commission, the California Coastal Conservancy, and the California Coastal Commission. The shoreline areas of the City of Benicia are under the jurisdiction of the San Francisco Bay Conservation and Development Commission (BCDC), but the WWTP and other areas where construction would occur are outside of BCDC jurisdiction. Therefore, the Coastal Zone Management Act does not apply to the proposed project.

4.5 Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) requires a federal agency to consider the effects of its actions and programs on the nation's farmlands. The FPPA is intended to minimize the impact of federal programs with respect to the conversion of farmland to nonagricultural uses. It assures that, to the extent possible, federal programs are administered to be compatible with state, local, and private programs and policies to protect farmland. As described in *Section 3.2 Agriculture and Forestry Resources*, the proposed project would be located entirely within Urban/Built, Grazing Land and Other Land designations and would not occur within any designated important farmlands. As such, the lead agency would be in compliance with the Farmland Protection Policy Act.

4.6 Executive Order (EO) 11988 – Floodplain Management

EO 11988 requires federal agencies to recognize the values of floodplains and to consider the public benefits from restoring and preserving floodplains. As described in *Section 3.9 Hydrology and Water Quality* the southernmost portion of the proposed pipeline and a portion of the WWTP lie within the 100-year floodplain as designated by FEMA. Although there are project facilities that would be within the floodplain, these are either existing facilities (i.e. modifications at the existing WWTP) or underground pipelines that would be buried and would not increase flood hazards or interfere with floodplain management. As such, the lead agency would be in compliance with EO 11988.

4.7 Federal Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Executive Order 13168

The Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act prohibit the take of migratory birds (or any part, nest, or eggs of any such bird) and the take and commerce of eagles. EO 13168 requires that any project with federal involvement address impacts of federal actions of migratory birds. As described in *Section 3.4 Biological Resources*, the proposed project would have less than significant impact on nesting birds with implementation of **Mitigation Measure BIO-1** if construction cannot be avoided during nesting season. Thus, the lead agency would be in compliance with the Federal Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and EO 13168.

4.8 Executive Order 11990 – Protection of Wetlands

Under EO 11990, federal agencies must avoid affecting wetlands unless it is determined that no practicable alternative is available. As described in *Section 3.4 Biological Resources*, the proposed project area does not support federally protected wetlands as defined by CWA Section 404 and therefore no impacts are anticipated. Culverts within the proposed project area constitute potentially jurisdictional waters of the U.S., however, project facilities would not affect these waters, and no creek, riparian habitat or other sensitive natural communities were found to be present. Thus, the lead agency would be in compliance with EO 11990.

4.9 Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act was passed in 1968 to preserve and protect designated rivers for their natural, cultural, and recreational value. There are no designated Wild and Scenic Rivers within the project area, nor will any designated rivers be adversely affected by the proposed project. As a result, the Wild and Scenic Rivers Act does not apply to the proposed project.

4.10 Safe Drinking Water Act – Source Water Protection

Section 1424(e) of the Safe Drinking Water Act established the USEPA's Sole Source Aquifer Program. This program protects communities from groundwater contamination from federally-funded projects. Within USEPA's Region 9, which includes California, there are nine sole source aquifers. None of these sole source aquifers are located within the project area. Therefore, the Sole Source Aquifer Program does not apply to the proposed project, and the lead agency would be in compliance with Section 1424(e) of the Safe Drinking Water Act.

4.11 Executive Order on Trails for America in the 21st Century

The EO on Trails for America requires federal agencies to protect, connect, promote, and assist trails of all types throughout the United States. The proposed project would not result in any impacts on trails. Thus, no adverse effects on trails would occur and the lead agency would be in compliance with this EO.

4.12 Executive Order 13007 – Indian Sacred Sites

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." The proposed project would not be located on or impact any Federal lands and therefore would not affect any Indian sacred sites under this EO.

4.13 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) of 1976 as amended (16 U.S.C. § 1801 et seq.), is the primary act governing federal management of fisheries in federal waters, from the 3-nautical-mile state territorial sea limit to the outer limit of the U.S. Exclusive Economic Zone. It establishes exclusive U.S. management authority over all fishing within the Exclusive Economic Zone, all anadromous fish throughout their migratory range except when in a foreign nation's waters, and all fish on the continental shelf. The Act also requires federal agencies to consult with NMFS on actions that could damage Essential Fish Habitat (EFH), as defined in the 1996 Sustainable Fisheries Act (Public Law 104-297). The proposed project would not be located in or impact any U.S. Federal waters regulated under the Magnuson-Stevens Act. As described in *Section 3.4 Biological Resources*, the proposed project is not expected to have adverse effect on resident or migratory fish, wildlife species, or

fish habitat in the proposed project area, and would therefore be in compliance with the Magnuson-Stevens Act.

4.14 Environmental Justice

This section describes the existing socioeconomic resources in the Study Area and the regulatory setting pertaining to environmental justice-related issues. This section also evaluates the potential for the Proposed Project to disproportionately affect minority or low-income groups.

The USEPA defines environmental justice as: "The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means no group of people, including racial, ethnic, or economic groups should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies." (USEPA 2016).

Economic conditions in the Study Area are generally better than national averages. According to 2010-2014 American Community Survey estimates, the median household income (MHI) of the City is $89,094 (US Census Bureau 2016). Statewide MHI was estimated at $61,489. The unemployment rate of the City is 5.5% (City of Benicia 2016).

Minority and Low Income Communities

According to CEQA and USEPA guidelines, a minority population is present in a project area if the minority population of the affected area exceeds 50 percent, or if the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. USEPA guidelines recommend that analysis of low-income communities consider U.S. Census Bureau's poverty level definitions, as well as applicable state and regional definitions of low-income and poverty communities. U.S. Census data define the poverty level based on income, household size, and number of minors. 2015 poverty levels range from $11,367 (one-person household) to $52,747 (nine or more person household with one related minor). California's Department of Water Resources (DWR) defines disadvantaged communities (DACs) as those with a median household income (MHI) that is 80 percent or less than the statewide MHI. Based on data from the American Community Survey (ACS), statewide 2014 MHI was $61,489, and low income communities (DACs) were those with an MHI of $49,191 or less. DWR's definition was used to define low income communities for this analysis. 2014 MHI estimates were used because those were the most recently available data (from 2010-2014 ACS).

Minority Communities

A review of demographic data for the City showed the City's overall population is majority white (61.7 percent) (City of Benicia 2016). A GIS analysis of 2010-2014 ACS demographic data, by Census block-group, found no block groups within the proposed project area had minority populations greater than 50 percent of the total population in the block group. The USEPA's Environmental Justice Screening and Mapping Tool (EJSCREEN) confirmed that the proposed project area does not include minority communities (U.S. Census Bureau 2016).

Low Income Communities

None of the proposed project components fall within low income communities. As noted above, the City's overall MHI is substantially higher than statewide MHI, and nearly twice that of the DAC threshold of $49,191. Analysis of 2010-2014 ACS data at the Census block-group levels found no block-groups within the proposed project area met the DAC threshold of 80 percent of statewide MHI. These findings were confirmed using the EJSCREEN tool.

Conclusion

For the purposes of this analysis, an impact related to environmental justice would be significant if the proposed project would cause impacts to minority or low-income populations that are disproportionately high and adverse, either directly, indirectly, or cumulatively. The proposed project would not result in any impacts on minority or low income communities. Thus, no adverse environmental justice impacts would occur.

This page intentionally left blank

Chapter 5 Report Preparation

5.1 Report Authors

This report was prepared by the City of Benicia, RMC Water and Environment (RMC), under contract with Brown and Caldwell, with assistance from Nomad Ecology and Basin Research. Staff that were involved include the following:

City of Benicia

- Graham Wadsworth, Public Works Director
- Daniel Jackson, Water Quality Supervisor
- Christina Ratcliffe, Community Development Director

RMC Water and Environment

- Robin Cort
- Susan Yogi
- Crystal Benham
- Alexis Cahalin
- Sally Johnson
- Simon Kobayashi

Brown and Caldwell

- Mallika Ramanathan
- Jill Chamberlain

Nomad Ecology

- Heath Bartosh
- Erin McDermott

Basin Research

- Colin Busby
- Chris Canzonieri

5.2 References

Chapter 2: Project Description

City of Benicia. 2011. 2010 Urban Water Management Plan. June. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/UWMPFinalReport.pdf

City of Benicia. 2016. Draft 2015 Urban Water Management Plan. May 2016. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Benicia_2015_UWMP_Public_Draft_-_Main_Document.pdf

San Francisco Bay Regional Water Quality Control Board (RWQCB). 1996. Order 96-011, General Water Reuse Requirements for: Municipal Wastewater and Water Agencies

San Francisco Bay Regional Water Quality Control Board. 2014. Order No. R2-2014-0023 NPDES No. CA0038091.

Chapter 3: Environmental Checklist

Aesthetics

California Department of Transportation (Caltrans). 2016. California Scenic Highway Mapping System – Solano County. Accessed May 16, 2016. Available: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm

City of Benicia. 2005. General Plan – Land Use Diagram. January. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlanLandUse.pdf

Solano County. 2008. Solano County General Plan. Accessed May 27, 2016. Available: http://www.co.solano.ca.us/depts/rm/planning/general_plan.asp

Air Quality

Bay Area Air Quality Management District (BAAQMD). 1999. BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans. 1999. Available. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqaguid.pdf?la=en

Bay Area Air Quality Management District (BAAQMD). 2010a. Bay Area 2010 Clean Air Plan. September. Available: http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans

Bay Area Air Quality Management District (BAAQMD). 2010b. Regulation 2 Permits Rule 5, New Source Review of Toxic Air Contaminants, January 2010.

Bay Area Air Quality Management District (BAAQMD). 2012. California Environmental Quality Act (CEQA) Air Quality Guidelines. May. Available: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/baaqmd-ceqa-guidelines_final_may-2012.pdf?la=en

City of Benicia. 1999. General Plan – Part 2. June. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlan2.PDF

City of Benicia. 2009. Benicia Climate Action Plan. Available: http://docs.ci.benicia.ca.us/cobcap.pdf

RMC Water and Environment. 2016. CalEEMod emissions modeling. October 2016.

United States Environmental Protection Agency. Title 40 Code of Federal Regulations (40CFR) § 93.153(b). Available: https://www3.epa.gov/airquality/genconform/documents/40_CFR_93_153.pdf

Yolo-Solano Air Quality Management District (YSAQMD). 2007 Handbook for Assessing and Mitigating Air Quality Impacts. July 11.

Agriculture

California Department of Conservation. 2015. Solano County Important Farmland 2014. December.

California Department of Forestry and Fire Protection. 2006. Land Cover Map. Accessed May 31, 2016. Available: http://frap.cdf.ca.gov/data/frapgismaps/pdfs/fvegwhr13b_map.pdf

Biological Resources

California Invasive Plant Council. 2016. Prevention BMPs for Transportation and Utility Corridors, Accessed June 7, 2016. Available: http://www.cal-ipc.org/ip/prevention/tuc.php

City of Benicia. 2008. Tree Ordinance. Chapter 12.24, Title 12 of the Benicia Municipal Code

Nomad Ecology. 2016a. Biological Resources Assessment, City of Benicia Water Reuse Project, Solano County, California. April.

Nomad Ecology. 2016b. Wetlands Assessment, City of Benicia Water Reuse Project, Solano County, California. May.

Cultural Resources

Basin Research Associates. 2016. Historic Property Survey Report/Finding of Effect. May.

Geology and Soils

Association of Bay Area Governments (ABAG). 2016a. Shaking Hazard Map. Accessed May 17, 2016. Available: http://resilience.abag.ca.gov/earthquakes/

Association of Bay Area Governments (ABAG). 2016b. ABAG GIS Hazard WebViewer. Accessed May 17, 2016. Available: http://gis.abag.ca.gov/website/Hazards/

California Geologic Survey. 2015. Regulatory Maps. Accessed May 17, 2016. Available: http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps

City of Benicia. 1998. General Plan EIR. January. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlanDraftEIR.pdf

City of Benicia. 1999. General Plan – Part 2. June. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlan2.PDF

City of Benicia. 2016. General Plan – Part 1. April. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GP_Part_1_ToC-1-2_updated_2016.pdf

United States Geologic Service. 2015. UCERF3: A New Earthquake Forecast for California's Complex Fault System. Accessed March 24, 2016. Available http://pubs.usgs.gov/fs/2015/3009/pdf/fs2015-3009.pdf

Greenhouse Gas Emissions

Bay Area Air Quality Management District (BAAQMD). 2009. California Environmental Quality Act Air Quality Guidelines. December. Available: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/draft-baaqmd-ceqa-guidelines_dec-7-2009.pdf?la=en

City of Benicia. 2009. Climate Action Plan.

Hazards and Hazardous Materials

Association of Bay Area Governments (ABAG). 2016. Wildfire Hazards Map. Accessed May 23, 2016. Available: http://gis.abag.ca.gov/website/Hazards/

California Department of Forestry and Fire Protection (Cal Fire). 2016. State Responsibility Areas for Fire Protection. Available: http://frap.fire.ca.gov/data/frapgismaps/sra11_2/sramap.48.pdf

City of Benicia. 1999. General Plan – Part 2. June. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlan2.PDF

City of Benicia. 2005. Land Use Diagram. January 2005. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlanLandUse.pdf

City of Benicia. 2007. Emergency Operations Plan. January 2007. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/EOP.pdf

City of Benicia. 2015. Benicia Municipal Code, Chapter 8.28 Fire Prevention and Life Safety Code. December 1.

Solano County. 2016. Hazardous Materials and Waste. Accessed June 1, 2016. Available http://www.co.solano.ca.us/depts/rm/environmental_health/hazmat/.

Hydrology and Water Quality

ESA. 2007. Administrative Draft Initial Study/Mitigated Negative Declaration. Benicia Water Reuse Project, March 2007.

Federal Emergency Management Agency (FEMA). 2009. Flood Insurance Rate Map, Solano County, California and Incorporated Areas. Map Number 06095C0642E. May 4.

California Department of Water Resources (DWR). 2014. California's Groundwater Bulletin 118: Suisun-Fairfield Valley Groundwater Basin. June 30. Available: http://www.water.ca.gov/groundwater/bulletin118/basindescriptions/2-03.pdf

California Department of Water Resources (DWR). 2013. Alluvial Groundwater Basins and Subbasins within the San Francisco Bay Hydrologic Region (Map). Accessed May 20, 2016. Available: http://www.water.ca.gov/groundwater/bulletin118/maps/SF.pdf

California Geological Survey (CGS). 2009. Tsunami Inundation Map for Emergency Planning Benicia Quadrangle. July 15.

City of Benicia. 1999. General Plan – Community Health and Safety. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlan2.PDF

City of Benicia. 2011. 2010 Urban Water Management Plan. June. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/UWMPFinalReport.pdf

State Water Resources Control Board. 2010. California 2010 303(d) List. Available: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

Land Use and Planning

City of Benicia. 2005. Land Use Diagram. January 2005. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlanLandUse.pdf

City of Benicia. 2011. Benicia Municipal Code – Chapter 17.36 Open Space District. Available: http://www.codepublishing.com/CA/Benicia/

City of Benicia. 2016. General Plan – Part 1. April. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GP_Part_1_ToC-1-2_updated_2016.pdf

Mineral Resources

City of Benicia. 1999. General Plan – Part 2. June. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlan2.PDF

Noise

Caltrans. 2013. Transportation and Construction Vibration Guidance Manual, Available: http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf

City of Benicia. 1999. General Plan – Part 2. June. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlan2.PDF

City of Benicia. 1998. General Plan EIR. January. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlanDraftEIR.pdf

City of Benicia. ND. Benicia Municipal Code.

ESA. 2007. Administrative Draft Initial Study/Mitigated Negative Declaration. Benicia Water Reuse Project, March 2007.

Federal Highway Administration (FHWA). 2013. Construction Equipment Noise Levels and Ranges – Handbook – Construction Noise.

Population and Housing

City of Benicia. 2016. Draft 2015 Urban Water Management Plan. May 2016. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Benicia_2015_UWMP_Public_Draft_-_Main_Document.pdf

Public Services

City of Benicia. 1999. General Plan – Part 2. June. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/GeneralPlan2.PDF

Recreation

City of Benicia. 1997. Benicia Parks, Trails, and Open Space Master Plan. July 1997. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/1997ParksTrailsOpenspacePlan.pdf

Utilities and Service Systems

California Department of Resources Recycling and Recovery (CalRecycle). 2016. Facility/Site Summary Details: Keller Canyon Landfill. Accessed May 23, 2016. Available: http://www.calrecycle.ca.gov/SWFacilities/Directory/07-AA-0032/Detail/

City of Benicia. 2016. Draft 2015 Urban Water Management Plan. May 2016. Available: http://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Benicia_2015_UWMP_Public_Draft_-_Main_Document.pdf

Mandatory Findings of Significance

City of Benicia. 2016. Current Advanced Planning Projects 6-3-16. Accessed June 6, 2016. Available: http://www.ci.benicia.ca.us/index.asp?SEC=436576E7-CC50-4161-A23C-AE5722763869&Type=B_BASIC

Chapter 4: Federal Cross Cutting Regulations

City of Benicia. 2016. Benicia Demographics. Updated March 14. Accessed May 25, 2016. Available: http://www.ci.benicia.ca.us/index.asp?SEC=5774168A-60FC-4D17-8376-EFF4A2941505#3B9D9A87-9DAC-4526-A8D1-9542879DD9E4&Type=B_LIST

United States Census (US Census). 2016. American Fact Finder: Benicia city, California (website). Accessed May 25, 2016. Available (requires search): http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml#

United State Environmental Protection Agency (USEPA). 2016. Learn About Environmental Justice . Accessed May 25, 2016. Available: https://www.epa.gov/environmentaljustice/learn-about-environmental-justice