INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
CITY OF SHASTA LAKE 7-ELEVEN

March 2025

Prepared For:

City of Shasta Lake
4477 Main Street
Shasta Lake, CA 96019

Prepared by:

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Table of Contents

List of Figures

List of Tables

List of Appendices

List of Abbreviations and Acronyms

AAGR	Average Annual Growth Rate
AB	Assembly Bill
ABC	Alcoholic Beverage Control
ADA	Americans with Disabilities Act
APN	Assessor's Parcel Number
AQAP	Air Quality Attainment Plan
ARPA	Archeological Resources Protection Act
B.P.	Before Present
BAAD	Bay Area Air District
BAMM	Best Available Mitigation Measure
BAU	Business as Usual
BFE	Base Flood Elevation
BMP	Best Management Practices
BRA	Biological Resources Assessment
BSA	Broader Sacramento Area
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal/OSHA	California Occupational Safety and Health Administration
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CalFire	California Department of Forestry and Fire Protection
CalGEM	California Geologic Energy Management Division
CalGreen	California Green Building Standards Code
CalTrans	California Department of Transportation
CAP	Criteria Air Pollutant
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CASGEM	California Statewide Groundwater Elevation Monitoring
CASQA	California Stormwater Quality Association
CAT	Climate Action Team
CBC	California Building Code
CBSC	California Building Standards Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act

CESA	California Endangered Species Act
CFG	California Fish and Game
CFS	Cubic Feet/Second
CGS	California Geologic Survey
CH_4	Methane
CHRIS	California Historical Resources Information System
CMC	California Mechanical Code
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
COG	Councils of Governments
CPD	Commercial Planned Development
CRHR	California Register of Historic Places
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CY	Cubic Yards
dB	Decibel
dBA	A-Weighted Sound Levels
DMG	Division of Mines and Geology
DOC	Department of Conservation
DOF	Department of Finance
DTSC	Department of Toxic Substances Control
DUI	Driving Under the Influence
EIR	Environmental Impact Report
EO	Executive Order
EOP	Emergency Operations Plan
EV	Electric Vehicle
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHSZ	Fire Hazard Severity Zones
FHWA	Federal Highway Administration
FIS	Flood Insurance Study
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
GHG	Greenhouse Gas
GPD	Gallons Per Day
GSP	Groundwater Sustainability Plan

HCD	Housing and Community Development
HFCs	Hydrofluorocarbons
HMP	Hazard Mitigation Plan
Hwy-151	Highway 151
I-5	Interstate 5
ICS	Incident Command System
IPaC	Information for Planning and Consultation
IS	Initial Study
IS/MND	Initial Study/Mitigated Negative Declaration
kVA	Kilovolt-Amps
Ldn	Day/Night Average Level
Leq	Average Sound Level
LESA	Land Evaluation and Site Assessment
LHMP	Local Hazard Mitigation Plan
LOS	Level of Service
LRA	Local Responsibility Areas
LUST	Leaking Underground Storage Tank
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
MND	Mitigated Negative Declaration
MPD	Multi-Product Dispenser
MRZ	Mineral Resource Zone
MS4	Post Construction Standard Plan
MT	Metric Ton
N_2O	Nitrous Oxides
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
ND	Negative Declaration
NEHR	National Earthquake Hazards Reduction
NEIC	Northeast Information Center
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_2	Nitrogen Dioxide
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSVAB	Northern Sacramento Valley Air Basin
NSVPA	Northern Sacramento Valley Planning Area

NWI	National Wetlands Inventory
NWP	Nationwide Permit
O_3	Ozone
OHP	Office of Historic Preservation
OHWM	Ordinary High-Water Mark
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Act
Pb	Lead
PFCs	Perfluorocarbons
PG&E	Pacific Gas and Electric
PM	Particulate Matter
PPV	Peak Particle Velocity
PRC	Public Resources Code
QSD	Qualified Stormwater Pollution Prevention Plan Developer
RABA	Redding Area Bus Authority
RCAP	Regional Climate Action Plan
RCRA	Resource Conservation and Recovery Act
RHNA	Regional Housing Needs Allocation
RMP	Risk Management Plan
RNG	Renewable Natural Gas
ROG	Reactive Organic Gas
RPS	Renewables Portfolio Standard
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAQMD	Shasta County Air Quality Management District
SCS	Sustainable Communities Strategy
SDWA	Safe Drinking Water Act
SEMS	Standardized Emergency Management System
SF	Square Feet
SF_6	Sulfur Hexafluoride
SGMA	Sustainable Groundwater Management Act
SHMA	Seismic Hazards Mapping Act
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SLF	Sacred Lands File
SLFPD	Shasta Lake Fire Protection District
SMM	Standard Mitigation Measure
SO_2	Sulfur Dioxide
SR	State Route
SRA	State Responsibility Area

SRTA	Shasta Regional Transportation Agency
SVAB	Sacramento Valley Air Basin
SVAQEEP	Sacramento Valley Air Quality Engineering and Enforcement Professionals
SWPPP	Stormwater Pollution Prevention Plan
SWQCB	State Water Quality Control Board
SWRBC	State Water Resources Control Board
TCP	Tribal Cultural Property
TCR	Tribal Cultural Resource
TIS	Traffic Impact Study
TPZ	Timberland Production Zone
TRU	Transportation Refrigeration Units
UCMP	University of California Museum of Paleontology
US 99	U.S. Route 99
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Department of Agriculture Forest Service
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
WDR	Waste Discharge Requirement
WWTP	Wastewater Treatment Plant

Section 1 | Introduction

1.1 PROJECT SUMMARY

Table 1.1-1: Project Summary

Project Title:	City of Shasta Lake 7-Eleven (Proposed Project)
Lead Agency Name and Address:	City of Shasta Lake (City) 4477 Main Street Shasta Lake, CA 96019
Contact Person and Phone Number:	Peter Bird, Senior Planner, 530-275-7416
Project Location:	1661 Cascade Boulevard, Shasta Lake, CA 96019. The Proposed Project is located on four assessor's parcels, numbered: 007-390-031, 007-390-036, 007-390-038, and 007-390-039.
Project Sponsor's name and address:	VAI (Robert Vermeltfoort); 8525 N. Cedar Ave., Suite 106, Fresno, CA 93720
General Plan Designation:	Commercial
Zoning:	The historic zoning for the Project Site is Community Commercial (C-2). Surrounding historic zoning designations include C-2 and Commercial Planned Development (CPD). The interim zoning for the site is Commercial (C)
Description of the Proposed Project:	Proposed 7-Eleven convenience store, a gas island with four dispensers and a diesel truck island with three dispensers, along with necessary site upgrades.
Surrounding Land Uses and Setting:	Adjacent properties to the Project Site include Shasta Dam Motel to the north, a McDonald's restaurant to the south, Highway I-5 to the east, and Cascade Boulevard and an Arco gas station to the west. Moody Creek flows along but outside of the northern and eastern Project Site boundaries. Both the Shasta Dam Motel and the McDonald's are zoned C-2, while the Arco is zoned CPD.
Other Public Agencies Whose Approval is Required:	Shasta County Air Quality Management District (SCAQMD); State of California Regional Water Quality Control Board (RWQCB); California Air Resources Board (CARB); California Department of Fish and Wildlife (CDFW); Shasta County Environmental Health Division; California Department of Forestry and Fire Protection (CalFire); Department of Toxic Substances Control (DTSC); California Department of Alcoholic Beverage Control (ABC).
Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance impacts to tribal cultural resources, procedures regarding confidentiality, etc.?	Tribal consultation letters were sent to all affected Native American tribes October 1st, 2024. One response was received from Cyndie Childress of the Nor-Rel-Muk Wintu Nation, deferring responsibility to the Wintu of Northern CA and the Redding Rancheria. Neither tribe requested further consultation.

1.2 REGULATORY GUIDANCE

An Initial Study (IS) is a document prepared by a lead agency to determine whether a project may have a significant effect on the environment. In accordance with California Code of Regulations Title 14 (Chapter 3, Section 15000, et seq.)-- also known as the CEQA Guidelines-- Section 15064 (a)(1) states that an environmental impact report (EIR) must be prepared if there is substantial evidence in light of the whole record that the Proposed Project under review may have a significant effect on the environment and should be further analyzed to determine mitigation measures or project alternatives that might avoid or reduce project impacts to less than significant levels. A negative declaration (ND) may be prepared instead if the lead agency finds that there is <u>no</u> *substantial* evidence in light of the whole record that the project may have a significant effect on the environment. A ND is a written statement describing the reasons why a proposed project, not otherwise exempt from CEQA, would not have a significant effect on the environment and, therefore, why it would not require the preparation of an EIR (CEQA Guidelines Section 15371). According to CEQA Guidelines Section 15070, a ND or mitigated ND (MND) shall be prepared for a project subject to CEQA when either:

a. The IS shows there is no substantial evidence, in light of the whole record before the agency, that the proposed project may have a significant effect on the environment, or

b. The IS identified potentially significant effects, but:

  1 Revisions in the project plans or proposals made by or agreed to by the applicant before the proposed MND and IS released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur is prepared, and

  2 There is no substantial evidence, in light of the whole record before the agency, that the proposed project as revised may have a significant effect on the environment.

1.3 SUMMARY OF FINDINGS

Section 4 of this document contains the analysis and discussion of potential environmental impacts resulting from construction and implementation of the Proposed Project. Based on the resources evaluated, it was determined that the Proposed Project would have no impact on the following resources:

- Recreation

Impacts of the Proposed Project were determined to be less than significant for the following resources:

- Aesthetics
- Agriculture and Forestry Resources
- Energy
- Land Use/Planning
- Mineral Resources
- Noise
- Population/Housing
- Public Services
- Transportation
- Utilities/Service Systems
- Wildfire

Impacts of the Proposed Project to the following resources would be less than significant with the incorporation of mitigation measures:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology/Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology/Water Quality
- Tribal Cultural Resources

1.4 DOCUMENT ORGANIZATION

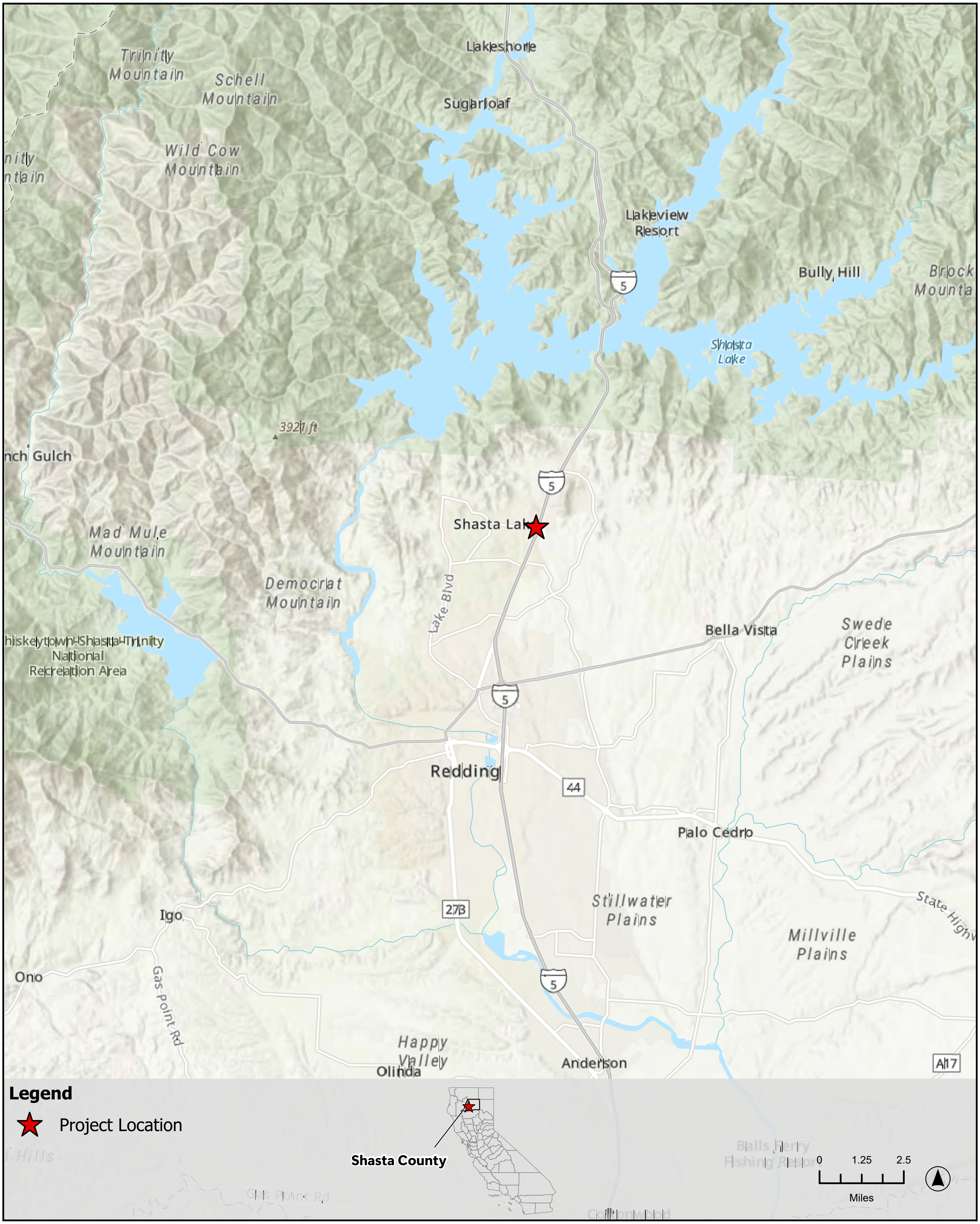
This Initial Study/Mitigated Negative Declaration (IS/MND) contains the following six sections plus appendices:

- **Section 1**, Introduction, provides a project summary/environmental checklist form, and an overview of the Proposed Project and the CEQA process.
- **Section 2**, Project Description, provides a detailed description of Proposed Project components.
- **Section 3**, Determination, identifies the environmental factors potentially affected based on the analyses contained in this IS and includes the Lead Agency's determination based upon those analyses.
- **Section 4**, Evaluation of Environmental Impacts, presents the CEQA checklist and environmental analyses for all impact areas and the mandatory findings of significance. A brief discussion of the reasons why the project impact is anticipated to be less than significant or why no impacts are expected is included.
- **Section 5,** References, contains the bibliography of resources cited within this document.
- **Section 6,** Preparers, includes the list of preparers.

Section 2 | Project Description

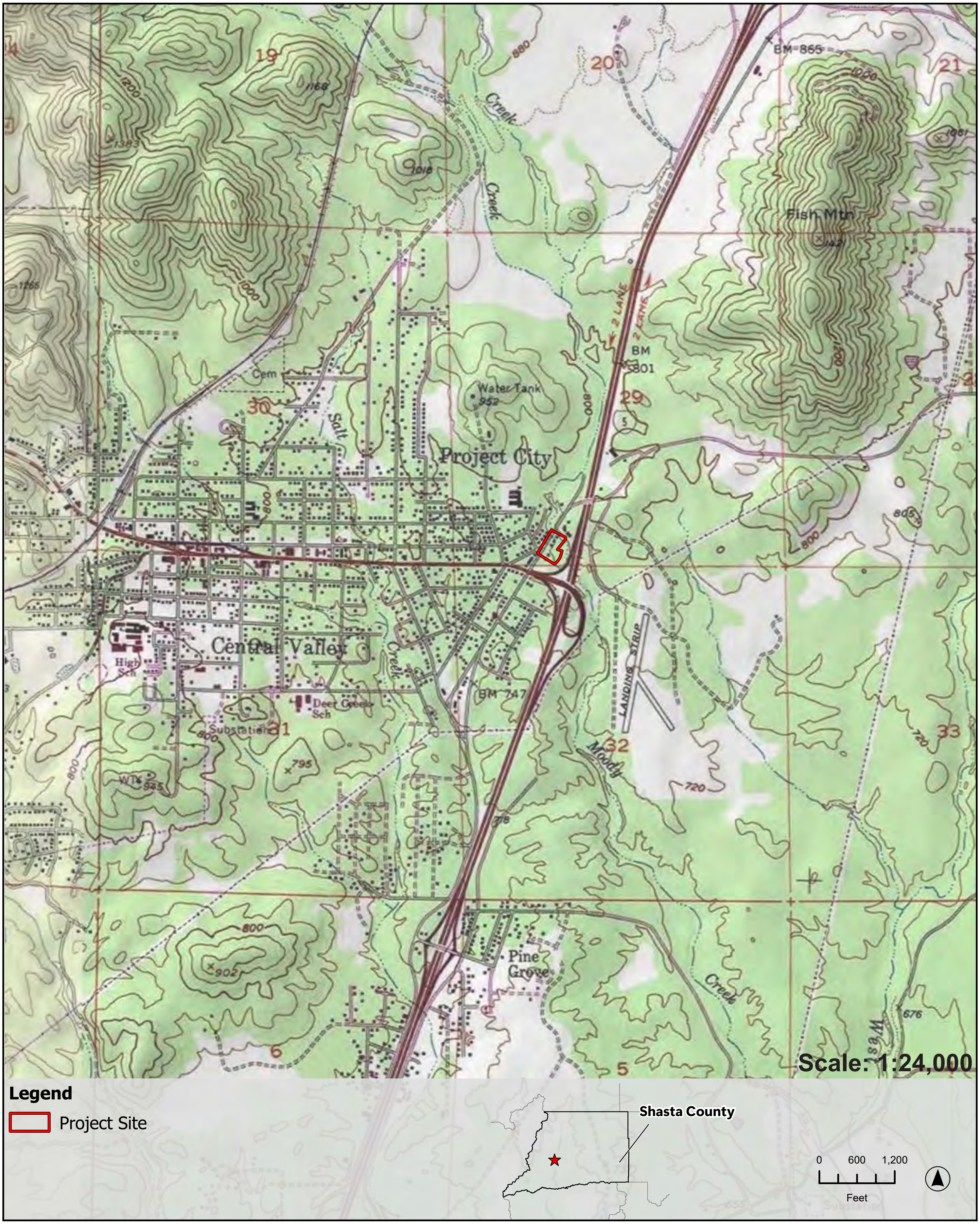
2.1 PROJECT LOCATION

The approximately 3.07 acre proposed commercial Project Site is located adjacent to Interstate 5 (I-5) in the City of Shasta Lake, California. The Project Site encompasses four Assessor's Parcel Numbers (APNs): 007-390-031, 007-390-036, 007-390-038, and 007-390-039. The Project Site occupies a portion of Section 29 of Township 33 North, Range 4 West, as depicted on the Mount Diablo Principal Meridian U.S. Geological Survey (USGS) 7.5' quadrangle map. **Figure 1** and **Figure 2** show the location of the Project Site. As shown on the aerial photograph in **Figure 3**, the Project Site is undeveloped except for an existing vacant gas station in the southwestern portion of the Project Site. Moody Creek flows along but outside of the northern and eastern Project Site boundaries before entering a culvert below I-5. Regional access to the Project Site is provided by I-5, which runs in a north-south direction adjacent to the site's eastern boundary. Local access to the Project Site is currently provided through Cascade Boulevard.



Esri, NASA, NGA, USGS, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 1
Regional Location



Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Copyright:© 2013 National Geographic Society, i-cubed

Figure 2
Site and Vicinity

Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 3
Aerial Overview

2.2 DESCRIPTION OF PROJECT

VAI (Applicant) proposes the construction of a 4,761 square-foot (SF) 7-Eleven convenience store, approximately 28 feet high with alcohol and tobacco sales, a 4-dispenser gas island, and a 3-lane diesel station island within the 3.07-acre Project Site. Construction would involve the demolition of an existing 1,800-SF vacant gas station on site. Approximately 40 percent of the Project Site is currently covered with trees, some of which would need to be removed during site preparation (**Figure 3**).

There would be two proposed fueling areas. The car fuel island will consist of four standard Multi-Product Dispenser (MPD) fueling stations and measure 120 by 30 feet, totaling approximately 3,600 SF. It will be located on the southern portion of the Project Site. The truck fuel island will consist of three diesel fueling stations and measure 53 by 45 feet, totaling 2,385 SF (**Figure 4**). The Proposed Project includes installation of two 20,000-gallon underground fuel tanks and one 27,000-gallon underground fuel tank.

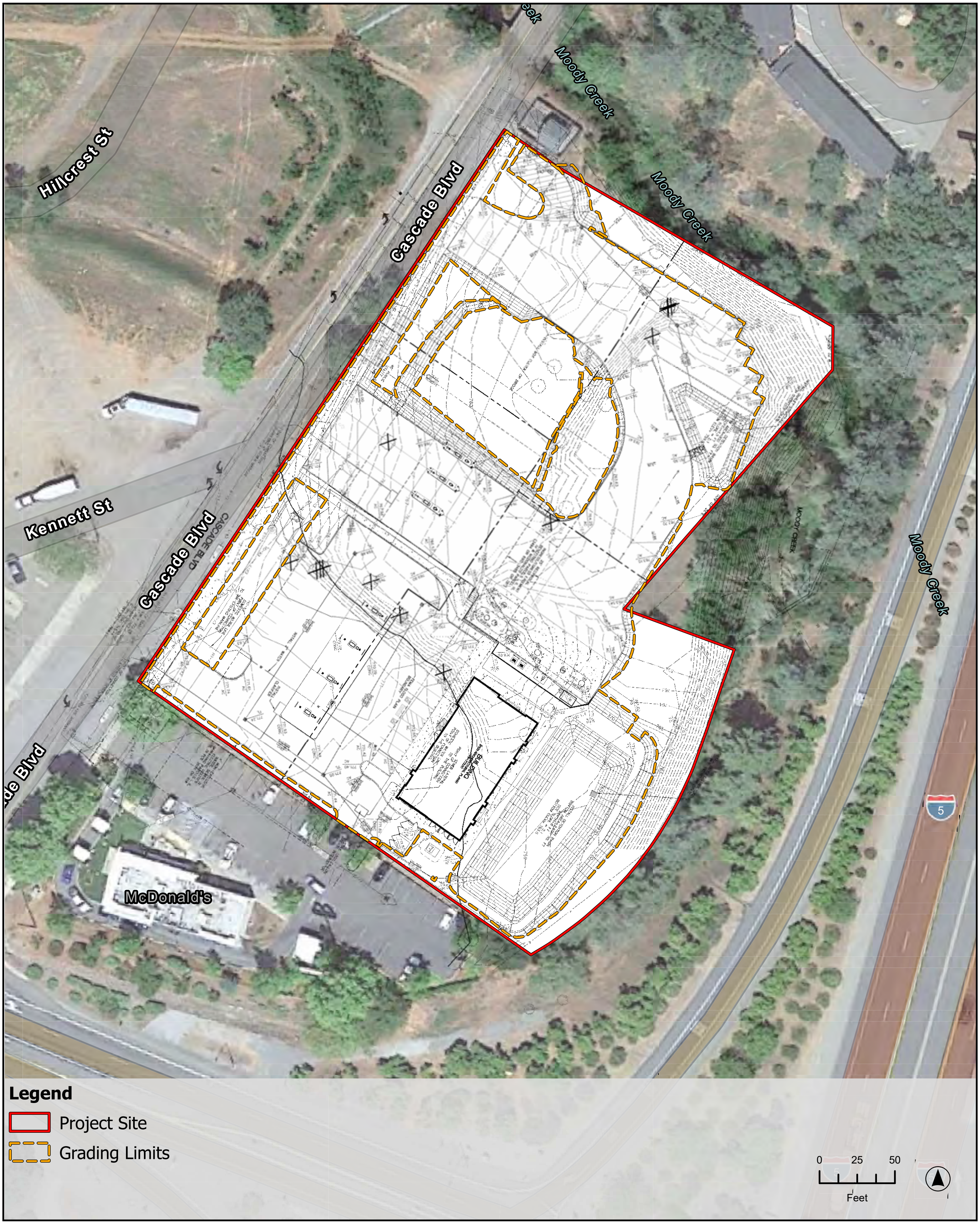
The convenience store is expected to operate seven days a week, 24 hours a day, and employ an estimated total of 10 employees. Typical shifts will have 2 to 3 employees. The Proposed Project is requesting approval for type 20 alcohol sales, including beer and wine.

2.2.1 Building Design, Lighting, and Signage

A mix of materials including glass windows, metal, and wood siding material, would be used to provide depth and visual interest to the project components. The primary façade of the convenience store will be west facing towards the car fuel island, with an additional entryway facing south towards the existing McDonalds parking lot (**Figure 4**). Both façades will include a double-entry doorway below an entry canopy, surrounded by window panels. There will be five security cameras on the convenience store: two on the west façade, two on the east façade, and one on the north façade. Garbage bins will be placed on the west side of the building with a recycling and trash enclosure along the southern edge of the Project Site, adjacent to the convenience store.

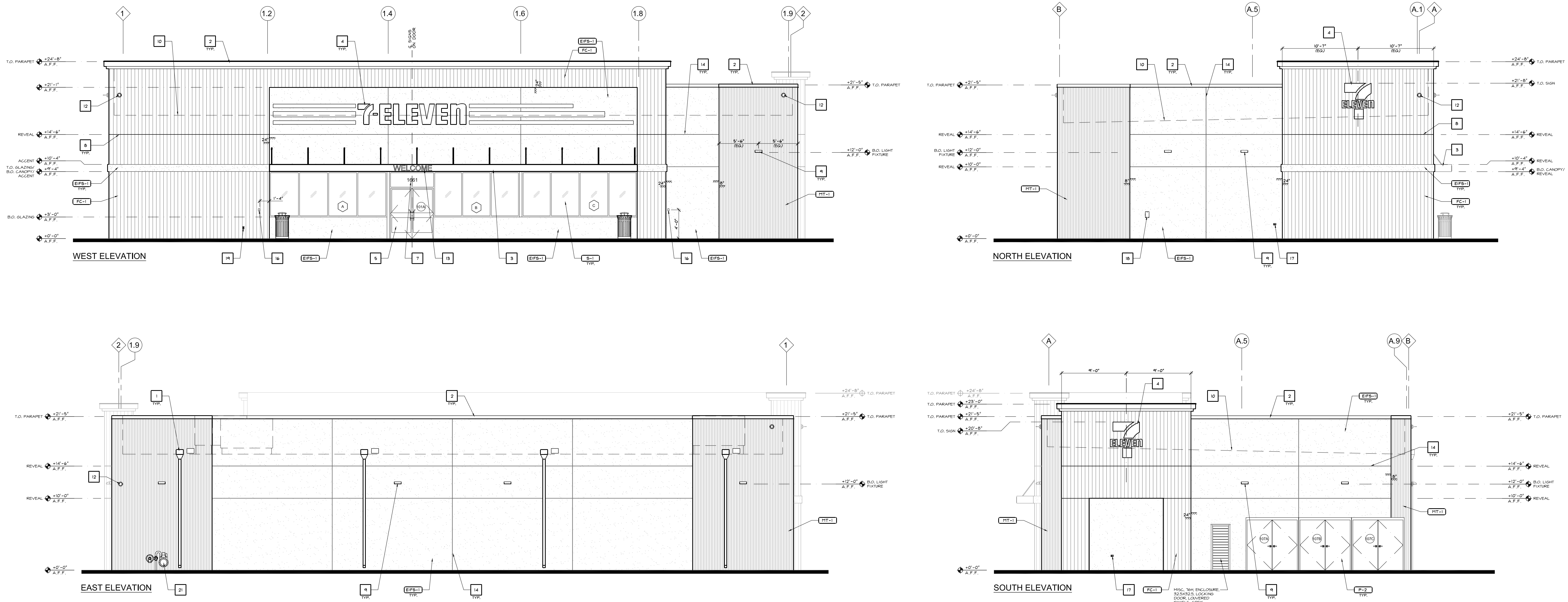
The convenience store will include three internally illuminated 7-Eleven signs on the western, northern, and southern building façades. Additionally, there will be a vinyl welcome sign and street address set on the west building façade. Security lighting would be located around the exterior of the convenience store and throughout the parking and fueling areas (**Figure 5**). On-site lighting and signage would be consistent with Municipal Code Sections 17.84.050 and 17.84.060, respectively.

Landscaping is proposed throughout the Project Site, including along the outer edges of the proposed pavement and in small islands within the parking areas as shown in **Appendix A**. In addition, there is an open area in the central portion of the Project Site that would remain unpaved for the retention of native trees and would be enhanced with shrubs as part of the landscaping plan (**Appendix A**). A mixture of drought-tolerant and low water use trees and shrubs is proposed. Native trees such as California live oak (*Quercus agrifolia*) are proposed along the northern boundary adjacent to the Moody Creek riparian area. Chinese pistache (*Pistacia chinensis*) trees are proposed along Cascade Boulevard and crepe myrtles (*Lagerstroemia indica*) are proposed within and adjacent to the parking area (**Appendix A**).



Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 4
Site Plan



 # KEYNOTES

1. PRE-FINISHED METAL SCUPPER AND DOWNSPOUT, REFER TO EXTERIOR FINISH SCHEDULE, "P-3".
2. 20 GA. PRE-FINISHED METAL COPING, REFER TO EXTERIOR FINISH SCHEDULE, "MT-2".
3. PRE-FAB METAL CANOPY, REFER TO EXTERIOR FINISH SCHEDULE, "MT-3".
4. INTERNALLY ILLUMINATED SIGNAGE BY SIGNAGE VENDOR (UNDER SEPARATE REVIEW & PERMIT). PROVIDE BLOCKING AS REQUIRED FOR THRU-BOLT CONNREFECTIONS, REFER TO ELECTRICAL FOR POWER REQUIREMENTS.
5. EXTERIOR ALUMINUM STOREFRONT DOOR AND FRAME, TYP., REFER TO SHEET A6.0.
6. ROOF ACCESS LADDER, SEE A2.8.
7. 6" WHITE VINYL STREET ADDRESS, REFER TO SHEET EF-1.0.
8. NICHIHA HORIZONTAL COMPRESSION JOINT.
9. WALL PACK, SEE ELECTRICAL.
10. ROOF LINE BEYOND, TYP.
11. CO2 TANK/CAGE.
12. SECURITY CAMERA, REFER TO ELECTRICAL LOW VOLTAGE PLAN FOR ADDITIONAL INFORMATION.
13. VINYL SIGNAGE, BY SIGNAGE VENDOR.
14. EIFS AESTHETIC REVEAL, LOCATE AS INDICATED ON ELEVATIONS.
15. 3M WINDOW FILM AT LEAN BAR, REFER TO EQUIPMENT SHEETS.
16. EMERGENCY SHUT-OFF FOR FUEL DISPENSERS MOUNTED AT 48" A.F.F.
17. HOSE BIB, REFER TO PLUMBING DRAWINGS.
18. ELECTRICAL OUTLET MOUNTED AT 40" A.F.F. FOR FUTURE AMAZON LOCKERS, REFER TO ELECTRICAL. DRAWINGS.
19. EXTERIOR ELECTRICAL OUTLET MOUNTED AT 24" A.F.F., REFER TO ELECTRICAL.
20. STAINLESS STEEL AIRCRAFT CABLE TRELLIS w/ 1-1/2" ANGLE FRAME, PAINTED TO MATCH BUILDING COLOR.
21. GAS METER.

XX-# EXTERIOR FINISH SCHEDULE

EIFS-1	EIFS - DRYVIT "TWILIGHT GRAY", OUTSULATION PLUS MD, SANDPEBBLE FINE TEXTURE; (7ELE 01 1022 ST).
FC-1	FIBER CEMENT PANELS (VINTAGEWOOD) - NICHIHA AWP 3030, "CEDAR".
MT-1	CORRUGATED METAL PANEL (EXPOSED FASTENER) - PAC-CLOUD "SILVER", TO BE INSTALLED VERTICALLY.
MT-2	PRE-FINISHED METAL COPING - DURO-LAST #6052 & #3110, "COAL BLACK".
MT-3	PRE-FINISHED ALUM. CANOPY - MAPES ARCHITECTURAL CANOPIES, LUMINSHADE, MATTE BLACK.
P-1	PAINT (EXTERIOR UTILITIES) - SHERWIN WILLIAMS #SW7005 "PURE WHITE".
P-2	PAINT (EXTERIOR DOORS/FRAMES) - SHERWIN WILLIAMS #SW6232 "MISTY".
P-3	PAINT (TRASH ENCLOSURE GATE/DOWNSPOUTS/LIGHT POLES/ROOF LADDER/PIPING/BOLLARDS - SHERWIN WILLIAMS #SW6258 "TRICORN BLACK"
S-1	ALUM. STOREFRONT FRAMING - KAWNEER 451T VG, #29 BLACK.

Vermeltfoort Architects, Inc., 1/19/2024

Figure 5
Exterior Renderings

2.2.2 Parking and Circulation

As proposed, the site improvements will include 20 parking stalls for passenger vehicles, two of which will be a van-accessible parking stalls. The dimensions of the passenger vehicle spaces are 9 feet by 20 feet, while the Americans with Disabilities Act (ADA) compliant parking spaces measure 11 feet by 20 feet. Additionally, bicycle parking will be provided on site with two short-term racks and one long-term locker.

Access to the Project Site will be provided by three proposed driveways located on Cascade Boulevard and one proposed driveway between the existing McDonald's parking lot to the south. On Cascade Boulevard, the southernmost unrestricted driveway will provide entry to the convenience store and the standard 4-dispenser gas island. The four fueling stations can service up to eight cars simultaneously, and there are 20 parking spaces, allowing for a maximum of 28 vehicles on site during peak times. The Proposed Project is estimated to bring approximately 740 motor vehicles to the site daily.

The other two driveways, designated exclusively for diesel trucks, will serve as entry and exit points, respectively, providing access to the 7-Eleven and the 3-lane diesel station island. Trucks have the option to utilize the fueling island or follow a roundabout route for entry and exit. The roundabout truck route cross around an area that will be left open for tree retention and stormwater drainage. A proposed box culvert or buttress/slab 'bridge' is proposed on the northern portion of the Project Site in the truck roundabout route. Additionally, there are four designated parking spaces for trucks in the northwestern corner of the site.

A break in pavement and a row of shrub plantings will delineate the boundary between vehicles accessing the standard fueling area and those entering the diesel fueling area.

Directional arrows and parking lot striping, adhering to City standards, will be provided throughout the Project Site to guide vehicle circulation, along with appropriate signage. A "Diesel Entry Only" sign will be placed at the entrance to the diesel fueling island from Cascade Boulevard, and two "Unauthorized Vehicles" signs will be placed at the southernmost driveway onto Cascade Boulevard and the driveway between the standard vehicle gas island and the existing McDonald's. A red curb with white "no parking fire lane" markings demarcates the northern boundary of the project site. Finally, an "Exit Only" sign will be placed at the exit from the diesel fueling station, directing traffic towards Cascade Boulevard.

2.2.3 Utilities

The City of Shasta Lake will supply electrical, water, wastewater, and storm drain services to the Proposed Project. Service connections will link to existing lines along Cascade Boulevard. Water service will be metered with projected water usage expected to reach 1,800 gallons per day (GPD) and an estimated sewer line flow of approximately 1,620 GPD. Electrical service will be metered at approximately 1,200 amps, with an anticipated electric demand of 126 kVA (volt-amps). Natural gas provision will be handled provided by Pacific Gas and Electric (PG&E), with a gas meter located on the eastern side of the convenience store. There are trash and recycling receptacles located on site, per City standards.

2.2.4 Grading and Drainage

Due to the gentle slopes of the Project Site, limited grading is required to accommodate the Proposed Project. The overall approach of the grading plan is to work within the natural grade fluctuations on the Project Site where feasible and avoid adding fill into the 100-year floodplain. The Grading Limits shown on **Figure 3** are approximately 2.24 acres. In the central portion of the Project Site, there is an area that will not be paved and will be avoided for the retention of trees protected by the City of Shasta Lake Tree Conservation Ordinance (Code of Ordinance Chapter 12.36). A portion of this area will be graded to facilitate stormwater drainage to the north towards Moody Creek. Stormwater will sheetflow through the open area and pass through either large box culverts or a buttress and slab ‘bridge’ that will allow sheetflow to pass below the proposed asphalt and into Moody Creek. There will be approximately 4,400 cubic yards (CY) of cut and 4,350 CY of fill; the excess 50 CY will be hauled off-site.

Two detention basins are proposed to capture, treat, and disperse stormwater runoff from the Project Site. The tributary drainage areas roughly follow the delineation of the diesel truck area in the north (Tributary Area No. 1) and the convenience store and vehicle fueling area to the south (Tributary Area No. 2). The northern drainage area (Tributary Area No. 1) will drain north and west into Moody Creek. A detention basin is proposed on the western boundary of the Project Site between the edge of the proposed pavement and Moody Creek to capture and treat receiving stormwater. Sheetflow from the vegetated open space area in the central portion of the site will flow directly north through a box culvert into Moody Creek. The southern portion of the Project Site (Tributary Area No. 2) will drain southeast towards a second basin proposed between the eastern edge of pavement behind the convenience store and Moody Creek. The storage capacity required for capturing the runoff from a 100-year storm event was calculated to be 3,199 cubic feet. The ponds will have an available storage capacity of approximately 44,191 cubic feet. Landscaping of small trees and shrubs along the edges of the detention ponds will provide visual interest and additional filtration benefits. The detention ponds are sized to accommodate 100-year storm flow volume, as well as the treatment standards for the 2-year, 24-hour storm event pursuant to the Post Construction Standard Plan (MS4) (**Appendix B**).

The Project Site is located partially within the 100-year floodplain of Moody Creek, with the hazard line intersecting the site (**Appendix C**). Moody Creek runs just north and east of the Project Site. The Proposed Project has been designed not to add fill into the 100-year floodplain. Due to the grading proposed for the project, there will be a net reduction in fill from the 100-year floodplain which will require the export of 50 cubic yards of material from the Project Site.

Section 3 | Determination

3.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

As indicated by the discussions of existing and baseline conditions, and impact analyses that follow in this Section, environmental factors not checked below would have no impacts or less than significant impacts resulting from the project. Environmental factors that are checked below would have potentially significant impacts resulting from the project. Mitigation measures are recommended for each of the potentially significant impacts that would reduce the impact to less than significant.

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

The analyses of environmental impacts in **Section 4**, **Impact Analysis**, result in an impact statement, which shall have the following meanings.

Potentially Significant Impact: This category is applicable if there is substantial evidence that an effect may be significant, and no feasible mitigation measures can be identified to reduce impacts to a less than significant level. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

Less than Significant with Mitigation Incorporated: This category applies where the incorporation of mitigation measures would reduce an effect from a "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measure(s), and briefly explain how they would reduce the effect to a less than significant level (mitigation measures from earlier analyses may be cross-referenced).

Less Than Significant Impact: This category is identified when the proposed project would result in impacts below the threshold of significance, and no mitigation measures are required.

No Impact: This category applies when a project would not create an impact in the specific environmental issue area. "No Impact" answers do not require a detailed explanation if they are adequately supported by the information sources cited by the lead agency, which show that the impact does not apply to the specific project (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

3.2 DETERMINATION

On the basis of this initial evaluation (to be completed by the Lead Agency):

☐ 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 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, nothing further is required.

Signature	**Date**

Section 4 | Evaluation of Environmental Impacts

4.1 AESTHETICS

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
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) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

4.1.1 Regulatory Setting

State

California Department of Transportation (CalTrans)

CalTrans administers the Scenic Highway Program which selects certain highway corridors in the State for their scenic qualities. For designated highways, CalTrans works to preserve and protect their scenic values through planning and design of highway projects. The Scenic Highway system includes a list of highways that have been designated and those that are eligible for designation as scenic highways.

Local

City of Shasta Lake General Plan

The City of Shasta Lake General Plan aims to protect and enhance aesthetics and scenic values as a part of the broader vision for land use and community development.

Policy OS-1.4: Preserve open space along creeks and hillsides to maintain biological, scenic, and recreational resources in future development.

Policy LU-3.10: Work to protect important natural resource areas and the scenic beauty of mountains and rolling hills around the city as the community develops. For new development located along existing creeks and streams, incorporate bank naturalizing approaches for channeled sections as a means of creek and stream restoration where appropriate.

Policy LU-1.12: Protect and improve the aesthetic appeal of neighborhoods in a fashion that does not conflict with the existing community character.

4.1.2 Environmental Setting

The Project Site is partially visible from the I-5 exit 685 for Shasta Dam Boulevard to the east, as well as from Cascade Boulevard which borders the Project Site to the west. The Project Site is also visible from commercial developments to the south and west including a nearby McDonalds fast food restaurant immediately adjacent to the southern Project Site boundary, and an Arco fueling station and AM/PM convenience store across Cascade Boulevard from the McDonalds. Views of the Project Site from the north are partially obscured as a result of tree lines surrounding Moody Creek.

Designated scenic highways, roadways, and resources do not occur within viewing range of the Project Site (Caltrans, 2019). I-5 to the east and Highway 151 (Hwy-151)/Shasta Dam Boulevard to the south are designated as “Eligible State Scenic Highway” locations (Caltrans, 2019). The nearest Officially Designated Scenic Highway is Hwy-151/Shasta Dam Boulevard over 3 miles northwest of the Project Site (Caltrans, 2019).

Views of the Project Site from the surrounding vicinity are typical of a commercial setting and consist of a primarily undeveloped property with an abandoned building, surrounded by commercial developments, roadways, and undeveloped land. Site Photograph 1 below provides a view of the Project Site as seen looking south from Cascade Boulevard.

The surrounding land to the north and west is largely undeveloped with limited light emitting sources, although the undeveloped parcel immediately west of the Project Site is approved for Commercial development. The eastern boundary of the Project Site is developed with the I-5 corridor where vehicle lights from traffic are a light source. The commercial developments to the south and southwest, especially the Arco fueling station and convenience store, emit light levels associated with a 24-hour fueling station and fast-food restaurant.

Site Photograph 1: View from Cascade Boulevard looking south with Project Site to left

The Project Site contains a former automobile service station that was recorded within a cultural resources report (**Appendix D**). It was determined that the service station did not meet the criteria for listing as a historical resource. Additionally, while not a historical resource, the "Largest Grindstone in the World" is located at the intersection of Cascade Boulevard and Dam Boulevard, approximately 80-feet from the southwest corner of the Project Site (World Record Academy, 2022). This attraction is currently located adjacent to the existing Arco fueling station.

4.1.3 Impact Assessment

a) Would the project have a substantial adverse effect on a scenic vista?

Less-than-Significant Impact. The Project Site is not located near a scenic vista, nor does the Project Site provide a vantage point to a scenic vista or is visible from any known scenic vista. The Proposed Project will not result in the obstruction of federal, state, or locally classified scenic areas, historic properties, community landmarks, or formally classified scenic resources, such as a scenic highway, national or state scenic area, or scenic vista. Therefore, there would be a less-than-significant impact.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less-than-Significant Impact. The Project Site is not located along a State-designated Scenic Highway (Caltrans, 2019). While there are "Eligible State Scenic Highways" in the vicinity, the Project Site does not occur directly adjacent to Hwy-151/Shasta Dam Boulevard, additionally the Moody Creek riparian corridor blocks views of the Project Site from I-5 and the I-5 offramp. While the Project Site does contain trees, it does not present notable scenic values such as prominent landforms or features. Trees along the Moody Creek riparian corridor would be retained, which would provide a visual barrier from the surrounding properties to the north and east. In addition, trees within the central portion of the Project Site would be retained, which would provide a visual break in the proposed pavement on the site. Development of the proposed gas station and convenience store would not obstruct views from adjacent properties. The nearest designated scenic highway is over 3 miles west of the Project Site along Shasta Dam Boulevard. Furthermore, there are no notable trees, rock outcroppings, or historical buildings on the Project Site that would be affected. Therefore, there would be a less-than-significant impact.

c) In nonurbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less-than-Significant Impact. The Project Site is located in an area zoned by the City of Shasta Lake for commercial developments. The development of the Proposed Project will not substantially degrade the existing public views of the Project Site and is consistent with the commercial character for which the Project Site is zoned. All views from publicly accessible vantage points, such as sidewalks and parking lots, will not be degraded. Therefore, the Proposed Project would have a less than significant impact on visual character.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less-than-Significant Impact. The Proposed Project would introduce new sources of light to the Project Site for safety and security purposes; however, lighting would be similar to the sources of light from other nearby commercial developments including an existing gas station located approximately 150-feet southwest from the Project Site. The Proposed Project will be consistent with Municipal Code 17.84.050 which requires that all lighting, exterior and interior, be designated and located to confine direct lighting to the premises and not constitute a hazard to vehicle traffic. Furthermore, the location of the convenience store has been set back from Cascade Boulevard to the extent possible, which will further minimize the potential for proposed lighting to extend beyond the Project Site boundaries. Therefore, the Proposed Project would have a less-than-significant impact.

4.2 AGRICULTURE AND FORESTRY

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
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?	☐	☐	☐	☒

4.2.1 Regulatory Setting

Federal

Farmland Protection Policy Act (FPPA)

The FPPA is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that federal programs are administered in a matter that is compatible with state and local units of government, and private programs and policies to protect farmland (7 U.S. Code [USC] Section 4201). The Natural Resources Conservation Service (NRCS), responsible for the implementation of the FPPA, categorizes farmland in a number of ways. These categories include: prime farmland, farmland of statewide importance, and unique farmland. Prime farmland is considered to have the best possible features to sustain long-term productivity. Farmland of statewide importance includes farmland similar to prime farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Unique farmland is characterized by inferior soils and generally needs irrigation depending on climate. The Land Evaluation and Site Assessment (LESA) is a numeric rating system used by the NRCS to evaluate the relative agricultural importance of farmlands.

State

California Farmland Mapping and Monitoring Program (FMMP)

The California FMMP, which monitors the conversion of the State's farmland to and from agricultural use, was established by the California Department of Conservation (DOC), under the Division of Land Resource Protection. The program maintains an inventory of state agricultural land and updates its "Important Farmland Series Maps" every two years. The FMMP is an informational service only and does not constitute state regulation of local land use decisions. The four categories of farmland, which include Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, are considered valuable and any conversion of land within these categories is typically considered to be an adverse impact.

Williamson Act

The Williamson Act is a State program that was implemented to preserve agricultural land. Under the provisions of the Williamson Act (California Land Conservation Act 1965, Section 51200), landowners contract (Williamson Act Contract) with the county to maintain agricultural or open space use of their lands in return for reduced property tax assessments. The contract is self-renewing; however, the landowner may notify the county at any time of intent to withdraw the land from its preserve status. Withdrawal from a Williamson Act contract involves a ten-year period of tax adjustment to full market value before protected agricultural/open space land can be converted to urban uses.

Public Resources Code (PRC)

The California PRC complies statewide laws related to the conservation, utilization, and supervision of natural resources, along with mines and mining, oil and gas, and forestry. Under the PRC, Section 12220 (g) defines Forest Land as land that can support 10-percent native tree cover for any species and that allows for management of one or more forest resources. The PRC Section 4526 defines Timberland as land available for and capable of growing a crop of tress of a commercial species used to produce lumber and other forest products. The PCR Section 51104 (g) defines Timberland Production Zone (TPZ) as an area which has been zoned for and is devoted to growing and harvesting timber, or for growing and harvesting timber and compatible uses.

4.2.2 Environmental Setting

The Project Site is located within an area that was residentially and commercially developed in the late 1930's (**Appendix D**). This area was previously known as Project City and was a boomtown along Shasta Lake Dam Boulevard. Based on historical aerial photographs, the Project Site contained an automobile service station beginning around 1966 and several buildings associated with the construction of Shasta Dam and transportation networks throughout the general area (**Appendix D**). There was no evidence that the site had been used historically for agriculture or forestry. The FMMP identified the Project Site as Urban and Built-up Land. Urban and Built-up Land is commonly residential, commercial, and industrial, and is occupied by structures with a building density of 1 unit to 1.5 acres or 6 structures to 10 acres, approximately. The NRCS prepared a custom soil resource report for the Project Site (NRCS, 2024).

4.2.3 Impact Assessment

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The Project Site is not currently used for agriculture, nor identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance per the FMMP (DOC, 2020). The FMMP identified the Project Site as Urban and Built-up Land. Additionally, while the NRCS lists a portion of the Project Site as Farmland of Statewide Importance, according to the City of Shasta Lake's Zoning Code, the Site is zoned for commercial uses (City of Shasta Lake, 2023b). As the land has already been developed and is committed to urban development, the FPPA would not apply and therefore, the Proposed Project would no impact on farmland.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. The Project Site is not zoned as agricultural land or subject to a Williamson Act contract. Additionally, there are no parcels under a Williamson Act contract in the vicinity of the project site. Construction and operation of the Proposed Project would not conflict with existing zoning for agriculture, forest, or timberland use. Therefore, the Proposed Project would have no impact.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. The Project Site and surrounding land uses are not zoned as forest land (as defined in PRC Section 12220 (g)), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)). Therefore, there would be no impact to the existing zoning or cause rezoning for these land types.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. The Project Site contains 1.22 acres of mixed conifer woodland with the dominant species being gray pine, blue oak, valley oak and interior live oak (**Appendix E**). According to CalFire, in Shasta County, commercial timber species include, but are not limited to, the following "Group A" species: sugar pine, coast redwood, ponderosa pine, Jeffrey pine, western white pine, lodgepole pine, white fir, California red fir, noble fir, Douglas fir, incense-cedar, and Port Orford cedar (CalFire, 2019). In addition, the following "Group B" species may be considered commercial species if they are found on lands where the Group A species are growing naturally, or have grown naturally in the past: knobcone pine, gray pine, California black oak, Oregon white oak, tanoak, mountain hemlock, Brewer spruce, Englemann spruce, Sierra redwood, golden chinkapin, foxtail pine, white alder, Monterey pine, Pacific madrone, California laurel, and western juniper. Therefore, the Project Site is not considered timberland.

The Project Site is not considered forest land as defined in PRC Section 12220 (g) since the Project Site is not managed for its tree resources. As stated in **Section 4.2.1** above, "forest land" must support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and allow for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. While the Project Site supports 10 percent tree cover under natural conditions, it was previously developed with a gas station and other buildings (see **Section 4.5**), is isolated from other natural areas due to the surrounding I-5, Hwy 151, and commercial developments, and does not include other public benefits. While the site is not considered forest land, the incorporation of Mitigation Measure BIO-3 for tree removal would result in tree replanting on the Project Site. There is no impact to timberland or forest resources.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The Proposed Project will not involve changes to the existing environment which could result in the conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. Therefore, no impact would occur.

4.3 AIR QUALITY

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b) 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?	☐	☒	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

4.3.1 Regulatory Setting

Federal

Clean Air Act (CAA)

The CAA (CAA; 42 USC Chapter 85) is the federal legislation for the protection of air quality. The CAA gives the U.S. Environmental Protection Agency (USEPA) authority to regulate air quality by promulgating standards and levels for air quality and enforcing those standards and levels on federal, state, and tribal land. The CAA requires the USEPA to regulate hazardous air pollutants, which are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects.

The Federal CAA of 1970, as amended, establishes air quality standards for several criteria air pollutants (CAPs): ozone (O_3), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). These pollutants are termed “criteria” pollutants because the USEPA has established specific concentration threshold criteria based upon specific medical evidence of health effects or visibility reduction, soiling, nuisance, and other forms of damage. These National Ambient Air Quality Standards (NAAQS) are divided into primary standards and secondary standards. Primary standards are designed to protect the public health and secondary standards are intended to protect the public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. NAAQS and California Ambient Air Quality Standards (CAAQS) are presented in **Table 4.3-1.**

Areas are designated attainment, nonattainment, or maintenance by the USEPA depending on whether the area is below or exceed the established NAAQS. Nonattainment areas must take steps towards attainment within a specific period of time. Once an area reaches attainment for particular criteria pollutant, then the area is re-designated attainment or maintenance. The CAA places most of the responsibility on states to achieve compliance with the NAAQS. States, municipal statistical areas, and counties that contain areas of nonattainment are required to develop a State Implementation Plan (SIP), which outlines policies and procedures designed to bring the state into compliance with the NAAQS.

Table 4.3-1: Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	National Standard
Ozone (O_3)	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137µg/m^3)
	1 Hour	0.09 ppm (180 µg/m^3)	--
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2)	24 Hour	0.04 ppm (105 µg/m^3)	0.14
	3 Hour	--	--
	1 Hour	0.25 ppm (665 µg/m^3)	75 ppb (196 µg/m^3)
	Annual Arithmetic Mean	--	0.030 ppm
Particulate Matter (PM10)	24 Hour	50 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3	
Particulate Matter (PM2.5)	24 Hour	--	35 µg/m^3
	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3
Sulfates	24 Hour	25 µg/m^3	--
Lead (Pb)	Calendar Quarter	--	1.5 µg/m^3
	30 Day Average	1.5 µg/m^3	--
	Rolling 3-Month Average	None	0.15 µg/m^3
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)	--
Visibility-Reducing particles	8 Hour	--	--

Source: CARB, 2016

State

California Air Resources Board (CARB)

The CARB, a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets the CAAQSs, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California as well as consumer products (e.g., hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's SIP, for which it works closely with the Air Quality Management Districts and the USEPA.

California CAA

The California CAA establishes maximum concentrations for the seven federal CAPs. These maximum concentrations are known as the CAAQS. CARB has jurisdiction over local air districts and has established its own standards and violation criteria for each CAP under the CAAQS. For areas within the state that have not attained air quality standards, the CARB works with local air districts to develop and implement attainment plans to obtain compliance with both federal and state air quality standards. **Table 4.3-1** provides the federal and state ambient air quality standards.

Local

Shasta County General Plan

Shasta County's General Plan includes the following objectives and policies that apply to the Proposed Project:

Objective AQ-1: To protect and improve the County's air quality in accordance with federal and state clean air laws in order to: (1) safeguard human health, and (2) minimize crop, plant, and property damage.

> **Policy AQ-1e:** The County shall require new air pollution point sources such as, but not limited to, industrial, manufacturing, and processing facilities to be located an adequate distance from residential areas and other sensitive receptors.

Objective AQ-2: To meet the requirements of the: (1) Federal CAA, and (2) the California CAA as soon as feasible.

> **Policy AQ-2f:** Shasta County shall require appropriate Standard Mitigation Measures and Best Available Mitigation Measures on all discretionary land use applications as recommended by the air quality management district in order to mitigate both direct and indirect emissions of nonattainment pollutants.
>
> **Policy AQ-2g:** Significance thresholds as proposed by the air quality management district for emissions shall be utilized when appropriate for: (1) reactive organic gases (ROG) and NOx, both of which are precursors of ozone, and (2) inhalable particulate matter (PM10) in determining mitigation of air quality impacts.

Policy AQ-2j: The County shall work toward measures to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible.

City of Shasta Lake General Plan

The City of Shasta Lake's General Plan includes the following goals and policies that apply to the Proposed Project:

Goal HS-9: Protect the Community from low air quality.

Policy-HS-9.1: Improve and maintain air quality to protect human health and preclude damage to plants and property.

Policy-HS-9.2: Cooperate with the Air Quality Management District and the Regional Transportation Agency to meet air quality standards and implement provisions of the California and Federal CAAs.

Policy-HS-9.4: Review land use decisions with consideration of the potential for improvement of air quality and mitigate air quality impacts to the greatest extent practicable. Consult with the Air Quality Management District regarding mitigation of air quality impacts.

Shasta County Air Quality Management District (SCAQMD)

All projects in Shasta County are subject to applicable SCAQMD rules and regulations in effect at the time of construction. Descriptions of specific rules applicable to the Proposed Project may include, but are not limited to:

- SCAQMD Rule 3:3, Gasoline Loading, Transfer and Dispensing. Limits volatile organic compound (VOC) emissions from the transfer of gasoline into stationary storage containers, delivery vessels, bulk plants and terminals, and into motor vehicle fuel tanks.
- SCAQMD Rule 3:15, Cutback and Emulsified Asphalt. Includes regulations to limit emissions of VOCs.
- SCAQMD Rule 3:16, Fugitive, Indirect, or Non-Traditional Sources. Controls the emission of fugitive dust during earth-moving, construction, demolition, bulk storage, and conditions resulting in wind erosion.
- SCAQMD Rule 3:31, Architectural Coatings. Establishes VOC content limits for architectural coatings.
- SCAQMD Rule 3:32, Adhesives and Sealants. Limits the emissions of VOCs from adhesives and sealants and associated primers, and from related surface preparation solvents, cleanup solvents, and strippers (CARB, 2024).

Shasta County is currently designated a non-attainment area for state ozone standards. The County is designated as an attainment or unclassified area for all other federal and state ambient air quality standards.

The SCAQMD, along with other air districts in the Northern Sacramento Valley Air Basin (NSVAB), jointly prepared an Air Quality Attainment Plan (AQAP) for the purpose of achieving and maintaining healthful air quality throughout the air basin. The Northern Sacramento Valley Planning Area (NSVPA) 2021 Triennial AQAP constitutes the region's SIP. The NSVPA 2021 AQAP assesses the progress made in implementing the previous triennial update completed in 2018 and proposes modifications to the strategies necessary to attain the CAAQS by the earliest practicable date. It also includes updated control measures for the three-year period of 2021 through 2024 (Sacramento Valley Air Quality Engineering and Enforcement Professionals [SVAQEEP], 2021).

4.3.2 Environmental Setting

The Project Site is located in Shasta County, California, and lies within the northern end of the Sacramento Valley Air Basin (SVAB). The SVAB includes all of Butte, Colusa, Yolo, Sutter, Yuba, Sacramento, and Shasta counties, and the northeast portion of Solano County. Shasta County is under the jurisdiction of the SCAQMD. The Air Pollution Control Districts and Air Quality Management Districts for the counties in the northern part of the SVAB collectively form the NSVPA. In the NSVPA, ozone pollution from vehicle and industrial emissions is the primary air quality concern during summer. In winter, a cold-weather inversion layer exacerbates airborne particle pollution from open-burning practices, fireplaces, and wood stoves. Additionally, NSVPA districts experience ozone transport from the Broader Sacramento Area (BSA). Emissions generated in the BSA can be carried northward by prevailing winds, influencing pollution levels in the NSVPA (Shasta County, 2023; SVAQEEP, 2021).

Attainment Status

As detailed in **Table 4.3-2**, Shasta County is currently designated a non-attainment area for state ozone standards. The County is designated as an attainment or unclassified area for all other federal and state ambient air quality standards.

Table 4.3-2: Air Quality Attainment Status for Shasta County

Pollutant	California Standard	Federal Standard
Ozone	Nonattainment	Attainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Oxides	Attainment	Attainment
Sulfur Oxides	Attainment	Attainment
PM10	Attainment	Attainment
PM2.5	Attainment	Attainment
Lead	Attainment	Attainment

Source: CARB, 2022a; USEPA, 2024

Sensitive Receptors

The nearest sensitive receptors to the Project Site include Grand Oaks Elementary School, located approximately 0.13 mile northwest of the Project Site, and several single-family homes located approximately 1 mile east of the Project Site on the opposite side of I-5. Other sensitive receptors in the vicinity of the Project Site include residential areas to the west and southwest.

4.3.3 Methodology

Construction and Operation Analysis

Emissions from construction trucks and heavy equipment were calculated using the USEPA-approved California Emissions Estimator Model, Version 2022.1 (CalEEMod) (California Air Pollution Control Officers

Association [CAPCOA], 2022). Annual operation emissions were also calculated using CalEEMod. CalEEMod emissions results are summarized below and included in **Appendix F**.

Thresholds of Significance

As detailed in **Table 4.3-3**, SCAQMD has adopted air quality thresholds for emissions of ROG, NOx and PM_{10} to determine the level of significance for projects subject to CEQA review.

Table 4.3-3: Thresholds of Significance for Criteria Pollutants of Concern

Level	ROG	NO_X	PM_{10}
Level A: Indirect Source	25 lbs/day	25 lbs/day	80 lbs/day
Level B: Indirect Source	137 lbs/day	137 lbs/day	137 lbs/day
Direct Sources	25 tons/yr	25 tons/yr	25 tons/yr

Source: Shasta County, 2004

All discretionary projects in Shasta County are required to implement Standard Mitigation Measures (SMMs) to minimize emissions and contribute to a reduction in cumulative impacts. SCAQMD recommends that projects that generate unmitigated emissions above Level A implement Best Available Mitigation Measures (BAMMs) in addition to the SMMs. If application of the SMMs and BAMMs results in reducing project emissions below Level B thresholds, the project can proceed with an environmental determination of a Mitigated Negative Declaration assuming other project impacts do not require more extensive environmental review. If a project is not able to reduce emissions below the Level B threshold, emissions offsets are required. If after applying the emissions offsets, a project's emissions still exceed the Level B threshold, an EIR is required (Shasta County, 2004). In other words, emissions below the Level B threshold, with the implementation of SMMs and BAMMs, are considered less than significant.

4.3.4 Impact Assessment

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less-than-Significant Impact with Mitigation. In areas within the state where air quality standards are not met, CARB collaborates with local air districts to develop and implement plans to achieve compliance with federal and state standards. The NSVAB 2021 AQAP serves as the air quality plan for the region (SVAQEEP, 2021). A project that meets the SCAQMD's numerical thresholds for CAPs will not conflict with plans, policies, or regulations aimed at reducing air quality emissions. As discussed under Impact b, with the implementation of Mitigation Measure AQ-1, the Proposed Project adheres to SCAQMD's thresholds for CAPs. Therefore, the Proposed Project would not conflict with or obstruct the implementation of the NSVAB 2021 AQAP, resulting in a less-than-significant impact with mitigation.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less-than-Significant Impact with Mitigation. Shasta County is currently designated a non-attainment area for state ozone standards. The County is designated as an attainment area for all other federal and state ambient air quality standards. The NSVAB 2021 AQAP serves as the air quality plan for the region. As such, inconsistency with the 2021 AQAP would be considered a cumulatively adverse air quality impact.

Project-specific emissions that exceed the thresholds of significant for CAPs would be expected to result in a cumulatively considerable net increase of any criteria pollutant for which Shasta County is in non-attainment under applicable federal or state ambient air quality standards. As discussed above in **Section 4.3.3**, the SCAQMD has established thresholds of significance for determining environmental significance. Results of the CalEEMod analysis, included in **Table 4.3-4** and **Table 4.3-5**, show that emissions generated from construction and operation of the Proposed Project will be less than the applicable SCAQMD emission thresholds for criteria pollutants. Therefore, a less-than-significant impact would occur.

Construction

Construction of the Proposed Project would generate CAPs from construction equipment (primarily diesel operated), construction worker automobiles (primarily gasoline operated), and physical land disturbance. Construction emissions are summarized in **Table 4.3-4**, and CalEEMod output files are provided in **Appendix F**.

Table 4.3-4: Project Construction Emissions (lbs/day)

Summary Report	CO	NO_X	ROG	SO_2	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	31.2	31.7	6.77	0.05	9.17	5.23
SMAQMD Level A Threshold	N/A	25	25	N/A	80	N/A
SMAQMD Level B Threshold	N/A	137	137	N/A	137	N/A
Above Level B Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: **Appendix F**

As shown in **Table 4.3-4**, the Proposed Project would exceed the Level A numerical threshold for NO_X but would not exceed the Level B threshold. As stated in **Section 4.3.2**, all discretionary projects in Shasta County are required to implement SMMs to minimize emissions and contribute to a reduction in cumulative impacts. SCAQMD recommends that projects that generate unmitigated emissions above Level A implement BAMMs in addition to the SMMs.

In addition to SMMs included as standard Conditions of Approval for all projects, Mitigation Measure AQ-1 provides additional SMMs to minimize emissions during construction. The City would consult with the SCAQMD as necessary to identify project-specific BAMMs or other measures that could be implemented to achieve compliance with established thresholds (City of Shasta Lake, 2023c). In addition, the Proposed Project is subject to CARB regulations for in-use off-road vehicles and portable equipment rated over 50 horsepower. Because the Proposed Project would not exceed the Level B threshold during construction, and Mitigation Measure AQ-1 and CARB regulations would be implemented, impacts during construction would be less than significant and would ensure that the project is in conformance with the SIP.

Operation

Operation of the Proposed Project would result in emissions from area, energy, and mobile sources. The primary operational emissions associated with new development projects include CO, PM_{10}, and ozone precursors (ROG and NO_X) that are emitted as vehicle exhaust. All operational emissions are summarized in **Table 4.3-5** and output files are provided in **Appendix F**.

Table 4.3-5: Project Operational Emissions (lbs/day)

Summary Report	CO	NO_X	ROG	SO_2	PM_{10}	$PM_{2.5}$
Area	2.63	0.02	0.56	<0.005	<0.005	<0.005
Energy	0.03	0.04	<0.005	<0.005	<0.005	<0.005
Mobile	52.7	8.38	8.92	0.10	7.61	2.02
Total Emissions	**55.36**	**8.44**	**9.48**	**0.10**	**7.61**	**2.02**
SMAQMD Level A Thresholds	N/A	25	25	N/A	80	N/A
Above Thresholds?	**No**	**No**	**No**	**No**	**No**	**No**

Source: **Appendix F**

As shown in **Table 4.3-5**, the Proposed Project's operational emissions would not exceed SCAQMD thresholds and would, therefore, not result in violating air quality emission standards. The impact during operations would be less than significant and would ensure conformance with the SIP.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less-than-Significant Impact with Mitigation. The nearest sensitive receptors to the Project Site include Grand Oaks Elementary School, located approximately 0.13 mile northwest, and several single-family homes located approximately 1 mile east on the opposite side of I-5. To minimize potential effects from fugitive dust emissions during construction, the Proposed Project will be required to comply with SCAQMD's District Rule 3:16 for fugitive, indirect, or nontraditional sources. Furthermore, Mitigation Measure AQ-1 includes SMMs to control fugitive dust emissions, and the City would consult with the SCAQMD as needed to identify BAMMs and additional measures to ensure that sensitive receptors are not adversely impacted by pollutant concentrations (City of Shasta Lake, 2023c). Since the Proposed Project would not exceed the Level B threshold during construction, and operational emissions would be less than significant as described in Impact b, the implementation of Mitigation Measure AQ-1, along with compliance with applicable SCAQMD rules, would ensure a less than significant impact would occur.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less-than-Significant Impact. During construction, the exhaust from construction equipment, as well as the application of asphalt, structural coatings, and other construction materials, may emit odors. However, these odors would be temporary and typical of construction-related activities.

Common facilities known for producing odors include wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, and petroleum refineries. The Proposed Project does not involve land uses generally considered significant odor emitters. Accordingly, operational activities are not anticipated to generate substantial odors that would affect a substantial number of people, and therefore, the Proposed Project would result in a less-than-significant impact.

4.3.5 Mitigation Measures

AQ-1: The following measures shall be implemented to minimize short-term air quality impacts during construction. These measures shall be included in all grading and improvement plans and/or permits.

- During all construction activities, all architectural coatings applied shall contain a low content of VOCs (i.e., 100 grams/liter) as required by the California Green Building Code or Shasta County AQMD, whichever is more restrictive.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturers' specifications.
- All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of ambient air quality standards. The timing and frequency of watering shall be determined by the City Engineer or Building Official.
- All unpaved areas (including unpaved roads) with vehicle traffic shall be watered periodically or have dust palliatives applied for stabilization of dust emissions.
- All on-site vehicles shall be limited to a speed of 15 miles per hour on unpaved roads.
- All land clearing, grading, earth-moving, or excavation activities on the project site shall be suspended if/when the City Engineer or Building Official determines that winds are causing excessive dust generation.
- All material transported off-site shall be either sufficiently watered or securely covered to prevent a public nuisance.
- Paved streets adjacent to construction areas shall be swept or washed at the end of the day to remove excessive accumulations of silt and/or mud resulting from activities on the work site.
- Prior to final occupancy, the applicant shall re-establish ground cover on the construction site through seeding and watering.
- Off-road construction equipment and other diesel-fueled construction vehicles shall not be left idling for periods longer than 5 minutes when not in use.
- Trees and other vegetation cleared to accommodate the proposed project shall not be burned onsite and shall be disposed of in another lawful manner (e.g., chipping or mulching), as approved by the City.

4.4 BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies,	☐	☒	☐	☐

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?				
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
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?	☐	☐	☐	☒

4.4.1 Regulatory Setting

Federal

The United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) implement the Federal Endangered Species Act of 1973 (FESA) (16 USC Section 531 et seq.). Threatened and endangered species on the federal list (50 CFR Section 17.11, 17.12) are protected from "take" (direct or indirect harm), unless a FESA Section 10 Permit is granted or a FESA Section 7 Biological Opinion with incidental take provisions is rendered. Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present in the project area and determine whether the proposed project will have a potentially significant impact upon such species. Under FESA, habitat loss is considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section 1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant and would require mitigation. Species that are candidates for listing are not protected under FESA; however, USFWS advises that a candidate species could be elevated to listed status at any time, and therefore, applicants should regard these species with special consideration.

Many bird species, especially those that are breeding, migratory, or of limited distribution, are protected under federal and state regulations. Under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC Section

703-711), migratory bird species and their nests and eggs that are on the federal list (50 CFR Section 10.13) are protected from injury or death, and project-related disturbances must be reduced or eliminated during the nesting cycle. The Bald and Golden Eagle Protection Act (16 USC Section 668) specifically protects bald and golden eagles from harm or trade in parts of these species.

State

The California Endangered Species Act of 1970 (CESA) (California Fish and Game [CFG] Code Section 2050 et seq., and California Code of Regulations (CCR) Title 14, Section 670.2, 670.51) prohibits "take" (defined as hunt, pursue, catch, capture, or kill) of species listed under CESA. A CESA permit must be obtained if a project will result in take of listed species, either during construction or over the life of the project. Section 2081 establishes an incidental take permit program for state-listed species. Under CESA, CDFW has the responsibility for maintaining a list of threatened and endangered species designated under state law (CFG Code 2070). CDFW also maintains lists of species of special concern, which serve as "watch lists." Pursuant to requirements of CESA, an agency reviewing proposed projects within its jurisdiction must determine whether any state-listed species may be present in the Project Site and determine whether the proposed project will have a potentially significant impact upon such species. Project-related impacts to species on the CESA list would be considered significant and would require mitigation.

California Fish and Game Code (Section 3503, 3503.5, and 3800) prohibits the possession, incidental take, or needless destruction of any bird nests or eggs. Fish and Game Code Section 3511 designates certain bird species "fully protected", making it unlawful to take, possess, or destroy these species except under issuance of a specific permit. California Fish and Game Code Sections 4700, 5050, and 5515 designates certain mammal, amphibian, and reptile species "fully protected", making it unlawful to take, possess, or destroy these species except under issuance of a specific permit. The California Native Plant Protection Act of 1977 (CFG Code Section 1900 et seq.) requires CDFW to establish criteria for determining if a species or variety of native plant is endangered or rare. Section 19131 of the code requires that landowners notify CDFW at least 10 days prior to initiating activities that will destroy a listed plant to allow the salvage of plant material.

CEQA (PRC Section 15380) defines "rare" in a broader sense than the definitions of threatened, endangered, or fully protected. Under the CEQA definition, CDFW can request additional consideration of species not otherwise protected. CEQA requires that the impacts of a project upon environmental resources must be analyzed and assessed using criteria determined by the lead agency. Sensitive species that would qualify for listing but are not currently listed may be afforded protection under CEQA. The CEQA Guidelines (Section 15065) require that a substantial reduction in numbers of a rare or endangered species be considered a significant effect. CEQA Guidelines (Section 15380) provide for assessment of unlisted species as rare or endangered under CEQA if the species can be shown to meet the criteria for listing. Plant species on the California Native Plant Society (CNPS) Lists 1A, 1B, or 2 are typically considered rare under CEQA. California "Species of Special Concern" is a category conferred by CDFW on those species that are indicators of regional habitat changes or are considered potential future protected species. While they do not have statutory protection, Species of Special Concern are typically considered rare under CEQA and thereby warrant specific protection measures.

Wetlands and Waters

The U.S. Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern waters of the U.S. (including wetlands), under Section 404 of the Clean Water Act (CWA).

Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the U.S. The USACE requires that a permit be obtained if a project proposes the placement of structures within, over, or under navigable waters and/or discharging dredged or fill material into waters below the ordinary high water mark (OHWM). The USACE has established a series of nationwide permits (NWP) that authorize certain activities in waters of the U.S. A Section 401 Water Quality Certification Permit is required in order to comply with CWA Sections 301, 302, 303, 306, and 307 and has been delegated by USEPA to the RWQCB. Anyone that proposes to conduct a project that may result in a discharge to U.S. surface waters and/or "waters of the state" including wetlands (all types) year round and seasonal streams, lakes, and all other surface waters would require a federal permit. At a minimum, any beneficial uses lost must be replaced by a mitigation project of at least equal function, value, and area. Waste Discharge Requirements Permits also required pursuant to California Water Code Section 13260 for any persons discharging or proposing to discharge waste, including dredge/fill, that could affect the quality of the waters of the state. The RWQCB addresses both the federal and State requirements in the issuance of a discharge permit.

Local

City of Shasta Lake General Plan (2040)

The City of Shasta Lake General Plan (General Plan) seeks to Conserve and manage significant fish, wildlife, and vegetation resources, enhance the area's natural beauty, and provide residents with a healthy environment.

> **Policy Con-3.3**: Use riparian and wetland buffers (non-development setbacks) to preserve existing riparian vegetation through the environmental review process and require minimum setbacks. Specific setbacks and widths should be determined on a case-by-case basis with input from resource agencies, including the CDFW.
>
> **Policy Con-4.4**: Protect resources such as wetlands, hillsides, and native trees and plants by encouraging sustainable development practices, mitigating impacts to such areas through environmentally-sensitive project siting and design, and promoting prudent fuel and vegetation management by property owners to reduce the risk of significant wildfire events.
>
> **Policy Con-4.5**: Incorporate erosion mitigation practices into construction and development projects.
>
> **Policy Con-4.6**: Define transition zones between development areas and open space or conservation areas to provide for further conservation of habitat and wildlife areas.

4.4.2 Environmental Setting

Methodology

A Biological Resources Assessment (BRA) was prepared by Acorn Environmental for the Proposed Project in July 2024 and is included as **Appendix E**. Biologist Kristen Ahrens, M.S., conducted a biological field assessment on May 20, 2024, and collected data on wildlife and plant species present, as well as habitat types and jurisdictional waters. Additional surveys were conducted by Biologist Kimberlina Gomez, M.S. and Senior Biologist and Certified Arborist Dr. Geo Graening on August 12, 2024 in support of the Arborist Assessment for the Proposed Project (**Appendix G**). The following sources and materials were reviewed:

- Previous biological resource studies pertaining to the Project Site or vicinity
- USGS 7.5 degree-minute topographic quadrangles of the Project Site and vicinity
- Aerial photography of the Project Site
- The California Natural Diversity Database (CNDDB), electronically updated monthly by subscription
- A query of the CNPS's database *Inventory of Rare and Endangered Plants of California* (online edition)
- USFWS National Wetlands Inventory (NWI) mapper
- USFWS species list (Information for Planning and Consultation (IPaC) Trust Resources Report)

The location of species' occurrences and habitat boundaries within the Project Site were recorded on color aerial maps, and boundaries for jurisdictional water resources were identified and measured in the field. These were later digitized to create maps using geographical information system software (ArcGIS 10, ESRI, Inc.).

Vegetation communities were classified by Vegetation Series using the CNPS Vegetation Classification Software.

General vegetation was identified as ruderal/developed, riparian and channel, annual grassland, and mixed oak-conifer woodland. Wetlands and other aquatic habitats were classified using the USFWS NWI Classification System. The NWI reported a riverine feature, Moody Creek, within the Project Site, however, no features were identified within the Grading Limits. The CNDDB reported no special-status habitats, and no critical habitat for federally-listed species were determined to occur within the Project Site. Additionally, no special-status habitats were detected within the Grading Limits. However, within the Project Site, a special-status habitat was detected along the Moody Creek corridor: riparian habitat. No designated wildlife corridors or fishery resources exist within or near the Project Site.

Habitat Types

The general habitat types occurring on the Project Site include ruderal/developed, riparian and channel, annual grassland, and mixed oak-conifer woodland as seen in **Figure 6**. **Table 4.4-1** below shows the acreage of each habitat type across the Project Site and within the Grading Limits.

Table 4.4-1: Habitat Types within the Project Site and Grading Limits

Habitat Type	Acreage within Project Site	Acreage within Grading Limits
Ruderal/Disturbed	0.70	0.54
Annual Grassland	1.11	0.88
Mixed Oak-Conifer Woodland	1.22	0.82
Riparian	0.02	0.00
Channel (Moody Creek)	0.02	0.00
Total	**3.07**	**2.24**

Source: **Appendix E**

Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 6
Habitat Types

Ruderal/Disturbed

These areas consist of disturbed or converted natural habitat that is now either in a ruderal state, graded, or urbanized with roads, structures, and/or utility infrastructure. Vegetation within this habitat type consists primarily of nonnative weedy or invasive species or ornamental plants lacking a consistent community structure. Conspicuous species present were: tree of heaven (*Ailanthus altissima*), mimosa (*Albizia julibrissin*), mulberry (*Morus alba*), olive (*Olea europaea*), Chinese pistache (*Pistacia chinensis*), and purple leaf plum (*Prunus cerasifera*). There is approximately 0.70 acre of ruderal/disturbed habitat within the Project Site and 0.54 acre within the Grading Limits.

Annual Grassland

This habitat consists of non-native pasture grasses and weedy forbs within areas of canopy openings. Plant species common in this community are European annual grasses (*Avena*, *Bromus*, *Hordeum*, *Lolium*) and herbs such as clovers (*Trifolium*), vetch (*Vicia villosa*), wild radish (*Raphanus raphanistrum*), and mustards (*Hirschfeldia*, *Brassica*). There are approximately 1.11 acres of annual grassland within the Project Site and 0.88 acre of this within the Grading Limits. A portion of this habitat located in the center of the Project Site will remain undeveloped and lies outside the Grading Limits in order to preserve individual trees.

Mixed Oak-Conifer Woodland

The dominant tree species are gray pine (*Pinus sabiniana*), blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), and interior live oak (*Quercus wislizeni*). The understory contains western redbud (*Cercis occidentalis*) and California bay laurel (*Umbellularia californica*). The herbaceous layer is similar to that of the annual grassland community. There are approximately 1.22 acres of mixed oak-conifer woodland within the Project Site and 0.82 acre within the Grading Limits. A portion of this habitat located in the center of the Project Site will remain undeveloped and lies outside the Grading Limits in order to preserve individual trees.

Riparian and Channel

The riparian habitat occurs in a narrow band along Moody Creek in the northeastern corner of the Project Site. The overstory consists of sycamore (*Platanus occidentalis*), white alder (*Alnus rhombifolia*), and western cottonwood (*Populus fremontii*). The understory is dense and consists of a mixture of Himalayan blackberry (*Rubus armeniacus*), California wild grape (*Vitis californica*), poison oak (*Toxicodendron diversilobum*), and willows (*Salix* spp.). There is 0.02 acre of riparian habitat in the northeastern portion of the Project Site, none of which falls within the Grading Limits.

The Moody Creek channel is scoured in some places while other places contain willows, fiddledock (*Rumex pulcher*), and giant reed (*Arundo donax*). The stream channel falls entirely outside of the Grading Limits.

Listed Species and Other Special-Status Species

The CNDDB reported no special status species as occurring within the Project Site, although three species were reported in the vicinity:

- northwestern pond turtle (*Emys marmorata*), 1 mile to south of the Project Site in Salt Creek;
- foothill yellow-legged frog (*Rana boylii*), 3 miles to north of the Project Site, in a non-specific location, from a 1945 record that CDFW presumes to be extirpated; and

- the Oregon shoulderband snail (*Helminthoglypta hertleini*), a scientific collection with the vague locale info of "Mountain Gate."

Using the USFWS' IPaC Trust Resource Report System, a species list was generated for the Project Site. However, the list is generated using a regional and/or watershed approach and does not indicate whether the Project Site provides suitable habitat. The following species were identified by the IPaC:

- California Condor (*Gymnogyps californianus*)- Experimental Population, Non-Essential;
- Northern Spotted Owl (*Strix occidentalis caurina*) – Threatened;
- Northwestern Pond Turtle (*Actinemys marmorata*) – Proposed Threatened;
- Western Spadefoot (*Spea hammondii*) – Proposed Threatened;
- Monarch Butterfly (*Danaus plexippus*) – Proposed Threatened;
- Suckley's Cuckoo Bumblebee (*Bombus suckleyi*) – Proposed Endangered;
- Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*) – Threatened;
- Shasta Crayfish (*Pacifastacus fortis*) – Endangered;
- Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) – Threatened.

The ruderal/developed and non-native grasslands within the Project Site have a very low potential for harboring special-status species due to the dominance of aggressive non-native grasses and forbs and periodic weed maintenance. However, the grassland within the Project Site may contain suitable foraging habitat for Crotch's bumblebee should flowering plants with pollen be present. The mixed oak-conifer woodland has a low to moderate potential to harbor special-status species, and may provide suitable roosting habitat for special status bat species. Should trees contain cavities, crevices, or exfoliating bark, suitable roosting habitat may occur within woodland habitat, and roosting could also occur within the abandoned gas station structure. Moody Creek and its narrow riparian corridor are an attractant for wildlife, but the flow is intermittent, with the channel dry most of the summer. Moody Creek has some potential to support special-status amphibians and reptiles, such as foothill yellow-legged frog, western spadefoot, and northwestern pond turtle. Moody Creek is not able to sustain a fishery resource.

Attachment C of **Appendix E** summarizes the special-status species reported by the CNDDB and CNPS in the Vicinity of the Project Site. The western spadefoot is the only species identified by the IPaC reported in the vicinity of the Project Site with low potential to occur as marginal habitat is present. During the field survey, no special-status species were observed within the Project Site.

Critical Habitat and Habitat Conservation Plans

No critical habitat for any federally-listed species occurs within the Project Site. One special-status habitat, riparian habitat along Moody Creek, occurs within the Project Site. The Project Site is not located within any adopted Habitat Conservation Plan or Natural Community Conservation Plan.

4.4.3 Impact Assessment

a) Would the project 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?

Less-than-Significant Impact with Mitigation. Construction activities would include the removal of trees and grassland, earthmoving and grading activities within the Grading Limits, the construction of buildings, trenching for underground utilities, and other site development activities such as paving across the Project Site. These activities could result in direct impacts to special-status species, if present, or indirect impacts due to noise disturbance. The ruderal/developed and non-native grassland habitats have low potential for containing special-status species due to the dominance of non-native grasses and forbs, and periodic weed management. Crotch's bumblebee may occur in the area, but the disturbance level is high due to human activity such as mowing, which minimizes the potential for foraging to occur on the Project Site. The mixed oak-conifer woodland has a low to moderate potential to contain special-status species, which could include suitable roosting habitat for special status bats if trees contain cavities, crevices, or exfoliating bark. While Moody Creek has a narrow riparian corridor, the channel is dry most of the summer with intermediate flow and is not suitable to sustain a fishery resource and is less useful to special-status amphibians. The CNDDB and USFWS databases reported special-status bird species in the vicinity of the Project Site. The Project Site, adjacent trees, and utility poles contain suitable nesting habitat for various bird species. Therefore, if construction occurs during the nesting season (typically February 1 through August 15), there is potential direct impact to nesting birds as a result of tree removal and indirectly as a result of noise, vibration, and other construction related disturbances.

While no special-status species were observed within the Project Site, there is potential for them to migrate onto the Project Site between the time the survey was conducted and the start of construction. This would be a potentially significant impact.

The following protected or special-status species, while not observed on the Project Site, do have low to moderate potential to occur:

- Crotch's bumblebee;
- special-status bats;
- foothill yellow-legged frog;
- western spadefoot,
- northwestern pond turtle, and
- nesting and migratory birds.

Mitigation Measures BIO-1 and BIO-2 (see **Section 4.4.3**) have been identified to reduce impacts to sensitive wildlife species, such as special-status bats, northwestern pond turtle, foothill yellow-legged frog, and nesting birds. With the implementation of Mitigation Measures BIO-1 and BIO-2, the Proposed Project would have a less-than-significant impact.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less-than-Significant Impact with Mitigation. The riparian habitat along Moody Creek, located at the northern edge of the Project Site, is considered a sensitive natural community. In addition to the designated riparian habitat, there are oak and conifer trees along and immediately adjacent to Moody Creek that provide shade and water quality filtration benefits to the riparian ecosystem. The designated riparian habitat has been avoided through project design. In order to protect the trees located along Moody Creek, CDFW has recommended the establishment of a minimum 10-foot buffer from the dripline of the trees. The establishment and maintenance of this protective buffer is required by Mitigation Measure BIO-3, which includes construction exclusionary fencing to prevent construction workers or equipment from inadvertently accessing the sensitive habitat during construction activities. During operation, a large curb will block vehicular access into the riparian habitat and creek. The Proposed Project includes setbacks from the Moody Creek channel and sensitive riparian habitat, and with implementation of Mitigation Measure BIO-3 will include an additional 10-foot setback as recommended by CDFW. Therefore, impacts to riparian habitat or other sensitive natural communities are less than significant with mitigation.

c) Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less-than-Significant Impact. There is one water resource located within the Project Site, Moody Creek (intermittent channel), in the northeast corner. There are no wetlands or other water resources located within the Project Site. Potential indirect impacts to water resources could occur during construction. As a result of disturbed soils or accidental release of hazardous materials, surface water quality has the potential to be degraded from storm water transport. However, the Proposed Project would disturb greater than one acre of soil, and therefore the landowner and designated contractor must enroll in the State Water Quality Control Board's Construction General Permit prior to the initiation of construction. This entails preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) with erosion control best management practices (BMPs) to avoid or minimize the potential for erosion, sedimentation or the accidental release of hazardous materials. Adherence to regulatory requirements and the implementation of these measures would reduce the potential indirect impacts to water resources to less than significant.

d) Would the project 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?

No Impact. No fishery resources occur within or near the Project Site. Moody Creek is not a perennial stream, and therefore does not function as a fish nursery. No designated wildlife corridors exist within or near the Project Site. The narrow riparian corridor of Moody Creek functions somewhat as a wildlife corridor but is disrupted by road crossing and culverts, and the Proposed Project has been designed to avoid the riparian habitat with a minimum 10-foot buffer. The Project Site is not located within any adopted Habitat Conservation Plan or Natural Community Conservation Plan. Therefore, the Proposed

Project would not interfere with the movement of native, resident, or migratory fish or wildlife corridors of the use of native wildlife nursery sites and result in no impact.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less-than-Significant Impact with Mitigation. The City of Shasta Lake General Plan has policies in place for the protection of natural resources and habitats. The Shasta Lake Municipal Code Chapter 12.36 (Tree Conservation) includes policies regarding the removal and replacement of protected trees, defined as trees with a diameter at breast height of 10 inches or more. An arborist report was prepared which identified 22 protected trees across the Project Site (**Appendix G**).

Because more than five protected trees are proposed for removal, a Pre-Development Review for Major Projects is required. Mitigation Measure BIO-4 addresses the necessary mitigation measures that must be enacted prior to the removal of protected trees. Compliance with the City of Shasta's tree preservation ordinance, and implementation of the avoidance measures and compensatory mitigation, would ensure compliance with local policies protecting biological resources and reduce impacts to protected trees to a less than significant level.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The Project Site is not within any adopted Habitat Conservation Plan or Natural Community Conservation Plan. Thus, the Proposed Project does not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or another approved governmental habitat conservation plan and would result in no impact.

4.4.4 Mitigation Measures

BIO-1: A qualified biologist shall conduct a pre-construction survey across the Project Site for special-status animals, including but not limited to, Crotch's bumblebee, special-status bats, foothill yellow-legged frog, western spadefoot, and northwestern pond turtle. Once confirmed that no special status species are present, the installation of animal exclusion fencing shall be installed by the construction crew to separate the construction area from the riparian habitat and channels outside the Grading Limits. The fencing shall be constructed out of plastic weed cloth or construction fabric, shall be keyed into the ground, and shall be supported by stakes and wire mesh, as needed. Fencing shall also be opaque, three feet in height, and installed with a smooth material such that it cannot be climbed. If any special-status species are detected, construction shall be delayed, and the appropriate wildlife agency (CDFW and/or USFWS) shall be consulted, and project impacts and mitigation reassessed.

BIO-2: If construction activities would occur during the nesting season (typically February 1 through August 15), a pre-construction survey for the presence of special-status bird species or any nesting bird species should be conducted by a qualified biologist within 500 feet of proposed construction areas. If active nests are identified in these areas, CDFW and/or USFWS should be consulted to develop measures to avoid "take" of active nests prior to the initiation of any construction activities. Avoidance measures may include establishment of a buffer zone using construction fencing or the postponement of vegetation removal until after the nesting season, or until after a qualified biologist has determined the young have fledged and are independent of the nest site.

BIO-3: Prior to construction, a qualified biologist shall identify and delineate a setback of 10 feet from the edge of the riparian tree canopy along Moody Creek. The setback shall be demarcated with orange construction fence, silt fence, or other high-visibility means. No construction staging, materials storage, earth moving, vegetation removal, or other disturbance shall occur within the identified setback.

BIO-4: For trees that cannot be preserved, a Tree Removal and Replacement Plan shall be prepared to identify trees for removal and preservation. Replacement trees or other mitigation shall be provided to compensate for the loss of a protected tree. Replacement trees shall be provided in accordance with the standards provided in Section 12.36.070. Alternatively, in-lieu fee contributions shall be paid as provided for in Section 12.36.075.

4.5 CULTURAL RESOURCES

Would the project:	**Potentially Significant Impact**	**Less than Significant Impact with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

4.5.1 Regulatory Setting

Federal

National Historic Preservation Act (NHPA)

Section 106 of the NHPA, as amended, and its implementing regulations found at 36 CFR Part 800, require federal agencies to identify cultural resources that may be affected by actions involving federal lands, funds, or permitting actions. The significance of the resources must be evaluated using established criteria outlined at 36 CFR 60.4, as described below. If a resource is determined to be a historic property, Section 106 of the NHPA requires that effects of the undertaking on the resource be determined. A historic property is:

> …any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Place, including artifacts, records, and material remains related to such a property… (NHPA Section 301[5]).

If it is determined that a historic property will be adversely affects by implementation of a proposed action, prudent and feasible measures to avoid or reduce impacts must be taken. The State Historic Preservation Officer (SHPO) must provide an opportunity to review and comment of these measures prior to implementation of the proposed action.

National Register of Historic Places (NRHP)

The eligibility of a resource for listing in the NRHP is determined by evaluating the resource using criteria defined in 36 CFR 60.4 as follows.

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and:

> A. That are associated with events that have made a significant contribution to the broad patterns of our history;
> B. That are associated with the lives of persons significant in our past;
> C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> D. That has yielded, or may be likely to yield, information important to prehistory or history.

Archaeological Resources Protection Act (ARPA)

The ARPA of 1979 (Public Law 96-95; 16 USC 470aa-mm), provides for the protection of archaeological resources and sites which are on public and Indian lands, and fosters increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data which were obtained before October 31, 1979. ARPA also provides for penalties for noncompliance and illegal trafficking.

Native American Graves Protection and Repatriation Act (NAGPRA)

NAGPRA is a federal law passed in 1990. NAGPRA provides a process for museums and federal agencies to return certain Native American cultural items—human remains, funerary objects, sacred objects, or objects of cultural patrimony—to lineal descendants, and culturally affiliated Indian tribes and Native Hawaiian organizations. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American burials and cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking.

State

California Environmental Quality Act (CEQA)

CEQA requires that, for projects financed by or requiring the discretionary approval of public agencies in California, the effects that a project has on historical and unique archaeological resources be considered (PRC Section 21083.2). Historical resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance (PRC Section 50201). The CEQA Guidelines (Section 15064.5) define three cases in which a property may qualify as a historical resource for the purpose of CEQA review:

- The resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR).
- The resource is included in a local register of historic resources, as defined in section 5020.1(k) of the PRC, or is identified as significant in a historical resources survey that meets the requirements of section 5024.1(g) of the PRC (unless the preponderance of evidence demonstrates that the resource is not historically or culturally significant).
- The lead agency determines that the resource may be a historical resource as defined in PRC §§ 5020.1(j), 5024.1, or significant as supported by substantial evidence in light of the whole record. Section 5024.1 defines eligibility requirements and states that a resource may be eligible for inclusion in the CRHR if it:
    1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    2. Is associated with the lives of persons important in our past;
    3. Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
    4. 4. Has yielded, or may be likely to yield, information important in prehistory or history.

Resources must retain integrity to be eligible for listing on the CRHR. Resources that are listed in or eligible for listing in the NRHP are considered eligible for listing in the CRHR, and thus are significant historical resources for the purposes of CEQA (PRC Section 5024.1(d)(1)).

PRC Section 21083.2 governs the treatment of a unique archaeological resource, which is defined as "an archaeological artifact, object, or site about which it can be clearly demonstrated" that it meets any of the following criteria:

- It contains information needed to answer important scientific research questions, and there is a demonstrable public interest in that information.
- It has a special and particular quality such as being the oldest of its type or the best example of its type
- It is directly associated with a scientifically recognized important prehistoric or historic event or person.

Local

City of Shasta Lake General Plan (2040)

The City of Shasta Lake's General Plan Goal OS-4 is to promote and protect the City's historical, cultural, and archaeological resources. The following policies are specific to archaeological and historic resources within the City:

Policy-OS-4.1: Preserve historical or archaeological resources from development impacts and include appropriate mitigation to protect such resources.

Policy-OS-4.2: Require consultation with affected communities, such as the Wintu, to determine the culturally appropriate treatment of historical or archaeological resources. This includes proper storage and handling, and potentially placing collections in a curated facility. These procedures should be based on existing federal curation standards.

Policy-OS-4.3: Coordinate with public agencies and the Wintu to maintain existing inventory of cultural resources in the City, including information about whether collections or sites are open to the public or have been placed in a curated site for public visitation.

Additionally, the City's General Plan Goal LU-1 is to manage land uses in a flexible and sustainable manner that promotes a village feel, with places to live, work, shop, be entertained and culturally enriched, engage in healthy lifestyles, and engage with one's community. The following policy is specific to historic buildings within the City:

Policy-LU-1.11: Incorporate existing buildings into community design efforts. Encourage the preservation, protection and restoration of historic buildings and properties where practical and feasible.

4.5.2 Environmental Setting

A Cultural Resources Report was prepared for the Proposed Project in June of 2024 and is included as **Appendix D**.

Prehistoric Setting

Paleoindian Period (13,400 – 8,850 Before Present (B.P.))

Two known sites provide archaeological remnants of Paleoindian occupation in the Upper Sacramento Valley. The earliest evidence for occupation in this region is found from fluted projective points at Samwell Cave in Shasta County and Thomes Creek in Tehama County.

Borax Lake Pattern (8,850 – 5,700 B.P.)

The Borax Lake Pattern appears after rapid environmental change during the early Holocene. Distinctive artifact assemblages appear by approximately 8,850 B.P. including wide-stemmed projectile points, hand stones, milling slabs and flake tools. In Shasta County, archaeological sites within the Squaw Creek drainage contained deposits of this time reflecting a mobile settlement pattern guided by seasonal resource availability. These sites are distinguished by Grasshopper Flat/Lost Iron Wells obsidian as a tool stone, a distinct style of wide-stemmed projectile points, and unintentionally shaped ground stone tools. The Shasta region is the northern-most expression of the Borax Lake Pattern.

Squaw Creek Pattern (5,700 – 3,200 B.P.P)

The appearance of new artifact forms such as Squaw Creek Contracting-stemmed points, Pollard Diamond-shaped points, and McKee Uniface points, mark the archaeological sites of the Squaw Creek Pattern. The Archaeological site in the Sacramento River Canyon is of particular note as it contained more than 1,500 mall incised slate artifacts. Later in the period, sites revealed increasing residential stability along the Sacramento and San Joaquin Valley River corridors, with fishing growing in importance. During this time, inter-regional trade was also well established with long distance trade brining beads and ornaments from coastal regions, and obsidian from the Cascades and norther Great Basin into the Upper Sacramento Valley.

Whiskeytown Pattern (3,200 – 1,600 B.P.)

The Whiskeytown assemblages mark a significant shift in the lifeways of native people in the Upper Sacramento River Watershed. Sites during this period have recently been interpreted as semi-sedentary village life, with settlement and subsistence patterns in the southern Klamath Mountains practicing generalized foraging. Intensification and semi-permanent riverine settlements developed later in this period. Regional cultural traditions emerged throughout other portions of northern California, throughout the Sacramento Valley, Sierra Foothills, and North Coast Ranges. Specific burial postures, artifact styles, and diversifying material cultural marked regional expression of culture. Inter-regional trade continued, and large villages and satellite settlements were established.

Shasta Pattern (post-1,600 B.P.)

The arrival of the Wintu is correlated with the onset of the Shasta Pattern in the region, as well as the appearance of distinct artifact assemblages reflecting new technology and settlement practices. The establishment of village sites along the Sacramento River and focus on the acquisition and storage of acorns and salmon occurred. The introduction of the bow and arrow, bone-tipped harpoons, and hopper mortar also occurred during this time. A growth in population coincided with an increase in violence, as indicated by burial excavations.

Ethnographic Setting

The Project Site is in an area historically within the Wintu territory in the northern portions of the Sacramento Valley and Klamath Mountains. The Wintu made their home in the watersheds of upper Trinity, upper Sacramento, and the Pit-McCloud rivers. The Wintu, and related Wintuan languages, Nomlaki and Patwin, are classified as a part of the Penutian language. Permanent villages were established by the Wintu along major stream and were the core of social, political, and economic.

The Wintu's social structure was based on village leadership and family units, with chieftainship typically passed down through hereditary lines. Basket weaving showcased the Wintu's material culture and artistic expression and was a significant cultural skill. Fishing and gathering were the primary basis for the Wintu's subsistence, with hunting playing a secondary role. The principal foods of the Wintu would have included salmon, deer, acorns, and buckeye with fishing having been particularly significant. Salmon, steelhead, and suckers were vital to the Wintu diet. Manzanita berries were processed into coarse flour for soup, while black acorns were used in various forms such as in soups and breads. Hunting would have included large game such deer and brown bear, with small games also taken.

Individual barter was the primary form of trade, with larger trade activities occurring during inter-village gatherings. Influences from northwestern and central California shaped the Wintu culture. The antiquity of the Wintuan occupation of northern California has been of debate as tabular stones recovered from Middle Period Assemblages in northern California have been cited as evidence for an earlier Wintu expansion. Tabular stones reflecting a nascent practice, a distinctive characteristic of ethnohistoric Patwin material culture, linguistic relatives of the Wintu's to the south. These may indicate a Wintuan presence in the region during the Early Middle Period and a 1,000-year earlier occupation of Penutian-speaking people in the region. The arrival of European settlers brought disease epidemics and a significant population decline to the Wintu.

Historic Setting

Spanish expeditions ventured into the upper Sacramento Valley between 1808 to 1821 and had little effect on the local people compared to coastal lands in central and southern California. By the late 1820's, trappers were working in the Sacramento Valley. Malaria was likely introduced into the Sacramento and

San Joaquin Valleys in 1833 by these fur traders, spreading into the foothills and resulting in an epidemic that killed tens of thousands of native people by 1846. Native populations of California were decimated by the introduction of exotic diseased which enabled the euromerican settlement of the region. With the exception of trappers and wagon trains, modern day Shasta County was largely free of non-Natives, until the discovery of gold to the south in 1848.

In June 1846, the Bear Flag Revolt marked the beginning of the American Period of California during the Mexican-American War, solidifying American settler control over the region. In 1848, the signing of the Treaty of Guadalupe officially ceded California to the United States. The discovery of gold in 1848 led thousands of miners emigrating to California by 1849. This further fueled the decline of indigenous people throughout the state as its economy and demographic transformed.

The displacement and depletion of natural resources, specifically fish and game, led to high tensions between the Euro-American miners and indigenous Native American tribes. In 1855, a band of Modoc Indians raided and burned several buildings at the settlement at Lower Soda Springs, north of the Project Site. In response, a party of settlers with the aid of Shasta Indians fought a pitched battler at Castle Crag, known as the Battle of the Crags. These tensions continued for years and culminated in the Modoc War beginning in the summer of 1872.

Pierson Reading, one of the region's earliest non-native settlers, discovered gold near the mouth of Clear Creek Canyon with the help of Native ranch hands. This led to many miner's entering the region and establishing the Clear Creek diggings settlement. Another settlement, Churntown, also known as Churn Creek Diggings, was located approximately three miles west of the Project Site. In the early 20th century, the extraction and smelting of copper brought another influx of settlers into the region.

In response to the Gold Rush and population boom, between 1850 and 1950, the lumber industry in Shasta County experienced significant growth into a major industrial sector. Shasta and Redding emerged as logging centers where timber was processed for local use. Advancements in technology increased efficiency and productivity, with major logging companies establishing operations in the region. The lumber industry in Shasta County reached its peak in the early to mid-20th century with towns such as Anderson and Redding emerging as the center of logging activity. This industry supported ancillary businesses such as equipment manufacturing, transportation services, and retail.

Early transportation corridors followed routes established by Native Americans generations before. These trails evolved into wagon roads which connected the northern Sacramento Valley to Oregon. In the late 19th century, economic growth drove the need for railroads in Shasta County. The California and Oregon Railroad was the first major railroad in Shasta County. The town of Redding was established as a temporary end of the Marysville-Portland line in 1872. In 1887, Redding was officially incorporated and became the first municipality in the County. In 1888, the line was extended into Redding, which turned it into a transportation hub. To support the lumber industry around Mount Shasta, the McCloud River Railroad was established in 1897 to transport timer. The railroad also provided passenger and freight services, connecting larger towns with isolated areas. While the Great Depression brough economic challenges, the demand for transportation of World War II war materials and troops relatives the railroads.

The introduction of the affordable automobile in 1908 (Ford Model T) led to a desire for a continuous network of roads. Before the establishment of the Interstate Highway System, travel in Shasta County relied on U.S. Route 99 (US 99), known as the Pacific Highway. The original US 99 followed modern day

Cascade Boulevard, following the Project Site to the west and crossing Moody Creek to the north. In 1956, the Interstate Highway System was created with I-5 designed as the primary north-south interstate on the West Coast. In the 1960's, the construction of I-5 in Shasta County began with the goal to improve travel efficiency, safety, and support economic growth.

Additionally, in 1937, the Central Valley Project was authorized to provide flood protection, navigation, storage/delivery, and power generation. This included an extensive network of dams, reservoirs, canals, pumping stations, and power generation facilities with the water stored and conveyed supporting irrigation for farms, providing water for municipal and industrial use, and to generate hydroelectric power. As a part of this project, the construction of Shasta Dam began in the late 1930's and was completed by the mid-1940's, creating Shasta Lake as a reservoir.

The building of the Dam brought individuals seeking work opportunities, and by the summer of 1938, three distinct residential and commercial developments emerged along Shasta Dam Boulevard. The junction of Highway 99 and Shasta Dam Boulevard, known as Project City, was developed and includes the current Project Site. Further west, commercial establishments lines Shasta Dam Boulevard with residential blocks extending behind them, known as Central Valley. And at the intersection of Shasta Dam Boulevard and Kennett-Buckeye Road (now Lake Boulevard), Summit City developed into entertainment venues and businesses. The communities of Project City, Central Valley, and Summit City merged in 1993 as the City of Shasta Lake was incorporated.

4.5.3 Methodology

Records Search

A record search was completed in June 2024 at the Northeast Information Center (NEIC) of the California Historical Resources Information System (CHRIS) at the California State University, Chico. The cultural resource site map and records, survey reports, and other relevant material, which included the California Office of Historic Preservation's (OHP) Build Environment Resources Directory, the Archaeological Determinations of Eligibility and the California Inventory of Historic Resources (1976) were reviewed. Additional sources of information and maps were consulted as a part of the literature review and are listed in Section 3.1.1 of **Appendix D**

Field Survey

A pedestrian survey for the Project Site was conducted on May 31, 2024 by a qualified archaeologist. The surveys used transects to focused on identify artifacts, ecofacts, features, and landforms associated with pre-contact Native American occupation and historic uses. The remnants of houses were noted as two isolates but did not warrant redecoration as sites as they were considered inconsequential demolished houses and *a priori* insignificant. A former 1966 automobile service station at 1621 Cascade Boulevard was recorded. The service station was documented, and a California Department of Parks and Recreation 523 form (DPR 523) was prepared.

Native American Consultation

The California Native American Heritage Commission (NAHC) was contacted on May 11, 2024, to request a search of the Sacred Lands File (SLF) and a list of local Native American contacts that may have information regarding the Project area. Ms. Cameron Vela of the NAHC responded via email on July 18, 2024, and stated that the SLF search for the Project area was negative. Seven tribes were identified as potentially having knowledge of cultural resources in the Project area. Outreach to the Nor-Rel-Muk Wintu Nation, Redding Rancheria, Round Valley Reservation/Covelo Indian Community, Shasta Nation, Winnemem Wintu Tribe, and Wintu Tribe of Northern California was initiated by contacting representatives for each of the seven tribes. The communication included an introduction to the Proposed Project, maps of the Project Site, and disclosed the results of the records search and pedestrian survey. After two weeks with no response to the initial communication, a hard copy letter was sent. As of the date of completion of this report, one response has been received. The Nor-Wel-Muk Wintu Nation responded deferring to the Wintu of Northern California and Redding Rancheria. No additional responses have been received to date.

Results

The literature review, historic maps, and aerial photographs identified previous, since demolished, buildings and the standing former automobile service station. The service station meets the minimum age criteria for consideration as a historical resource. It was determined that the service station did not meet the criteria for listing in the CRHR and is not a historical resource. The environmental position indicates a low potential for pre-contact archaeological sites within the Project Site. Given the geological setting, the depth of any precontact archaeological resources is expected to be shallow and the Project Site is determined to have low potential for harboring buried archaeological resources. The records search also indicated that no previous surveys for cultural resources had been conducted and no cultural resources had previously been identified within the Project Site. No pre-contact or historic archaeological resources were identified during the survey. The two isolates were considered *a priori* insignificant.

4.5.4 Impact Assessment

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?

Less-than-Significant Impact. No historical resources were identified on the Project Site through background research. Two isolates and a former automobile service station were identified during the pedestrian survey. The two isolates were considered insignificant as they as inconsequential features associated with houses demolished in the past. The automobile service station was documented on DPR 523 form but was not determined to meet criteria for listing in the CRHR and is not considered a historical resource. Therefore, the Proposed Project would result in a less than significant impact.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Less-than-Significant Impact with Mitigation. No archaeological resources have been identified on the Project Site through background research, and no archaeological resources were found during pedestrian surveys of the Project Site. Should buried artifacts or features be inadvertently discovered during construction, work should stop in the vicinity until an archaeologist can make an assessment. Therefore, if such resources were discovered, implementation of Mitigation Measure CUL-1 would ensure that work is halted until resources eligible for NHRP and CRHR can be identified and important information is recovered. This would reduce the impact of the Proposed Project to less-than-significant impact with mitigation incorporated.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Less-than-Significant Impact with Mitigation. The Proposed Project would not disturb any known human remains, including those interred outside of formal cemeteries, because there are no known human remains located on or in the vicinity of the Project Site. If human remains are inadvertently uncovered, Mitigation Measure CUL-2 would ensure that work is halted, the Shasta County coroner is contacted, and compliance with Section 15064.5 I (1) of the CEQA Guidelines and Health and Safety Code Section 7050.5 is required. Project-related ground disturbance in the vicinity of the find should not resume until the process detailed in CEQA Guidelines Section 15064.5 (c) has been completed. Therefore, the Proposed Project will have a less-than-significant impact with mitigation incorporated.

4.5.5 Mitigation Measures

CUL-1: If archaeological resources are inadvertently discovered, all finds would be subject to CEQA guidelines 15064.5 and PRC 21083.2. Procedures for inadvertent discovery include the following:

- All work within 50-feet of the find shall be halted until the significance of the find can be evaluated in accordance with NRHP and CRHR criteria by an archaeologist or a paleontologist, if the find is of paleontological nature.
- If any find is determined to be significant, then representatives of the City of Shasta Lake shall meet with the archaeologist, or paleontologist, to determine the appropriate course of action. If necessary, a Treatment Plan shall be prepared by an archaeologist, or paleontologist, which outlines the recovery of the resource, analysis and reporting of the find. The Treatment Plan shall be submitted to the City of Shasta Lake for review and approval prior to resuming construction.
- All significant cultural or paleontological materials recovered shall be subject to scientific analysis, professional curation, and a report prepared by the professional archaeologist, or paleontologist, according to the current professional standards.

CUL-2: If human remains are encountered during construction activities, the City of Shasta Lake shall comply with Section 15064.5 (e) (1) of the CEQA Guidelines and PRC Section 7050.5. All project-related ground disturbance within 100-feet of the find shall be halted until the county coroner has been notified. If the coroner determines that the remains are Native American, the coroner will notify the NAHC to identify the most likely descendants of the deceased Native Americans. Project-related ground disturbance in the vicinity of the find shall not resume until the process detailed in Section 15064.5 (e) has been completed.

4.6 ENERGY

Would the project	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

4.6.1 Regulatory Setting

State

California Energy Efficiency Standard

The Energy Efficiency Standards for Residential and Non-Residential Buildings (California Building Energy Efficiency Standards) specified in Title 24, Part 6 of the CCR were established in 1978 in response to a legislative mandate to reduce energy consumption in California. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The most recent standards were adopted in 2022 and took effect on January 1, 2023 (for building permit applications submitted on or after that date). These standards are updated every three years. The new standards encourage efficient electric heat pumps, establish electric-ready requirements for new homes, expand solar photovoltaic and battery storage standards, and strengthen ventilation standards.

California Green Building (CALGreen) Standards Code

The CALGreen Standards Code, specified in CCR, Title 24, Part 11, is a Statewide regulatory code for all buildings, residential and commercial included. The regulations are intended to encourage more sustainable and environmentally friendly building practices, require low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment. The standards require that all new residential and non-residential development implement various energy conservation measures, including ceiling, wall, and concrete slab insulation; weather stripping on doors and windows; closeable doors on fireplaces; insulated heating and cooling ducts; water heater insulation blankets; and certified energy efficient appliances. CALGreen is updated periodically and the latest update, CALGreen 2022, became effective on January 1, 2022.

Renewable Portfolio Standard (RPS) Program

The California RPS Program was established in 2002 by SB 1078 and requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide a certain percentage of their supply from renewable sources. The initial requirement was that at least 20% of electricity retail sales had to be served by renewable resources by 2017. The RPS Program was accelerated in 2015 with SB 350 that mandated a 50% RPS by 2030. In 2018, SB 100 was signed into law, increasing the RPS to 60% by 2030 and requiring all electricity in California to come from carbon-free resources by 2045.

Local

City of Shasta Lake General Plan

The City's General Plan includes the following energy goals and policies that apply to the Proposed Project:

Goal CON-4: Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.

> **Policy-CON-4.3:** Promote cost-effective water and energy consumption in the City as much as possible; continue and build upon existing programs to reduce water and energy consumptions in the City.

Goal HE-5: To support energy efficiency improvements and appropriate weatherization for all new and existing housing units.

Policy-HE-5.1: New Construction Efficiency. The City shall require new construction to meet Title 24 energy conservation requirements.

Policy-HE-5.2: Conservation Programs & Measures. The City shall promote energy efficiency measures and energy conservation programs in accordance with applicable laws, including programs that support low-income households.

City of Shasta Lake Renewable Energy Portfolio Standard

The City adopted a RPS Enforcement Program and Renewable Energy Resources Procurement Plan in 2013. In February 2019, the California Energy Commission (CEC) conducted a verification review covering the City's second compliance period (2014-2016). The CEC found that for Compliance Period 2, the City met its renewable energy portfolio balance requirements.

4.6.2 Environmental Setting

The City of Shasta Lake will supply electrical services to the Proposed Project, as discussed more in **Section 4.19**. The City of Shasta Lake Electric Utility is a publicly owned electric utility with a service territory of approximately 10 square miles in and around the City of Shasta Lake's boundaries. The Electric Utility provides retail electric service to customers located within the City's corporate limits, as well as certain adjacent areas, and serves approximately 4,500 retail customers (meters). For the Proposed Project, electrical service will be metered at approximately 1,200 amps, with an anticipated electric demand of 126 kVA.

4.6.3 Impact Assessment

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less-than-Significant Impact. Construction of the Proposed Project will result in energy consumption. Heavy equipment used to bring materials to and from the Project Site and tools used during construction will consume petroleum products. The use of this energy is necessary for Project Site development and will be utilized only when needed for construction progress. Construction would be temporary in nature and of a limited scale. Once operational, the Proposed Project will comply with Title 24, Part 6 of the CCR, known as the Building Energy Efficiency Standards. Additionally, the Project Site is located in close proximity to I-5, so the Project Site would provide efficient vehicle access. As a result, the Proposed Project would not result in wasteful or inefficient use of energy resources and would thus have a less-than-significant impact.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Less-than-Significant Impact. As previously mentioned, the construction and operation of the Proposed Project would be subject to compliance with applicable CARB regulations, California Code of Regulations, and Title 24 standards, which include a broad set of energy conservation requirements in addition to BMPs for water conservation. Thus, applicable State regulations and programs would be implemented to reduce energy waste. As a result, the Proposed Project would not conflict with any plans for renewable energy or energy efficiency and would therefore have a less-than-significant impact.

4.7 GEOLOGY AND SOILS

Would the project:	**Potentially Significant Impact**	**Less than Significant Impact with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☒	☐
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☒	☐
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

4.7.1 Regulatory Setting

Federal

Clean Water Act

The CWA prohibits the discharge of sediment and erosion into navigable waters of the United States to protect water quality. It establishes regulatory measures to control soil erosion and sediment runoff, ensuring that construction and land development activities implement BMPs to prevent sediment pollution. The goal is to maintain the integrity of the nation's waters by minimizing the impact of soil disturbance and erosion on water quality.

National Earthquake Hazards Reduction Act

The National Earthquake Hazards Reduction (NEHR) Act was passed in 1977 to reduce the risks to life and property from future earthquakes in the United States. The Act established the National Earthquake Hazards Reduction Program, which was most recently amended in 2004. The Federal Emergency Management Agency (FEMA) is designated as the lead agency of the program.

State

California Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (PRC Section 2621 et seq.) was passed in 1972 to reduce the risk to life and property from surface faulting in California. The Act prohibits the siting of most structures intended for human occupancy on the surface trace of active faults. For projects proposed in an Alquist-Priolo Fault Study Zone, a geologic investigation must be prepared to demonstrate that proposed buildings would not be constructed across active faults. According to the California Geological Survey (CGS), an "active" fault is defined as one that has shown evidence of movement within the last 11,000 years, which is the Holocene epoch.

California Seismic Hazards Mapping Act (SHMA)

The California SHMA of 1990 (PRC Section 2690–2699.6) addresses nonsurface fault rupture earthquake hazards, including strong ground shaking, liquefaction, and seismically induced landslides. The SHMA also addresses expansive soils, settlement, and slope stability. Under the SHMA, cities and counties may withhold development permits for sites within seismic hazard areas until geologic/geotechnical investigations have been completed and measures to reduce potential damage have been incorporated into development plans.

California Building Standards Code (CBSC)

As discussed in Section 4.6, the CBSC consists of 13 parts, including the California Building Code (CBC), Energy Code, Fire Code, and Green Building Standards Code. Part 2 of the CBSC is the CBC that includes standards for structural design, excavation, grading, seismic design, drainage, and erosion control. CBC Chapter 18 (Soils and Foundations) and Appendix J (Grading) include requirements for geotechnical investigations and soil reports.

Local

City of Shasta Lake General Plan

The Shasta Lake General Plan includes the following goals and policies that are applicable to the Proposed Project:

Goal CON-1: Protect and conserve water resources and improve and maintain water quality.

> **Policy CON-1.5:** Integrate stormwater management techniques and low impact development best practices to minimize runoff. Encourage water conservation efforts by residents, businesses, and industry.

Goal CON-4: Consider conservation practices in community planning decisions to reduce environmental pollutants, conserve energy and water resources, preserve critical wildlife habitats, and address climate change.

> **Policy-CON-4.5:** Incorporate erosion mitigation practices into construction and development.

Goal HS-6: Minimize the risk to life and property from geologic hazards.

> **Policy-HS-6.1:** Protect development from seismic hazards, and protect essential or critical structures, such as schools, public meeting facilities, emergency services, and high-rise and high-density structures, by developing standards appropriate for such protection.

> **Policy-HS-6.2:** Comply with state seismic and building standards in the design and siting of critical facilities, including hospital facilities, law enforcement and fire stations, school facilities, hazardous material manufacture and storage facilities, bridges, and large public assembly halls. Require all new buildings in the city be built under the seismic requirements of the currently adopted codes.

> **Policy-HS-6.3:** The City of Shasta Lake should coordinate with county, state and federal agencies monitoring volcanic activity and hazards.

> **Policy-HS-6.4:** Sedimentation and erosion from development shall be minimized through ordinances and implementation mechanisms as adopted by the City.

> **Policy-HS-6.5:** Protect development from geologic hazards such as landslides, erosion, and expansive soils.

City of Shasta Lake Municipal Code

SLMC Chapter 15.08 (Grading, Erosion Control, and Hillside Development), Section 15.08.210(A)(8) requires that all construction projects involving site grading shall include erosion control plans prepared by a registered civil engineer, qualified SWPPP developer (QSD), or other licensed or certified stormwater professional. Temporary and permanent erosion control devices, designed and constructed in accordance with the California Stormwater Quality Association (CASQA) BMPs, and the City's Construction Standards, shall be provided to control erosion. The Developer must provide sufficient equipment and qualified personnel to conduct emergency erosion control as identified in the SWPPP and/or erosion control plan.

4.7.2 Environmental Setting

The City of Shasta Lake is located in the northern portion of the Sacramento Valley, which is the northern extension of the Great Valley geomorphic province. The Great Valley occupies an elongate, northwest-trending structural trough bounded on the east by the Sierra Nevada Mountain range and on the west by the Coast Ranges. The northern Sacramento Valley is bounded on the west by the northern Coast Ranges, on the north by the Klamath Mountains, and on the east by the Cascade Range and Modoc Plateau (CGS, 2002). Major topographical features in the vicinity of the Project Site include Mount Shasta, located approximately 50 miles north, and Lassen Peak, approximately 45 miles southeast of the Project Site.

Seismic Conditions

The City of Shasta Lake has the potential for earthquakes, but is less prone to more frequent and stronger seismic shaking than the rest of California (City of Shasta Lake, 2023a). The nearest fault to the Project Site is the Battle Creek Fault, approximately 20 miles south, which is mapped as a quaternary fault of undifferentiated age (DOC, 2015). The nearest active fault with historic displacement is the Cleveland Hill Fault, which is part of the Foothills fault system, and is located approximately 100 miles south. The Project Site is not located within an Alquist-Priolo Earthquake Fault Zone as mapped by the California DOC (DOC, 2021).

Soil Types and Characteristics

The Project Site contains two soil types: Auburn loam with 0 to 8 percent slopes and Auburn very stony loam with 8 to 30 percent slopes (NRCS, 2024). Auburn series soils consist of shallow to moderately deep, well drained soils formed in material weathered from amphibolite schist (U.S. Department of Agriculture [USDA]-NRCS, 2018). **Table 4.7-1** details the characteristics of each soil types.

Table 4.7-1: Soil Types

Soils	Hydrologic Soil Group	Drainage Class	Ksat (µm/s)	Runoff Class	Linear Extensibility
AnB - Auburn loam, 0 to 8 percent slopes	C	Well drained	Very low to moderately low	Medium	Low
ArD – Auburn very stony loam, 8 to 30 percent slopes	C	Well drained	Very low to moderately low	Medium	Low

Source: NRCS, 2024

Soil Hazards

The hydrologic soil group is a classification based on the runoff potential of the soils when thoroughly saturated by a long duration storm. Soils are grouped into four classes that grade from A to D, with A being coarse-grained soils with high infiltration and low runoff potential and D being mostly fine-grained clays with extremely slow infiltration and high runoff potential. The soils on the Project Site have a hydrologic rating of C, indicating they have a slow infiltration rate when thoroughly wetted (NRCS, 2024; USDA, 2002).

Drainage class is a measure of the frequency and duration of wet periods under conditions similar to those in which the soil developed. The soil types on the Project Site are well-drained (NCRS, 2024).

Expansive soils may increase in volume when water is absorbed and shrink when dried. This property is measured using linear extensibility. Expansive soils are of concern because they can cause foundations to rise during the rainy season and fall during the dry season, causing structural distortion. The soils on the Project Site have low linear extensibility ratings, indicating they have low shrink-swell potential (NRCS, 2024).

Paleontological Resources

A search of the University of California Museum of Paleontology (UCMP) specimen records cited no listings for unique paleontological resources or geological features in the immediate project area. However, the database search listed 827 specimens within Shasta County (UCMP, 2024).

4.7.3 Impact Assessment

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map, issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Less-than-Significant Impact. The Project Site is not within a designated Alquist-Priolo Earthquake Fault Zone. No known faults with evidence of historic activity cut through the valley soils in the vicinity of the Project Site, and the nearest active fault with historic displacement is approximately 100 miles from the Project Site. Due to the geology of the City and its distance from active faults, the potential for loss of life, property damage, ground settlement, or liquefaction to occur in the vicinity of the Project Site is considered minimal. The CBC establishes minimum standards for structures located in regions subject to ground shaking hazard areas. Structures constructed on-site would be required by State law and City ordinances to be constructed in accordance with the CBC and to adhere to all current earthquake construction requirements. Therefore, the Proposed Project would have a less-than-significant impact.

ii. Strong seismic ground shaking?

Less-than-Significant Impact. The nearest active fault with historic displacement is approximately 100 miles from the Project Site. Ground shaking generally decreases with distance and increases with the depth of unconsolidated alluvial deposits. Considering the distance to the causative faults, the potential for ground motion in the vicinity of the Project Site is minimal. As described above, the Proposed Project would be constructed in accordance with the CBC which address seismic hazards and provide safeguards against typical ground shaking. Consistency with the CBC design and construction standards would allow ground shaking-related hazards to be managed from a geologic, geotechnical, and structural standpoint such that adverse impacts to the health or safety of workers or members of the public would be minimized. Therefore, the Proposed Project would result in a less-than-significant impact.

iii. Seismic-related ground failure, including liquefaction?

Less-than-Significant Impact. As previously described, there are no geologic hazards or unstable soil conditions known to exist on the Project Site. The Project Site is relatively flat with stable soils and no apparent unique or significant landforms. Development of the Project Site would require compliance with the City's grading and drainage standards. Additionally, neither liquefaction nor lateral spreading has been observed in the City of Shasta Lake from any historic earthquake. The Project Site is mapped as having low liquefaction potential (USGS, 2024a). Due to the nature of the underlying soils and the history of low ground shaking potential, liquefaction and lateral spreading potential in the City are considered very low. Therefore, given the Proposed Project's flat topography, stable soils, infrequency of seismic activity, and required compliance with City standards, the Proposed Project would have a less-than-significant impact.

iv. Landslides?

Less-than-Significant Impact. There have been no recorded landslide events on or in the vicinity of the Project Site as mapped by the USGS (USGS, 2024b). Furthermore, the Project Site is generally flat. Due to the flat and level topography, the Proposed Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. Therefore, the Proposed Project would result in a less-than-significant impact.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less-than-Significant Impact. Construction activities such as grading and trenching may result in the potential for short-term soil disturbance or erosion impacts. Construction would also involve the use of water for dust control, which may cause further soil disturbance. The Proposed Project would disturb more than one acre of land and would be required to obtain coverage under the Statewide General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit; Order No. 2022-0057-DWQNPDES Permit No. CAS000002). Such impacts would be addressed through compliance with Shasta Lake General Plan Policy-CON-1.5, which encourages Low Impact Development best practices, and regulations set by the State Water Resources Control Board (SWRCB). The Construction General Permit requires the development of a SWPPP by a certified QSD. Furthermore, the City ordinance requires development of an erosion control plan prepared by a registered civil engineer, QSD, or other licensed or certified stormwater professional. The Proposed Project includes two detention basins to detain and treat stormwater and each detention basin includes an outlet that would discharge water. Stormwater will not be channelized on the Project Site and each detention basin outlet will include bioswales or other measures to ensure that runoff returns to sheet flow prior to entering Moody Creek to prevent channel erosion. Since the Project Site has relatively flat terrain with a low potential for soil erosion and the Proposed Project would comply with SWRCB and City requirements, the Proposed Project would have a less-than-significant impact.

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less-than-Significant Impact. The Project Site has a relatively flat topography with stable soils and no apparent unique or significant landforms. Furthermore, the City of Shasta Lake has a relatively low potential for frequent and strong seismic shaking (City of Shasta Lake, 2023a). Such factors minimize the potential for other geologic hazards such as landslides, lateral spreading, subsidence, liquefaction, or collapse. Therefore, any development on the native, stable soils is unlikely to become unstable and result in geologic hazards. As a result, the Proposed Project would have a less-than-significant impact.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less-than-Significant Impact. The soils on the Project Site have low linear extensibility ratings and are not considered expansive soils (NRCS, 2024). In addition to the proposed convenience store, a box culvert or buttress/slab bridge is proposed in the northern portion of the site along the internal truck roundabout route. This structure would be designed and constructed in accordance with all applicable building code standards, including the CBC and the City of Shasta Lake Municipal Code, to address any underlying soil constraints. Therefore, the Proposed Project would not be located on expansive soil or create substantial direct or indirect risks to life or property. There would be a less-than-significant impact.

e) Would the project 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 waste water?

No Impact. The Proposed Project would not require the construction or use of septic tanks or alternative wastewater disposal systems. The Proposed Project will be incorporated into the City's existing sewer system; therefore, there would be *no impact*.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less-than-Significant Impact with Mitigation. The UCMP database cited no listings for unique paleontological resources or geological features in the immediate project area. However, the database search listed 827 specimens within Shasta County (UCMP, 2024). Accordingly, there is a reasonable basis for concluding that paleontological impacts may be encountered at the Project Site as a result of construction-related grading and excavation activities, which is a potentially significant impact. Mitigation Measure GEO-1 has been identified to reduce impacts to paleontological resources. Implementation of Mitigation Measure GEO-1 would ensure that impacts would be less-than-significant.

4.7.4 Mitigation Measures

GEO-1: If paleontological resources (fossils) are discovered during construction, all work within a 50-foot radius of the find shall be halted until a professional paleontologist can evaluate the significance of the find. If any find is determined to be significant by the paleontologist, the City shall meet with the paleontologist to determine the appropriate course of action. If necessary, a Treatment Plan prepared by a paleontologist outlining recovery of the resource, analysis, and reporting of the find shall be prepared. The Treatment Plan shall be reviewed and approved by the City prior to resuming construction.

4.8 GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☒	☐	☐

4.8.1 Regulatory Setting

Federal

U.S. Environmental Protection Agency (USEPA)

In Massachusetts v. EPA, 549 U.S. 497 (2007), the Supreme Court found that greenhouse gas emissions (GHGs) are air pollutants covered by the CAA. The Court also acknowledged that climate change is caused, in part, by human activities. The Supreme Court's ruling paved the way for the regulation of GHG emissions by the USEPA under the CAA. The USEPA has enacted regulations that address GHG emissions, including, but not limited to, mandatory GHG reporting requirements, carbon pollution standards for power plants, and air pollution standards for oil and natural gas.

State

Executive Order (EO) S-3-05

EO S-3-05 was signed by the California Governor on June 1, 2005 and established the following Statewide emission reduction targets:

- Reduce GHG emissions to 2000 levels by 2010,
- Reduce GHG emissions to 1990 levels by 2020, and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

EO S-3-05 created a Climate Action Team (CAT) headed by the CalEPA that included several other State agencies. The CAT is tasked by EO S-3-05 with outlining the effects of climate change on California and recommending an adaptation plan, as well as creating a strategy to meet the emission reduction targets.

California Global Warming Solutions Act of 2006 (AB-32)

As required by AB 32 (2006), CARB adopted the initial Climate Change Scoping Plan in 2008 that identified the State's strategy to achieve the 2020 GHG emissions limit via regulations, market-based mechanisms, and other actions. AB 32 requires that the Scoping Plan be updated every five years. CARB's first update to the Climate Change Scoping Plan (2014) addressed post-2020 goals and identified the need for a 2030 mid-term target to establish a continuum of actions to maintain and continue reductions. In December 2017, CARB adopted the second update to the Scoping Plan that includes strategies to achieve the 2030 mid-term target.

EO S-01-07

EO S-01-07 mandates a State-wide goal to reduce the carbon intensity of transportation fuels by at least 10 percent by 2020. This target reduction was identified by CARB as one of the AB 32 early action measures identified in their October 2007 report.

EO B-30-15

EO B-30-15 sets interim GHG targets of 40 percent below 1990 by 2030, to ensure California will meet the 2050 targets set by AB 32.

Senate Bill (SB) 375

Under SB 375, the CARB sets regional targets for the reduction of GHG emissions from passenger vehicles and light duty trucks through an integrated approach to regional transportation and land use planning. SB 375 requires a Sustainable Communities Strategy (SCS) to be included in the applicable Regional Transportation Plan (RTP) that demonstrates how the region will meet the GHG emissions reduction targets. The purpose of the SCS is to coordinate transportation and land use planning in order to reduce vehicle miles traveled (VMT) and associated GHG emissions from vehicles and light trucks.

Assembly Bill (AB) 1279: California Climate Crisis Act

California Climate Crisis Act (AB 1279) requires the State to achieve net zero GHG emissions as soon as possible, but no later than 2045, and to achieve and maintain net negative GHG emissions thereafter. The bill also requires California to reduce statewide anthropogenic GHG emissions by 85 percent below 1990 levels, and directs CARB to work with relevant state agencies to achieve these goals.

2022 Scoping Plan for Achieving Carbon Neutrality

On December 15, 2022, CARB adopted the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan), which builds on the 2017 Scoping Plan as well as the requirements set forth by AB 1279, which directs the State to become carbon neutral no later than 2045. To achieve this statutory objective, the 2022 Scoping Plan lays out how California can reduce GHG emissions by 85 percent below 1990 levels and achieve carbon neutrality by 2045. The 2022 Scoping Plan creates a sector-by-sector roadmap for California that deploys “a broad portfolio of existing and emerging fossil fuel alternatives and clean technologies, and align with statutes, Executive Orders, Board direction, and direction from the governor” (CARB, 2022b).

Local

Shasta County Regional Climate Action Plan

Shasta County developed a draft Shasta Regional Climate Action Plan in August 2012 (RCAP). The RCAP includes GHG inventories and projections for each jurisdiction in Shasta County for 2008, 2020, 2035, and 2050. The plan shows that the County would achieve a reduction in GHG emissions in the year 2020 below 2008 business as usual (BAU) emissions with the implementation of State and federal reduction measures. According to SCAQMD staff, the District’s GHG policy is to quantify, minimize, and mitigate GHG emissions, as feasible. Chapter 4 of the RCAP is specific to the City of Shasta Lake; however, the City has not formally adopted the RCAP or adopted thresholds of significance for GHGs.

City of Shasta Lake Renewable Energy Portfolio Standard

As discussed under Section 4.6 (Energy), the City adopted a RPS Enforcement Program and Renewable Energy Resources Procurement Plan in 2013. In February 2019, the CEC conducted a verification review covering the City's second compliance period (2014-2016). The CEC found that for Compliance Period 2, the City met its renewable energy portfolio balance requirements.

SCAQMD

The SCAQMD maintains the air quality conditions in Shasta County. However, the SCAQMD has not adopted CEQA thresholds relating to GHGs. The Bay Area Air District (BAAD) has established GHG thresholds that are used by several air districts in northern California. Other air districts that currently use BAAD's significance thresholds include the Northern Sonoma Air Quality Management District, the Placer County Air Quality Control District, the Yolo-Solano Air Quality Management District, and the Feather River Air Quality Management District. Consequently, the City, in its discretion, has determined that the BAAD's GHG thresholds are appropriate to use to evaluate the significance of the proposed project's GHG emissions.

The BAAD's 2022 CEQA Air Quality Guidelines provide recommended procedures for evaluating potential air quality and climate impacts during the environmental review process for land use projects, consistent with CEQA requirements. These guidelines include instructions and examples for assessing, measuring, and mitigating air quality and climate impacts from construction and operational activities, focusing on emissions of CAPs, precursors, odors, toxic air contaminants, and GHGs. They offer two methods for assessing a project's potential impacts: screening criteria and thresholds of significance. For GHG emissions, the guidelines recommend evaluating the climate impacts of land use projects based on the extent to which a project's design elements provide a "fair share" reduction in GHG emissions.

4.8.2 Environmental Setting

Gases that absorb and re-emit infrared radiation in the atmosphere are called GHGs. The GHGs that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are primarily determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2, CH_4, and N_2O are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing are associated with agricultural practices and landfills. N_2O is produced by microbial processes in soil and water, including those reactions that occur in fertilizers that contain nitrogen, fossil fuel combustion, and other chemical processes. In addition to natural sources, human activities are exerting a substantial and growing influence on climate by changing the composition of the atmosphere and the ocean, and by modifying the land surface through deforestation and urbanization that reduces carbon capture and decreases albedo (Intergovernmental Panel on Climate Change, 2014). GHGs are typically quantified in terms of "carbon dioxide equivalent"

(CO_2e), a common measure used to compare the emissions of various GHGs based on their global warming potential. This measure is usually presented in metric tons (MT) and is expressed as $MTCO_2e$.

4.8.3 Methodology

Thresholds of Significance

The 2022 BAAD CEQA Air Quality Guidelines state that a project's GHG emissions would be cumulatively considerable if it did not contribute its "fair share" towards minimizing GHG emissions. Because construction emissions are temporary and variable, BAAD has not developed a quantitative threshold of significance for construction-related GHG emissions. However, it is recommended that projects quantify and disclose GHG emissions that would occur during construction. For a project to have a less-than-significant impact related to operational GHG emissions, it must include, at a minimum, the following project design elements:

1. Buildings:
    a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).
    b. The project will not result in any wasteful, inefficient, or unnecessary energy use as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.

2. Transportation:
    a. The project will achieve a reduction in project-generated VMT below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted SB 743 VMT target that reflects the recommendations provided in the Governor's Office of Planning and Research's *Technical Advisory: Evaluating Transportation Impacts in CEQA*:
        i. Residential projects: 15 percent below the existing VMT per capita
        ii. Office projects: 15 percent below the existing VMT per employee
        iii. Retail projects: no net increase in existing VMT
    b. The project will achieve compliance with off-street electric vehicle (EV) requirements in the most recently adopted version of CALGreen Tier 2.

Alternatively, projects must be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).

4.8.4 Impact Assessment

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less-than-Significant Impact with Mitigation. The Proposed Project would generate GHG emissions which contribute to global warming. GHG emissions from construction activities are temporary and variable, and therefore would not significantly contribute to long-term cumulative GHG emissions impacts in the air basin. Long- term emissions would be from vehicle and truck refueling, vehicle trips, indirect emissions from energy consumption, and perpetual solid waste generated by the Proposed Project.

Because neither the City of Shasta Lake nor Shasta County have adopted thresholds of significance for GHG emissions, the BAAD thresholds were utilized to evaluate the Proposed Project. Because construction emissions are temporary and variable, BAAD has not developed a quantitative threshold of significance for construction-related GHG emissions. However, BAAD recommended that projects quantify and disclose GHG emissions that would occur during construction. As shown in **Table 4.8-1**, construction activity for the Proposed Project would generate an estimated 306 MT of CO_2e.

Table 4.8-1: Estimated Construction Emissions of GHGs

Construction Year	Annual Emissions (CO_2e MT/year)
2025	206
2026	100
Total	**306**

Source: **Appendix F**

Using the BAAD thresholds, for a project to have a less-than-significant impact related to operational GHG emissions, it must include specific project design elements required by BAAD, as detailed in **Section 4.8.3**. The Proposed Project's alignment with the required design elements is summarized in **Table 4.8-1**. In addition, although the Proposed Project is consistent with the City of Shasta Lake General Plan designation, the General Plan EIR identified the potential buildout of the General Plan would result in a significant and unavoidable impact on GHG emissions and climate change (City of Shasta Lake, 2023c). Project-level analyses are encouraged to review for consistency against the 2040 General Plan Policies and incorporate mitigation strategies recommended in Table 4.7-8 of the General Plan EIR that are consistent with CAPCOA (City of Shasta Lake, 2023c). PG&E is actively working to transition the City gas system to transport and deliver cleaner fuels, with a goal of increasing renewable natural gas (RNG) to 15 percent by 2030, which will also enable PG&E to meet State standards for utilities (City of Shasta Lake, 2023c). The Proposed Project is consistent with CAPCOA Measures T-10 for bicycle facilities and T-18 for pedestrian improvements (City of Shasta Lake, 2023c).

With the implementation of Mitigation Measure GHG-1 that requires EV-capable parking spaces and other measures as recommended within the General Plan EIR to reduce natural gas usage consistent with CAPCOA, the Proposed Project would meet its share of the necessary reductions to achieve California's long-term climate goals and is therefore considered to have a less-than-significant impact.

Table 4.8-2: Consistency with BAAD GHG Thresholds of Significance

Design Elements Required for New Land Use Projects to Incorporate that will Achieve Carbon Neutrality by 2045	Is the Project Consistent?
1. Buildings	
a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).	Consistent with Mitigation. The Proposed Project would connect to the existing natural gas line available to the property. With inclusion of mitigation as recommended by the City, the use of natural gas will be limited.
b. The project will not result in any wasteful, inefficient, or unnecessary energy use as determined by the analysis required under CEQA Section	Consistent. The Proposed Project will comply with California Building Energy Efficiency Standards, including Title 24, Part 6 of the California Code of Regulations. As such, the Proposed Project would not result in wasteful, inefficient, or

Design Elements Required for New Land Use Projects to Incorporate that will Achieve Carbon Neutrality by 2045	Is the Project Consistent?
21100(b)(3) and Section 15126.2(b) of the State CEQA Guidelines.	unnecessary energy consumption during construction and operation, nor would it conflict with State or local plans for renewable energy or energy efficiency.
2. Transportation	
a. The project will achieve a reduction in project-generated VMT below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted SB 743 VMT target that reflects the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory: Evaluating Transportation Impacts in CEQA: i. Residential projects: 15 percent below the existing VMT per capita ii. Office projects: 15 percent below the existing VMT per employee iii. Retail projects: no net increase in existing VMT	Consistent. A Traffic Impact Study (TIS) was completed for the Proposed Project (**Appendix I**), classified as a retail project. The TIS concluded that the project will have a less than significant impact on transportation, meeting the requirement for retail projects to achieve no net increase in VMT.
b. The project will achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.	Consistent with Mitigation. The CALGreen Tier 2 requirements for the installation of off-street EV infrastructure mandate that non-residential developments with between 10 and 25 parking spaces include 4 EV-capable spaces (CALGreen, 2024). This must be done in accordance with the regulations specified in the California Building Code and the California Electrical Code. Mitigation Measure GHG-1 has been incorporated to require that the Project achieve compliance with off-street EV requirements in the most recently adopted version of CALGreen Tier 2. With incorporation of this mitigation measure, the Proposed Project would be consistent with this design measure.

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less-than-Significant Impact with Mitigation. Because neither the City of Shasta Lake nor Shasta County have adopted thresholds of significance for GHG emissions, the BAAD thresholds were utilized to evaluate the Proposed Project. The BAAD's approach uses a "fair share" methodology to determine if an individual project's GHG emissions are cumulatively considerable. If a project contributes its fair share towards achieving the State's long-term GHG reduction goals, the lead agency can find that the project's impact on climate change is not significant.

A project that meets the BAAD qualitative thresholds would not conflict with applicable plans, policies, or regulations aimed at reducing GHG emissions. As shown in **Table 4.8-2**, with implementation of Mitigation Measure GHG-1, the Proposed Project demonstrates consistency with the BAAD thresholds of significance. Therefore, the Proposed Project would not conflict with a plan, policy, or regulation adopted for the purpose of reducing GHG emissions. The impact would be less than significant with mitigation.

4.8.5 Mitigation Measures

GHG-1: The following measures shall be required to reduce the greenhouse gas emissions of the project, to the extent that they are applicable to the proposed appliances to be installed within the convenience store:

- In order to achieve compliance with off-street electric vehicle (EV) requirements in the most recently adopted version of CALGreen Tier 2, no fewer than four (4) EV capable spaces shall be installed.
- CAPCOA Measure E-2: Require Energy Efficient Appliances. Require installation of Energy StarCertified appliances that exceed the energy efficiency of conventional appliances.
- CAPCOA Measure E-3-B: Require Energy Efficient Commercial Packaged Boilers. Require commercial packaged boilers with a higher energy efficiency than what is required by regulation.

4.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	**Potentially Significant Impact**	**Less than Significant Impact with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
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 § 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	☐	☐	☐	☒

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☒	☐	☐

4.9.1 Regulatory Setting

Federal

USEPA

The USEPA administers numerous statutes pertaining to human health and the environment. The USEPA regulates toxic air contaminants through its implementation of the CAA. Although the CAA covers a range of air pollutants, Section 112(r) specifically covers “extremely hazardous materials” which include acutely toxic, extremely flammable, and highly explosive substances. Section 112(r) (referred to as the USEPA’s Risk Management Plan (RMP)) requires facilities involved in the use or storage of extremely hazardous materials to implement a RMP. A RMP requires a detailed analysis of potential accident factors present at a facility and requires the implementation of mitigation measures designed to reduce the identified accident potential.

The USEPA also regulates the land disposal of hazardous materials through the Resource Conservation and Recovery Act (RCRA). Under RCRA, the USEPA regulates the activities of waste generators, transporters, and handlers (any individual who treats, stores, and/or disposes of a designated hazardous waste). RCRA further requires the tracking of hazardous waste from its generation to its final disposal through a process often referred to as the “cradle-to-grave” regulation. The “cradle-to-grave” regulation requires detailed documentation and record keeping for hazardous materials generators, transporters, and/or handlers in order to ensure proper accountability for violations.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides a Federal fund to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through various enforcement mechanisms, the USEPA obtains private party cleanup orders and recovers costs from financially viable individuals and companies once a response action has been completed. Uncontrolled or abandoned hazardous-waste site identification, monitoring, and response activities in states are coordinated though the state environmental protection or waste management agencies.

Federal Occupational Safety and Health Administration (OSHA)

OSHA regulates the preparation and enforcement of occupational health and safety regulations with the goal of providing employees a safe working environment. OSHA regulations apply to the workplace and cover activities ranging from confined space entry to toxic chemical exposure. OSHA regulates workplace exposure to hazardous chemicals and activities through regulations governing workplace procedures and equipment.

State

Department of Toxic Substances Control (DTSC)

The California DTSC regulates the generation, transportation, treatment, storage, and disposal of hazardous waste under the RCRA and the State Hazardous Waste Control Law. Both laws impose "cradle-to-grave" regulatory systems for handling hazardous waste in a manner that protects human health and the environment.

California Occupational Safety and Health Administration (Cal/OSHA)

Cal/OSHA assumes primary responsibility for developing and enforcing workplace safety regulations in the State. Cal/OSHA regulations concerning the use of hazardous materials in the workplace, as detailed in Title 8 of the CCR, include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation.

Cal/OSHA enforces hazard communication program regulations that contain training and information requirements, including procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees at hazardous waste sites. The hazard communication program requires that Safety Data Sheets be available to employees and that employee information and training programs be documented.

State Water Quality Control Board (SWQCB) Underground Storage Tank (UST) Program

The SWRCB UST Program is a state-level regulation managed by the SWRCB in California. The program is designed to prevent releases of hazardous substances from USTs, protect groundwater quality, and ensure compliance with federal and state UST regulations.

Regional Water Quality Control Board (RWQCB)

The SWRCB and RWQCBs regulate hazardous substances, materials, and wastes through a variety of State statutes including, for example, the Porter-Cologne Water Quality Control Act, Cal. Water Code Section 13000 et seq., and the UST cleanup laws (Cal. Health and Safety Code Section 25280- 25299.8). RWQCBs regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. Any person proposing to discharge waste within any region must file a report of waste discharge with the appropriate regional board.

Local

Shasta County Environmental Health Division

The Shasta County Environmental Health Division has been designated by CalEPA as the Certified Unified Program Agency (CUPA) for Shasta County. Shasta County is responsible for permitting, inspections, and/or enforcement for the following Unified Programs: Hazardous Materials Area Plans, Hazardous Materials Business Plans, Hazardous Waste and Hazardous Waste Treatment, USTs, Aboveground Petroleum Spill Prevention, Control, and Countermeasure Plans, and California Accidental Release Prevention.

Shasta County Hazardous Materials Area Plan

The 2022 Hazardous Materials Area Plan for Shasta County provides detailed procedures for responding to hazardous materials incidents. It defines the roles and responsibilities of local, state, and federal agencies, and uses the Incident Command System (ICS) for incident management. The plan outlines protocols for notifying authorities and the public, and includes hazard assessments identifying potential threats and associated risks. It recommends protective actions, such as evacuation and shelter-in-place, and emphasizes the need for regular training and preparedness for emergency responders. The plan also includes procedures for public information dissemination and lists available resources for response efforts, ensuring an efficient and effective approach to minimizing public health and environmental impacts (Shasta County, 2022).

Shasta County Emergency Operations Plan (EOP)

The Shasta County EOP is the primary emergency planning and management document within the County (Shasta County, 2014). The EOP provides a framework for coordinated response and recovery activities during a large-scale emergency and describes how various agencies and organizations in the County (e.g., federal, State, local, and tribal governments and agencies, community organizations, faith-based organizations, private-sector partners, etc.) would coordinate resources and activities. The EOP is activated in response to emergencies and disasters in the community, including hazardous materials incidents, when additional resources or extended response activities are needed. Government Code Section 8607(a) requires the use of the Standardized Emergency Management System (SEMS) for managing emergencies involving multiple jurisdictions and agencies as outlined in the CCR Section 2400-2450. The EOS is based on the functions and principles of SEMS.

City of Shasta Lake Local Hazard Mitigation Plan (LHMP)

The City of Shasta Lake LHMP updates the 2014 FEMA-approved City of Shasta Lake LHMP. The purpose of hazard mitigation plan is to reduce or eliminate long-term risk to people and property from hazards. The LHMP update documents the hazard mitigation planning process and identifies relevant hazards and vulnerabilities and strategies the City will use to decrease vulnerability and increase resiliency and sustainability in the community.

City of Shasta Lake General Plan

The City of Shasta Lake's General Plan includes the following goals and policies that apply to the Proposed Project:

Goal HS-1: Create and maintain a safe environment.

Policy-HS-1.2: Expand emergency training and local expertise for hazard event response and recovery, including through volunteer roles.

Policy-HS-1.6: Known fire hazard information should be analyzed as part of every general plan amendment, zone change, use permit, variance, building site approval, and all other land development applications subject to environmental assessment.

4.9.2 Environmental Setting

For the purposes of this section, the term “hazardous materials” as defined by the California Code of Regulations are substances with certain physical properties that could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed, or otherwise managed. Hazardous materials are grouped into the following four categories based on their properties:

- Toxic: causes human health effect
- Ignitable: has the ability to burn
- Corrosive: causes severe burns or damage to materials
- Reactive: causes explosions or generates toxic gases

Hazardous waste is any hazardous material that is discarded, abandoned, or slated to be recycled. The criteria that define a material as hazardous also define a waste as hazardous. If improperly handled, hazardous materials and hazardous waste can result in public health hazards if released into the soil or groundwater or through airborne releases in vapors, fumes, or dust. Soil and groundwater having concentrations of hazardous constituents higher than specific regulatory levels must be handled and disposed of as hazardous waste when excavated or pumped from an aquifer. The California Code of Regulations, Title 22, Sections 66261.20-24 contains technical descriptions of toxic characteristics that could cause soil or groundwater to be classified as hazardous waste.

Hazardous materials are routinely used, stored, and transported in the City. Hazardous waste generators may include industries, businesses, public and private institutions, and households. Federal, State, and local agencies maintain comprehensive databases that identify the location of facilities using large quantities of hazardous materials, as well as facilities generating hazardous waste. Some of these facilities use certain classes of hazardous materials that require RMPs to protect surrounding land uses. The release of hazardous materials would be subject to existing federal, State, and local regulations.

The Project Site consists of vacant commercial land. Moody Creek flows adjacent to the northern and eastern boundaries of the site. A vacant Texaco Service Station is present on the site. Concerns about soil and aquifer contamination, emanating from USTs and associated piping linked to the Texaco station, were addressed by the Central Valley RWQCB under case number 450340. The USTs and associated piping are documented to have been removed in 1976. The cleanup was marked as completed, and the case was closed on April 29, 2009 (SWRCB, 2024; Central Valley RWRCB, 1995).

Database searches were conducted for records of hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials within the vicinity of the Project Site. The following databases were reviewed: DTSC Envirostor, SWRCB GeoTracker, and the California Geologic Energy Management Division’s (CalGEM) Well Finder.

4.9.3 Impact Assessment

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less-than-Significant Impact with Mitigation. Construction of the Proposed Project would involve the use of potentially hazardous materials, including vehicle fuels, oils, and transmission fluids typical of construction sites. However, Mitigation Measure HAZ-1 will be implemented to minimize the impacts of hazardous materials during construction. During the operation of the retail business, typical hazardous materials transported to and used at the site would include cleaning solvents, pesticides for landscaping, painting supplies, and petroleum products. All potentially hazardous materials used during construction or operation would be contained, stored, and used in accordance with manufacturers' instructions and handled in compliance with applicable federal, state, and local standards and regulations, which include requirements for disposal of hazardous materials at a facility licensed to accept such waste based on its waste classification and the waste acceptance criteria of the permitted disposal facilities.

The Proposed Project includes fueling stations for vehicles and trucks supported by USTs. The project includes installation of two 20,000-gallon underground fuel tanks and one 27,000-gallon underground fuel tank. The underground design of the tanks will meet the depths and coverage as required by the City of Shasta Lake building code. Operation and maintenance of the gasoline USTs are regulated by the SWRCB UST Program. Installation and maintenance of the proposed USTs would be subject to CCR Title 23, Division 3, Chapter 16 (Underground Tank Regulations). These regulations stipulate construction requirements for new USTs systems including secondary containment for tanks and associated piping, and leak prevention and detection equipment; monitoring requirements; requirements for unauthorized release report and for repair, upgrade, and closure of USTs; and specify variance request procedures. In Shasta County, the SWRCB has given the Environmental Health Department the authority to issue permits for the operation of USTs in the County and oversee the installation, operation and removal (Shasta County, 2024a).

Additional local, State and federal regulations pertaining to the underground storage and dispensation of flammable materials include but are not limited to the following:

- California Health and Safety Code, Chapter 6.7, Sections 25280, et seq.;
- 2013 California Fire Code Title 24, Part 9 (CFC 8003.1.3.2) Spill Control Requirements;
- California Code of Regulations Title 13, Motor Vehicles Division 1, 2 and 3;
- California Code of Regulations Title 27, Environmental Protection, as applicable;
- California Mechanical Code (CMC);
- California Code of Regulations, Title 8, Industrial Relations, Chapter 4, Industrial Safety;
- California Health and Safety Code, Section 13240 – 1343.6 (California Propane Storage and Handling Safety Act);
- Code of Federal Regulations, Section 40, Part 280; and
- National Fire Protection Association (NFPA) Code Section 30a.

Air quality emissions from USTs are regulated by CARB and SCAQMD. The intent of these rules is to minimize the release of VOCs and other hazardous vapors. This is accomplished by vapor recovery and leak detection systems that are required to be CARB-certified and verified through testing and reporting. SCAQMD Rule 3:3 applies to the transfer of gasoline into stationary storage containers, delivery vessels, bulk plants and terminals, and into motor vehicle fuel tanks (SCAQMD, 1997). Additional regulations include CARB's Benzene Airborne Toxic Control Measure for Retail Service Stations (17 CCR 93101) and the Environmental Protection Agency's National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities (CFR, Title 40, Chapter I, Subchapter C, Part 63, Subpart CCCCCC).

The convenience store, aside from the fuel islands, is a typical commercial development that would likely require the use of some common hazardous materials, including cleaning products, pesticides, fertilizers, and solvents, all of which are commonly used in cleaning and landscaping activities. If not properly transported, used, or disposed of, such materials could create hazards for employees, customers, and nearby residents.

Federal and State law requires labeling of all such materials, which identifies proper use, storage, and disposal instructions. Additionally, the use of such materials would be regulated by the Shasta County Environmental Health Department, which has been designated as the CUPA for Shasta County by CalEPA. This program requires handlers of significant amounts of hazardous materials to prepare hazardous materials management plans, detailing emergency response to a release or threatened release of a hazardous material. Given the Proposed Project would use, handle and store significant quantities of hazardous materials, the Project proponent would be required to prepare and implement a Business Plan for Emergency Response, which details a response to a release or threatened release of a hazardous material at the facility. The plan would be required to include site plans and storage maps of the facility, an inventory of hazardous materials that are handled or stored on-site, an emergency response plan, and a safety and emergency response training program for new employees with annual refresher courses (Shasta County, 2024b).

The fueling operations would result in the regular transport of large amounts of hazardous materials such as gasoline, diesel, oil and other truck and automotive materials to the Project Site. These deliveries would occur on designated truck routes in compliance with the California Department of Motor Vehicle standards. Collectively, the routine inspection of the fueling station, the USTs, and all associated fuel delivery infrastructure, along with the continued mandated compliance with all federal, state, and local regulations, would ensure that the Proposed Project is operated in a non-hazardous manner.

Therefore, long-term impacts associated with handling, storing, and dispensing of hazardous materials would be less than significant in compliance with all regulations concerning the use and storage of such hazardous materials.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less-than-Significant Impact. As discussed above, the Proposed Project would include the routine transport, use, and disposal of hazardous materials. The Proposed Project would be required to meet all requirements for hazardous material handling, transport, and storage by local, State and federal agencies. The Proposed Project would also be subject to several plans, programs, and permits regulated by the Shasta County Environmental Health Department. The Project Site would be constructed to provide multiple safety measures including containment areas and piping designed to expose leakages. Adherence to State standards, as well as regulation and enforcement by the Shasta County Environmental Health Department, would ensure that the Proposed Project would not result in a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. Therefore, impacts would be less than significant.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less-than-Significant Impact with Mitigation. Grand Oaks Elementary School is approximately 0.13 miles northwest of the Project Site. However, the Proposed Project will comply with all hazardous material handling, transport, and storage regulations established by local, State, and federal agencies, and will adhere to various plans, programs, and permits regulated by the Shasta County Environmental Health Department. Additionally, Mitigation Measure HAZ-2 mandates the development and execution of an accidental spill prevention and response plan to ensure safe construction practices. Furthermore, there are existing gas stations located 175 feet west and 426 feet south of the Project Site, both of which are also within one-quarter mile from the Grand Oaks Elementary School. Therefore, the Proposed Project is not introducing a new type of land use into the area. As a result of compliance with regulations and implementation of mitigation measures, the project would not pose a significant hazard to the public or the environment, including Grand Oaks Elementary School. Therefore, the impact would be less than significant.

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less-than-Significant Impact with Mitigation. The Cortese list is prepared in accordance with Government Code Section 65962.5. The DTSC EnviroStor and SWRCB GeoTracker databases were reviewed to identify "Cortese List" sites. These databases identified one site on the Project Site and another nearby (SWRCB, 2024).

The SWRCB GeoTracker database identified a Leaking Underground Storage Tank (LUST) cleanup site on the Project Site, originating from the former UST system associated with the abandoned Texaco Service Station (SWRCB, 2024) The USTs and associated piping are believed to have been removed in 1976. The investigation into the site involved borings and soil and groundwater samples in November 1986 and June 2007. In September 2008, a monitoring well was installed, and two groundwater samples were taken. The first sample showed a small amount of gasoline contamination, but the follow-up sample in October 2008 had no detectable petroleum constituents. The Central Valley RWQCB determined no apparent threat to human health, or the environment and the cleanup status was marked as completed with the case closed on April 29, 2009 (Central Valley RWRCB, 2009).

In addition, the SWRCB GeoTracker database identified a LUST cleanup site approximately 160 feet west of the Project Site, opposite Cascade Boulevard, originating from the UST system of a Chevron Service Station (SWRCB, 2024). In October 1993, four USTs were removed from the site during tank upgrade activities and contaminated soil was discovered. After excavation and disposal of 69 tons of petroleum impacted soils, additional testing showed minimal contamination and the excavation was closed with authorization from the Shasta County Department of Environmental Health. Shortly after, petroleum contaminants were detected in groundwater, leading to the creation of the Preliminary Groundwater Evaluation Report and a year of monitoring. Initial tests found low gasoline levels in one well, but subsequent tests and soil samples from well installation were clean. The Central Valley RWQCB determined no apparent threat to human health or the environment and the cleanup status was marked as completed with the case closed on August 16, 1995 (Central Valley RWRCB, 1995).

Because the LUST sites on and in the vicinity of the Project Site have been remediated, the Proposed Project would not pose a significant hazard to the public or the environment from being located on a Cortese List site. Although contaminated soil and/or groundwater is not expected to exist on the Project Site, construction activities could encounter contamination that could pose a risk to construction workers. Therefore, Mitigation Measure HAZ-1 outlines procedures for addressing contaminated soil or groundwater if encountered during construction. With inclusion of mitigation, the impact would be less than significant.

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 or excessive noise for people residing or working in the project area?

No Impact. The Proposed Project is not located within an airport land use plan and there are no public airports located within two miles of the Project Site. There is a private airfield, Tews Field, located less than 1 mile northwest of the Project Site, that has two runways and receives minimal air traffic (SkyVector, 2023). Neither temporary construction activities nor operation of the Proposed Project would result in a safety hazard or excessive noise for people residing or working in the vicinity of a public use airport, and the Proposed Project will have no impact.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less-than-Significant Impact. The primary evacuation routes for the City direct traffic to I-5, which runs north-south along the City's eastern boundary and adjacent to the eastern boundary of the Project Site. The Project Site is also adjacent to Cascade Boulevard and 200 feet north of Shasta Dam Boulevard, both of which are identified as key evacuation routes. Although the Proposed Project will change the existing land use of the Project Site and increase vehicle and truck traffic, as discussed further in **Section 4.17** and **Appendix I**, the increases in traffic are not expected to increase delays at local intersections that could negatively impact emergency responders. Furthermore, only 17 parking spaces for passenger cars and 4 for trucks are proposed under the project meaning a maximum of 21 vehicles would need to evacuate from the Project Site at any one time assuming the parking was at maximum occupancy. Based on the designation of the surrounding streets as collector roads, it is unlikely these additional 21 vehicles would significantly impair emergency evacuation. Therefore, the Proposed Project will not conflict with the City's emergency response or evacuation plans, resulting in a less-than-significant impact.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less-than-Significant Impact with Mitigation. The Project Site was identified as a Very High Fire Hazard Severity Zone (VHFHSZ) by the State Fire Marshall and CalFire and is currently being reviewed by local jurisdiction prior to adoption (CalFire, 2025). However, the Project Site is located on a relatively flat property with minimal slope and is not subject to strong prevailing winds or other factors that would exacerbate wildfire risks. Furthermore, Mitigation Measure HAZ-1 mandates actions to reduce fire risk during construction. Lastly, the Proposed Project would be developed and operated in compliance with all current California Fire Code regulations. Therefore, with mitigation the Proposed Project would have a less-than-significant impact.

4.9.4 Mitigation Measures

HAZ-1: During construction, staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. To the extent feasible, the contractor shall keep these areas clear of combustible materials in order to maintain a fire break. Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.

The following measures shall be implemented to reduce impacts from hazardous materials during construction:

- Potentially hazardous materials, including fuels, shall be stored away from drainages and secondary containment shall be provided for all hazardous materials during construction.
- Vehicles and equipment used during construction shall be provided proper and timely maintenance to reduce the potential for mechanical breakdowns leading to spills.
- Maintenance and fueling shall be conducted in an area that meets the criteria set forth in the spill prevention plan.
- If contaminated soil and/or groundwater is encountered or if suspected contamination is encountered during project construction, work shall be halted in the area, and the type and extent of the contamination shall be identified. A qualified professional, in consultation with the U.S. Department of Agriculture Forest Service (USFS) and the USEPA shall then develop an appropriate method to remediate the contamination. If necessary, a remediation plan approved by the USEPA shall be prepared and implemented for the duration of construction of the proposed project.

HAZ-2: Accidental Spill Prevention and Response Plan

- An accidental spill prevention and response plan shall be developed which will include a list of all hazardous materials used and/or stored on the project site during construction activities; appropriate information about initial spill response, containment, and cleanup strategies; and a list of appropriate City contact information. The plan shall require containment equipment and sufficient supplies to combat spills of oil or hazardous substances shall be on site at all times during construction.

4.10 HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☒	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. result in a substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv. impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

4.10.1 Regulatory Setting

Federal

Clean Water Act (CWA)

The CWA, as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality and establishes the national water quality goals. The pertinent sections of the CWA include:

- Section 303 and Section 304: Provide water quality standards, criteria, and guidelines.

- Section 401: Water Quality Certification. Requires an application for any federal permit that proposed an activity which may result in the discharge to Waters of the U.S. to obtain certification from the state that the discharge will comply with other prevision of the CWA.
- Section 402: Established the National Pollution Discharge Elimination System (NPDES) for the discharge of any pollutant (except for dredge of fill material) into Waters of the U.S. This permit system is administered by the SWRCB and is discussed in further detail below.
- Section 404: Establishes a permit program for the discharge of dredge or fill material into Waters of the U.S. This permit program is administered jointly by the USACE and the USEPA.

Safe Drinking Water Act (SDWA)

Under the SDWA, the USEPA regulates contaminants of concern to domestic water supply. Contaminants of concern are those defined to pose a threat to public health or alter the aesthetic acceptability of the water. These types of contaminants are classified as either primary or secondary Maximum Contaminant Levels (MCLs).

Federal Emergency Management Agency (FEMA)

FEMA is responsible for mapping flood prone areas under the National Flood Insurance Program (NFIP). Communities that participate in the NFIP are required to adopt and enforce a floodplain management ordinance to reduce future flood risks related to new construction in a flood hazard area.

National Pollution Discharge Elimination System (NPDES)

Under Section 402(p) of the CWA, the USEPA established the NPDES to enforce the discharge standards for both point-source and non-point source pollution, such as construction activities. Construction activities include clearing, grading, excavation, stockpiling, and reconstructing existing facilities involving removal and replacement of existing foundations or other hardscapes. Construction projects disturbing one or more acres of soil must be covered under the NPDES Construction General Permit process. The responsibility for issuing NPDES programs is delegated to the SWRCB and the nine RWQCBs. Additional discussion for NPDES as it relates to State specific regulations are discussed below.

State

NPDES

On February 5, 2013, the SWRCB adopted Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (Phase II MS4s) (currently Water Quality Order No. 2013-0001-DWQ). The City of Shasta Lake is a Regulated Small MS4 and must comply with provisions of the Phase II MS4 General Order. Under the Phase II MS4 permit, the City of Shasta Lake must ensure that development projects incorporate measures to reduce storm water runoff both during construction and post-construction to minimize the potential for long-term impacts.

Water Quality Control Plan

Each of the State’s RWQCBs is responsible for developing and adopting a basin plan for all areas within its region. The Plans identify beneficial uses to be protected for both surface water and groundwater. Water quality objectives for all waters addressed through the plans are included, along with implementation programs and policies to achieve those objectives. The Central Valley RWQCB adopted a Water Quality Control Plan, Fourth Edition (revised February 2019), for the Sacramento and San Joaquin River Basins (Basin Plan) that designates beneficial uses, establishes quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. The Basin Plan identifies water quality objectives that are to be achieved primarily through the adoption of waste discharge requirements (WDRs) to attain the beneficial uses listed for the Basin Plan area.

Sustainable Groundwater Management Act (SGMA)

The SGMA, enacted in September 2014, established a framework for groundwater resources to be managed by local agencies in areas designated by the Department of Water Resources as "medium" or "high" priority basins. Basins were prioritized based, in part, on groundwater elevation monitoring conducted under the California Statewide Groundwater Elevation Monitoring (CASGEM) program. The SGMA requires local agencies in overdrafted, medium and high-priority basins to form Groundwater Sustainability Agencies and be managed in accordance with locally-developed Groundwater Sustainability Plans (GSPs).

Local

City of Shasta Lake General Plan

The City of Shasta Lake 2040 General Plan includes the following goal CON-1, which aims to protect and conserve water resources and improve and maintain water quality. The following polices are specific to water resources and water quality:

> **POLICY CON 1.1**: Protect and improve the quality of surface water.
>
> **POLICY CON 1.2:** Protect existing wetlands to the greatest extent possible, consistent with achieving the vision expressed in the General Plan.
>
> **POLICY CON 1.3**: Maintain and improve current conveyance capacity for both natural and constructed drainages.
>
> **POLICY CON 1.4**: Minimize the alteration of creek courses and bottoms.
>
> **POLICY CON 1.5**: Integrate stormwater management techniques and low impact development best practices to minimize runoff. Encourage water conservation efforts by residents, businesses, and industry.
>
> **POLICY CON 1.6**: Require new development annexed to the City be connected to the City's wastewater collection system whenever possible.

Additionally, the goal of CON-2 is to continue regional relationships that ensure a flexible and sustainable water supply. With the following polices specific to water resource and water quality:

> **POLICY CON 2.1**: Continue to work with regional water authorities, including the Central Valley Regional Water Quality Control Board and Shasta County Environmental Health Department, to implement land use controls for the protection of water quality.
>
> **POLICY CON 2.2**: Coordinate with regional water authorities to ensure that applicable requirements are included in new development projects and City ordinances.

POLICY CON 2.3: Work with regional stakeholders to protect and restore watershed viability and protect the health of wildlife and natural habitat in an integrated watershed management approach that aligns with regional, state, and federal policies that may apply.

4.10.2 Environmental Setting

The Project Site is located within the Sacramento River watershed and Moody Creek occurs along the northern and eastern boundaries. Moody Creek is a tributary of Stillwater Creek which eventually flows into the Sacramento River. Neither Moody Creek nor Stillwater Creek are listed on the Section 303(d) list of impaired water bodies, although the stretch of the Sacramento River near the Stillwater Creek confluence is listed as impaired for temperature and toxicity (SWRCB, 2022). This same stretch was delisted in 2018 for other contaminants, including cadmium, copper, zinc, indicating water quality is generally improving in the area (SWRCB, 2022).

The Project Site is included in a FEMA Flood Insurance Study (FIS) for Shasta County dated March 17, 2011. A portion of the Project Site is classified as Special Flood Hazard Area – Zone AE, as determined by FEMA (**Figure 7**). A Technical Memorandum was prepared for the Proposed Project to determine base flood elevation (BFE), which is 772.99 feet based on the design hydraulic study for Cascade Boulevard Bridge at Moody Creek (**Appendix C**). Immediately east of the Project Site, Moody Creek is routed into a culvert that flows below I-5 and discharges on the east side of the highway (**Appendix C**).

Drinking water within the City of Shasta Lake is primarily sourced from Shasta Lake surface waters through long-term water contracts with the U.S. Bureau of Reclamation. The City also has contracts for surface water supplies from the Central Valley Project, Anderson Cottonwood Irrigation District, Shasta County Water Agency, and the City of Redding (City of Shasta Lake, 2023a).

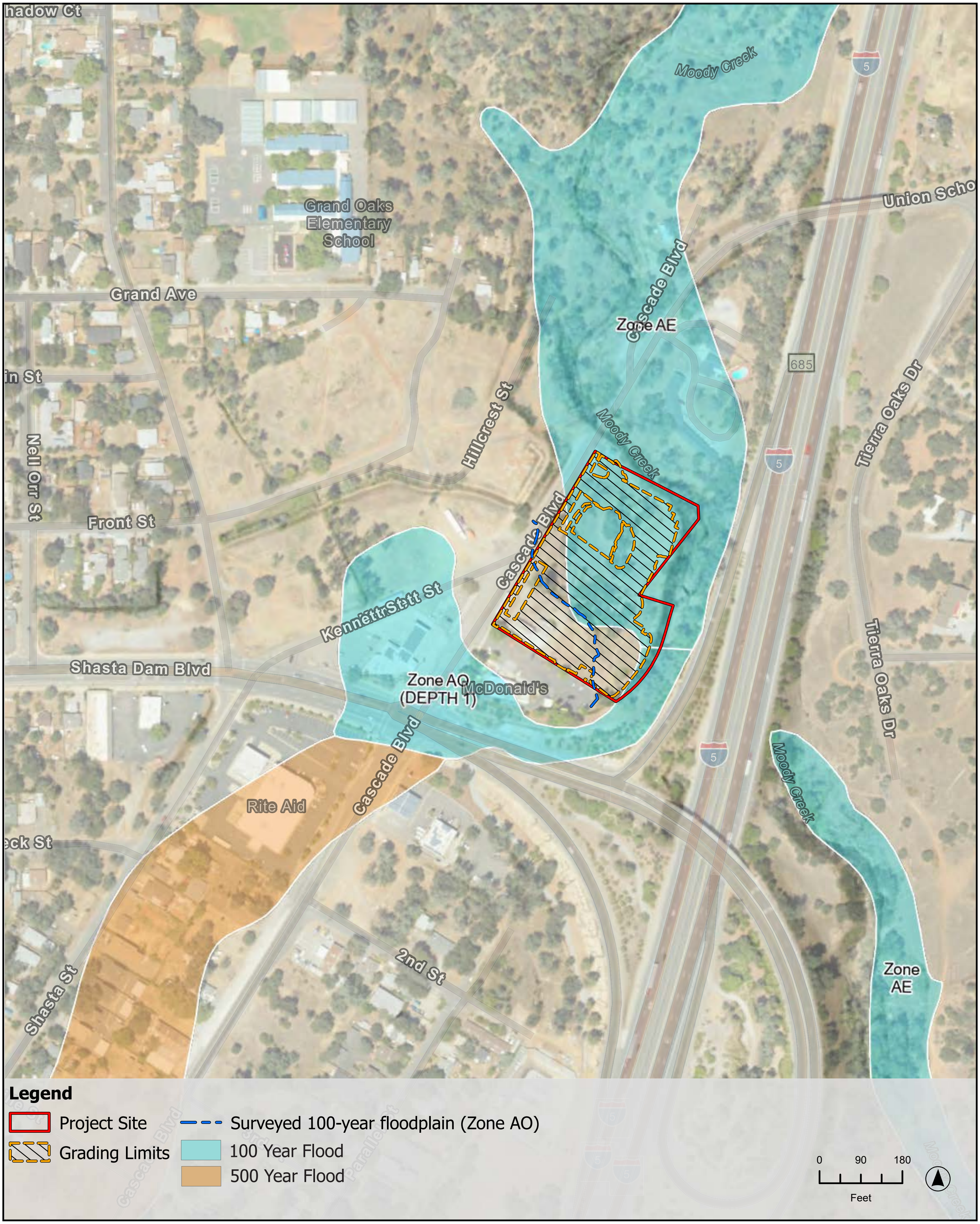
The Project Site is not located within a designated groundwater basin; the nearest groundwater basin is Redding Enterprise (5-006.04) which is approximately 1.5 miles southeast. This basin is considered a medium priority basin of the State under SGMA and has an approved GSP (DWR, 2024). The quality of both groundwater and surface water in the region is generally excellent and suitable for all anticipated beneficial uses (City of Shasta Lake, 2023a).

4.10.3 Impact Assessment

a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Construction

Less-than-Significant Impact. Clearing, grading, excavation, and construction activities have the potential to impact water quality through soil erosion and increased silt and debris discharged into runoff. Additionally, the use of construction materials such as fuels, solvents, and paints may present a risk to surface water quality. Temporary storage of construction material and equipment in work areas or staging areas could create the potential for a release of hazardous materials, trash, or sediment to the storm drain system. While construction-related erosion and discharges would be significant, because the Proposed Project would disturb more than one acre of soil it would be required to comply with the NPDES General Construction Permit, which requires the implementation of a SWPPP that incorporates BMPs to control sedimentation, erosion, and the potential for hazardous materials contamination of runoff during construction. With compliance with the NPDES General Construction Permit and implementation of a



Source: Esri, USDA FSA, Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 7
FEMA Flood Zones

SWPPP with site-specific stormwater BMPs, impacts due to construction activities would be less than significant.

Gas Station Operation

Less-than-Significant Impact. The gas station shall be designed and constructed in accordance with all federal and state regulations governing gasoline operations. Specific design, construction and operation practices shall include the following to prevent spills, overfills, and corrosion from impacting surface water or groundwater resources:

- Gas station attendants and delivery personnel shall follow industry standard filling practices such as American Institute recommended Practice 1007, "Loading and Unloading of MC306/DOT 406 Cargo Motor vehicles." Filling practices shall include provisions that ensure that the volume available in the tank is greater than the volume of product to be transferred to the tank before the transfer is made; and that the transfer operation is monitored constantly to prevent overfilling and spilling.
- Gasoline storage tanks shall be equipped with overfill protection such as automatic shutoff devices, overfill alarms or ball and float valves.
- Gasoline storage tanks shall be constructed to meet federal corrosion performance standards. Gasoline storage tanks shall be periodically inspected to ensure that the tank is structurally sound and free of corrosion or holes. Frequency of inspections shall be consistent with state and federal requirements.
- The tanks shall be equipped with leak detection systems to provide early detection of leaks from the tanks and dispensing equipment.

With adherence to the aforementioned regulatory requirements, potential impacts to water quality due to typical gas station operations would be less than significant.

Stormwater Runoff During Operation

Less-than-Significant Impact with Mitigation. The Proposed Project would consist of two tributary areas that will convey surface runoff by a series of swales, gutters, and drop inlets. The proposed retention ponds would be located near the northeastern and southeastern site boundaries. The Proposed Project would be required to implement applicable provisions of the City's Storm Water Quality Management Program, ensuring that effective and adequate BMPs would be in place to minimize the pollutant load in storm drainage, thereby protecting surface water quality. At the discharge pipes of each detention basin, bioswales or other measures shall be utilized to ensure that stormwater will not be channelized on the Project Site and that runoff returns to sheet flow prior to entering Moody Creek to prevent channel erosion that could impact water quality. In addition, implementation of General Plan policies would further protect surface quality by requiring the SWPPP to be updated to include newly available BMPs. However, runoff of improperly treated stormwater could result in the violation of water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality, and this is a potentially significant impact.

Mitigation Measure HYD-1 requires that the on-site stormwater system include catch basins with rechargeable, media-filled cartridges that trap particulates and absorb pollutants from stormwater runoff. Additionally, Mitigation Measure HYD-1 requires treatment of all runoffs from vehicle circulation areas prior to entering the storm drainage system and detention basin. With the implementation of Mitigation Measure HYD-1, potential impacts to water quality would be less than significant.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less-than-Significant Impact. Potable water will be provided by the City of Shasta Lake's water system (City of Shasta Lake, 2024e) which is supplied by surface water from Shasta Lake. Groundwater is not proposed to serve the water demands of the Proposed Project. Development of the Proposed Project would increase the amount of impervious surfaces on the Project Site, which could potentially affect groundwater recharge in the local area. However, the Project Site is not located within a designated groundwater basin and therefore the minor decrease in pervious surface is minimal and not anticipated to affect groundwater recharge in the nearest groundwater subbasin over 1 mile from the Project Site. Therefore, this would be a less-than-significant impact.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i. Result in a substantial erosion or siltation on- or off-site?

Less-than-Significant Impact. The Proposed Project would require vegetation removal and some grading during construction. If not controlled, the transport of mobilized soils into local waterways could temporarily increase sediment concentrations. The Proposed Project would be required to comply with all of the requirements of the NPDES General Construction Permit, including preparation and implementation of a SWPPP prior to start of construction activities. Currently, stormwater on the Project Site either percolates into the permeable ground or runs off into Moody Creek. Upon completion of the Proposed Project, stormwater from the Grading Limits would either flow north toward Moody Creek from the vegetated, open area in the central portion of the site, or be directed to one of two detention basins to slow and treat stormwater flows. Compliance with State regulations would ensure that the Proposed Project would have a less-than-significant impact.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

Less-than-Significant Impact. The Proposed Project would alter on-site drainage patterns and increase the amount of impervious surface area on the Development Site, potentially increasing the rate and volume of runoff from the Project Site. The Proposed Project includes on-site drainage collection improvements that would route stormwater to two detention basins, as analyzed in **Appendix B**. The 100-year preconstruction runoff flow was estimated to be 2.75 cubic feet/second (cfs), while uncontrolled post-construction runoff rates with the increased impervious surfaces would be 2.376 cfs. Approximately 1,518 cubic feet and 1,681 cubic feet of storage per tributary are required to meet the 100-year storm capacity (**Appendix B**). To reduce the peak runoff rates and minimize potential on- or off-site flooding, the Proposed Project detention basins will provide 6,037 cubic feet and 39,333 cubic feet of stormwater storage capacity per tributary drainage area. Therefore, the potential impacts to flooding on- or off-site would be less than significant.

iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less-than-Significant Impact. The Proposed Project would introduce additional impervious surfaces and would have the potential to increase the amount of stormwater runoff either on- or off-site. While the Proposed Project would alter the existing drainage on-site, development would include two detention basins to retain stormwater flows to at or below pre-project conditions. During construction related activities, a SWPPP will be prepared and implemented to ensure the prevention of polluted runoff. Therefore, the Proposed Project would have a less-than-significant impact.

iv. Impede or redirect flood flows?

Less-than-Significant Impact. A portion of the Grading Limits would be located within the 100-year floodplain of Moody Creek. The Proposed Project does not include any components that would directly alter the course of a stream or river, however it does propose the convenience store building partially within the 100-year floodplain. As further discussed in **Appendix C**, the hydraulics and flooding of Moody Creek is due to the presence of undersized culverts downstream at I-5 which results in a large backwater at the Project Site. "Any significant fill added to the area within FEMA flood plain boundary may result in flooding at the areas downstream." Although the Proposed Project does include some development components within the 100-year floodplain, the overall site grading has taken this into consideration and has designed the proposed earthworks to avoid additional fill within the FEMA flood plain boundary. The proposed grading plan results in a net reduction (cut) from the floodplain, which demonstrates that the Proposed Project will not have any significant impact to the base flood elevation during the 100 year storm event (**Appendix C**). Therefore, the Proposed Project would have a less-than-significant impact on flood risks.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Less-than-Significant Impact. The Project Site is located inland and approximately 4.0 miles from Shasta Lake; therefore, no impacts expected to occur as a result of a tsunami or seiche. As discussed above, the Proposed Project is within a 100-year flood zone, but includes the construction of three retention ponds to direct stormwater to a stable outlet where it can be treated before release. An overflow swale would be constructed in the unlikely event that stormwater exceeds the expected 100-year storm capacity (**Appendix B**). Therefore, the risks of pollutant release related to flood hazard is less than significant as pond capacity will meet calculated runoff from a 100-year storm event.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less-than-Significant Impact. The Project Site is not located within a designated groundwater basin and is not regulated by a GSP. The implementation of a SWPPP would minimize any effects resulting from potential water quality impacts. As such, the impacts to water quality control plan or a sustainable groundwater management plan would be less than significant.

4.10.4 Mitigation Measures

HYD-1: The following measures will be implemented to reduce impacts to water quality from operation:

- All stormwater runoff from parking and vehicle circulation areas will be treated prior to entering the stormwater drainage system and detention basin via bioretention facilities or catch basins with rechargeable, media-filled cartridges that trap particulates and adsorb pollutants from stormwater runoff such as total suspended solids, hydrocarbons, nutrients, metals, and other common pollutants.
- The gas station shall be equipped with catchment basins of sufficient size to contain small spills. At a minimum, the basin shall be large enough to contain what may spill when the delivery hose is uncoupled from the fill pipe. Any spilled fuel shall be removed and disposed of immediately.
- The fueling station pad shall be graded to prevent runoff from flowing across the pad, or to a drain with an oil and water separator prior to connection to the sanitary system or a closed sump. This would isolate any fuel or oil contamination in the fueling station area from the stormwater system.

4.11 LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

4.11.1 Regulatory Setting

Local

City of Shasta Lake General Plan

The City of Shasta Lake's General Plan includes the following objectives and policies that apply to the Proposed Project:

Goal LU-1: Manage land uses in a flexible and sustainable manner that promotes a village feel, with places to live, work, shop, be entertained and culturally enriched, engage in healthy lifestyles, and engage with one's community.

Policy-LU-1.3: Evaluate zoning proposals to prevent the overconcentration of land uses in any area of the City where land use intensities, commercial or industrial operations, or increased traffic would adversely impact the safety, health, and quality of life of residents.

Policy-LU-1.4: Adopt quality zoning development standards to ensure that the characteristics of major entrances to the community are not diminished by commercial uses or site development proposals that do not support high quality visitor-serving commercial development.

Policy-LU-1.5: At a minimum, the General Plan land use diagram will contain Residential, Commercial, Industrial, Open Space, Natural Resource, Parks, and Public Facilities land use categories, each of which is described in the Table 1-2 Land Use Classification Descriptions. These land use categories will be implemented through specific zoning districts and the related development standards.

Policy-LU-1.6: Address the issue of non-conforming land uses to improve land use compatibility. Recognize that small-town development features may allow a non-conforming land use issue to remain compatible with adjacent or future uses. Work with property owners to manage non-conforming uses if they were legally started and constructed.

Policy-LU-1.8: As the community grows and faces development pressure along I-5 and on its fringes, the City must be both deliberate and resolute in its commitment to preserve the character and economic vitality of downtown. The City shall encourage economic growth and continued improvement in the downtown area on already-developed areas and on underutilized parcels.

Policy-LU-1.9: Develop and ensure land use compatibility through coordination and cooperation with the City of Redding and Shasta County. All development applications which have the potential to impact lands or facilities in the City of Redding and in the unincorporated areas of Shasta County should be submitted to the respective agencies for review and comment.

Policy-LU-1.12: Protect and improve the aesthetic appeal of neighborhoods in a fashion that does not conflict with the existing community character.

City of Shasta Lake Municipal Code

The City of Shasta Lake Municipal Code Chapter 15.04 contains provisions designed to reduce flood loss and to protect loss of property and life. New development in the floodplain must meet strict standards and be approved by the floodplain administrator. This includes special attention to the management of altered natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters; the management of filling, grading, dredging, and other development which may increase flood damage; and the prevention and regulation of the construction of flood barriers which will unnaturally divert floodwaters, or which might increase flood hazards in alternate areas. The Code prohibits encroachments, which include fill, new construction, substantial improvement, and other new development unless certified by a registered professional engineer and approved by the City.

Hazard Mitigation Plan (HMP)

The City of Shasta Lake Hazard Mitigation Plan (HMP) is a comprehensive, long-term strategy aimed at reducing the community’s vulnerability to natural hazards. Section 4.5.2 specifically evaluates the City’s flood hazard profile, identifying areas within the 100-year floodplain as high-risk zones for flooding. The HMP outlines strategies to minimize flood hazards, including regulating development within flood-prone areas, preserving natural floodplain functions, and implementing infrastructure improvements to manage stormwater and reduce flood risk. The HMP supports policies that encourage flood-resilient design, protect riparian corridors, and maintain open space in floodplains to mitigate potential damage to property and infrastructure during flood events. The HMP is incorporated within the Safety Element of the General Plan, helping to create an opportunity for wise land-use decisions as future growth encroaches on flood hazard areas.

4.11.2 Environmental Setting

The Project Site is located within and adjacent to the City of Shasta Lake boundaries in Shasta County, California, and is currently undeveloped except for a vacant gas station. The City of Shasta Lake adopted an updated General Plan on November 15, 2022, and is in the process of updating its Zoning Ordinance. The existing zoning ordinance, originally written for unincorporated Shasta County, is inconsistent with the new General Plan. Until the new Zoning Ordinance is adopted, an Interim Zoning Ordinance, consistent with the new General Plan, establishes land use zones and standards for all properties within the City.

The Project Site is zoned and designated Commercial (C) by the City of Shasta Lake General Plan and Interim Zoning Ordinance (City of Shasta Lake, 2023a; City of Shasta Lake, 2023b). The Commercial Zone includes most of the retail and service business developments within the City, such as general retail, restaurants, personal services, offices, hotels, shopping centers, and similar uses. Further, the Project Site is within a Natural Resource Overlay zone due to its location in the 100-Year flood hazard area. This zone aims to protect significant wildlife habitat resources, and is important for maintaining natural local ecosystems, such as floodplains, riparian areas, and sensitive habitats.

The Project Site is bordered by I-5 on the east, Cascade Boulevard to the west, and commercial land immediately to the north and south. Surrounding land uses in the vicinity of the Project Site within the City boundaries include Mixed Use (MU), Urban Residential (UR), Public Facilities (PF), and Commercial (C).

The area east of the Project Site on the opposite side of I-5 is within unincorporated Shasta County and is designated Rural Residential (RA) by the Shasta County General Plan and Rural Residential (R-R) Mobile Home (T) with a Design Review overlay (DR) by the Zoning Ordinance (Shasta County, 2024c).

The Project Site is located within a 100-year floodplain, and Moody Creek flows adjacent to the Project Site's northern and eastern boundaries. Regional access to the Project Site is provided by I-5, which runs in a north-south direction adjacent to the site's eastern boundary. Local access to the Project Site is provided though Cascade Boulevard. Surrounding zoning designations are illustrated in **Figure 8**.

4.11.3 Impact Assessment

a) Would the project physically divide an established community?

No Impact. The Proposed Project would not divide an established community. It does not involve the construction or closure of any highways or major roadways, nor does it include the construction of major utility transmission lines, storm channels, or water diversions. The Proposed Project consists solely of on-site improvements within four parcels that were previously developed with a gas station and service station. As such, there would be no impact.

Source: Esri, USDA FSA, Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community

Figure 8
Zoning

b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less-than-Significant Impact with Mitigation. The Proposed Project would result in the conversion of vacant commercial land and the construction and operation of a 7-Eleven convenience store, 4-dispenser gas island, and 3-lane diesel station island. As the Project Site is currently zoned for commercial development and previously included a gas station, the Proposed Project is consistent with the City's underlying land use and zoning designations and historical use of the Project Site. Through the plan review and permitting process, the Proposed Project would be required to adhere to the City's development policies and standards, and commercial design and development guidelines. The Project Site is located within a Natural Resource Overlay Zone due to its location in the 100-year flood hazard zone and will be subject to additional regulations concerning flood risk, including the City's Floodplain Management Ordinance (Section 15.04 of the Municipal Code). **Appendix H** presents a consistency analysis of the Proposed Project compared to the most relevant goals and policies of the City of Shasta Lake General Plan. As shown by the detailed analysis contained within **Appendix H**, the Proposed Project is consistent with the majority of the relevant General Plan policies, but there are several for which it is partially consistent or inconsistent. Specifically, the Proposed Project would be inconsistent with several goals and policies pertaining to avoiding development within floodplains (e.g., Goal OS-2, Policy HS-4.2) for which the Proposed Project would be only partially consistent. Policy LU-3.15 recommends incorporating best practices to minimize damage from floods, and Goal OS-3 recommends development planning that is consistent with flood mitigation efforts. Although the Proposed Project does include some development components within the 100-year floodplain, the overall site grading has taken this into consideration and has designed the proposed earthworks to avoid additional fill within the FEMA flood plain boundary. The proposed grading plan results in a net reduction (cut) from the floodplain, which demonstrates that the Proposed Project will not have any significant impact to the base flood elevation during the 100 year storm event (**Appendix C**), and therefore the Proposed Project is partially consistent with floodplain-related General Plan goals and policies. With inclusion of Mitigation Measure BIO-3, the Proposed Project would abide by CDFW's recommended 10-foot setback from the edge of the riparian tree canopy, which would ensure consistency with General Plan Policy CON-3.3. Mitigation Measure BIO-3 would also ensure the Proposed Project is consistent with Implementing Action CON-4.6, which requires defined transition zones between development areas and open space or conservation areas. The 10-foot setback would be protective of riparian trees and provide the transition zone recommended by Implementing Action CON-4.6. Therefore, despite the identified inconsistencies with the General Plan, impacts would be less than significant with mitigation.

Properties directly to the north and south of the Project Site are zoned commercial by the City of Shasta Lake. Operation of the convenience store and fueling service stations would be compatible with commercial uses, and thus no land use conflicts would occur. The Project Site is located within a 100-year floodplain; however, the Proposed Project would comply with FEMA, USFWS, and City of Shasta Lake regulations to minimize flood risk. The Proposed Project would not interfere with the County's land use plan designations for properties to the east. The Proposed Project is generally consistent with the majority of applicable land use plans, policies, and regulations, and with mitigation would result in less than significant environmental impacts from being inconsistent with two General Plan Policies adopted for the purpose of avoiding or mitigating an environmental effect.

4.12 MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?	☐	☐	☒	☐
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?	☐	☐	☐	☒

4.12.1 Regulatory Setting

State

Surface Mining and Reclamation Act of 1975

The Surface Mining and Reclamation Act (PRC Chapter 9, Division 2) provides a comprehensive surface mining and reclamation policy to ensure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. MRZs are applied to sites determined by the CGS as being a resource of regional significance and are intended to help maintain mining operations and protect them from encroachment of incompatible uses.

4.12.2 Environmental Setting

The CGS is responsible for the classification and designation of areas within California containing or potentially containing significant mineral resources. The CGS classifies lands into Aggregate and Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geologic Board, as mandated by the Surface Mining and Reclamation Act of 1975. Lands classified as MRZ-1 are areas where geologic information indicates no signification mineral deposits are present; MRZ-2 indicates areas that contain identified mineral resources; MRZ-3 indicates areas of undetermined mineral resources significance; and MRZ-4 indicates areas of unknown mineral resource potential.

In 1997, the California DOC Division of Mines and Geology (DMG) published Report 97-03 titled, Mineral Land Classification of Alluvial Sand and Gravel, Crushed Stone, Volcanic Cinders, Limestone, and Diatomite Within Shasta County, California. Report 97-03 identified the potential for MRZ-3 sand and gravel resources on the east side of the City, encompassing the boundaries of the Project Site (DOC, 2023; City of Shasta Lake, 2023a).

4.12.3 Impact Assessment

a) Would the project result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?

Less-than-Significant Impact. While the Project Site falls within MRZ-3 for sand and gravel, it is not identified as containing any mineral deposits according to the DOC DMR. Furthermore, the Project Site has been historically used as a gas station and currently includes abandoned buildings associated with these past land uses; there is no evidence it has been used for mineral extraction. Therefore, the Proposed Project would not 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. As such, there would be a less-than-significant impact.

b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. While the City of Shasta Lake General Plan acknowledges the presence of MRZ-3 within the City, it does not identify any mineral resources of significant value, and there are no mineral extraction or mining operations within the City limits. Therefore, the Proposed Project would not result in the loss of availability of a locally important mineral resource recovery site as delineated on a local general plan, specific plan, or other land use plan. As such, there would be no impact.

4.13 NOISE

Would the project result in:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 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?	☐	☐	☒	☐

4.13.1 Regulatory Setting

Federal

Federal Noise Abatement Criteria

The Federal Highway Administration (FHWA) provides construction noise level thresholds in its Construction Noise Handbook, which are provided in **Table 4.13-1** (U.S. Department of Transportation [USDOT], 2006).

Table 4.13-1: Federal Construction Noise Thresholds

Noise Receptor Locations and Land Uses	Daytime dBA, Leq[1] (7 A.M. – 6 P.M.)	Evening dBA, Leq[1] (6 P.M. – 10 P.M.)	Nighttime dBA, Leq[1] (10 P.M. – 7 A.M.)
Noise-Sensitive Locations: (residences, institutions, hotels, etc.)	78 or Baseline + 5 (whichever is louder)	Baseline +5	Baseline +5 (if Baseline <70) or Baseline +3 (if Baseline >70)
Commercial Areas: (businesses, offices, stores, etc.)	83 or Baseline +5	None	None
Industrial Areas: (factories, plants, etc.)	88 or Baseline +5	None	None

Notes:
[1]Leq thresholds were empirically determined
dBA = A-weighted decibels, Leq = equivalent continuous noise level
Source: USDOT, 2006

Local

City of Shasta Lake General Plan

The City's General Plan contains the following policies and implementation measures related to noise (City of Shasta Lake, 2023a)

Goal-HS-8: Protect the community from excessive noise.

> **Policy HS-8.1:** Protect the community from excessive noise through thoughtful siting and adequate buffering where new uses have the potential to cause negative noise impacts on health and wellness.
>
> **Policy HS-8.2:** Protect noise-sensitive uses and areas from significant sources of noise, including from transportation and stationary noise-generating uses.
>
> **Policy HS-8.3:** New development shall use appropriate site planning and building design to reduce undesirable noise impacts in accordance with standards established through the Noise Ordinance.
>
> **Policy HS-8.4:** The noise sensitivity of land uses as established in Figure 7-24 shall be used in the location of new development, new circulation improvements, and preparation of general plan amendments and specific plans. The noise exposure level shall be established by reference to the noise contour maps (Figure 7-26, Figure 7-27, Figure 7-28, and Figure 7-29) or project specific measurements or calculations made pursuant to the Noise Ordinance. The guidelines in Figure 7-24

shall be with the degree of flexibility required in each case to achieve a sound and feasible land use decision.

Implementation HS-8.1: Buffer noise-sensitive uses and areas adjacent to existing and new sources of noise, such as I-5 and industrial areas and uses, through the implementation of various methods, including but not limited to:

- Establishing land use compatibility standards;
- Enforcement of noise standards;
- Insulating or buffering residences exposed to excessive levels of noise;
- Minimizing traffic noise through responsive site design techniques and physical barriers; and
- Regulating new development to limit noise impacts through site and building design and operational conditions.

4.13.2 Environmental Setting

Acoustical Background and Terminology

Noise is a subjective reaction to different types of sounds. Noise is typically defined as (airborne) sound that is loud, unpleasant, unexpected or undesired, and may therefore be classified as a more specific group of sounds. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by A-weighted sound levels. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives sound. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.

The decibel scale is logarithmic, not linear. In other words, two sound levels 10-dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted, an increase of 10-dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound, and twice as loud as a 60-dBA sound.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given environment. A common statistical tool is the average, or equivalent, sound level (L_{eq}), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time varying signal over a given time period (usually one hour). The L_{eq} is the foundation of the composite noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average level (DNL or L_{dn}) or community Noise Equivalent Level (CNEL) is based upon the average noise level over a 24-hour day, with a +10-decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours and a +5-decibel weighing for evening (7:00 pm to 10:00 pm hours). The evening and nighttime penalties are based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Ambient Noise

The Project Site is located within the City limits, adjacent to I-5 to the east and commercial development to the north and south. Shasta Dam Boulevard (Hwy-151) is located approximately 200 feet south. Land use designations in the vicinity are predominantly commercial, as discussed further in **Section 4.11**. There is an existing private airfield with two runways located approximately 1 mile southeast. Vehicular traffic in the area, particularly along I-5 and Hwy-151, contribute to the ambient noise levels in the vicinity of the Project Site. The existing ambient noise levels in the vicinity of the Project Site are moderate to high, with the CNEL ranging from 65 to 70 (City of Shasta Lake, 2023a).

Sensitive Receptors

Noise sensitive receptors are land uses that are considered to be more sensitive to noise impacts. Examples of noise sensitive receptors include schools, residences, and hospitals. The nearest sensitive receptors to the Project Site include Grand Oaks Elementary School, located approximately 0.13 mile northwest of the Project Site, and several single-family homes located approximately 1 mile east of the Project Site on the opposite side of I-5.

4.13.3 Impact Assessment

a) Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction

Less-than-Significant Impact. Noise from the construction of the Proposed Project would temporarily increase the ambient noise levels in the immediate vicinity. The current baseline noise level at the Proposed Project site is 65 to 70 dBA, due to the proximity of I-5 directly adjacent to the Project Site which produces consistent noise from vehicular traffic. Construction activities would be subject to federal and local noise regulations and ordinances. The FHWA limits daytime construction noise thresholds in commercial areas to 83 dBA or the baseline noise level +5, whichever is louder. The City of Shasta Lake General Plan states the maximum conditionally acceptable LDN in commercial zones to be 78 dB and the normally unacceptable day-night average noise level to be 85+ dBA. Typical construction equipment that may be used during the development of the Proposed Project would produce variable levels of increased noise at 50 feet from the source, as outlined in **Table 4.13-2**.

Table 4.13-2: Typical Construction Equipment Noise

Type of Equipment	Maximum Level, dBA at 50 feet
Backhoe	78
Compactor	83
Compressor (air)	78
Crane	85
Dozer	85
Drum Mixer	80
Dump Truck	76
Excavator	81
Flat Bed Truck	84
Generator	81
Pneumatic Tools	85
Welding Truck	73

Source: USDOT, 2006

Construction activities would result in temporary maximum noise levels ranging from 73 to 85 dBA at a distance of 50 feet. Noise typically decreases by 6 dBA with the doubling of distance between a noise point source, such as a construction site, and a noise receptor. Given this attenuation rate and with conservative assumptions, a sensitive receptor 200 feet from construction activity might experience maximum noise levels up to 73 dBA Lmax. These levels are less than the City of Shasta Lake and FHWA construction noise threshold of 83 within commercial zones during daytime construction hours (7 A.M. – 6 P.M.). The nearest sensitive receptor is 0.13 mile (686 feet) away, and would experience substantially lower levels of noise from construction at the Project Site. Standard City Conditions of Approval would limit construction to daytime hours, 7 A.M. – 7 P.M. Monday through Friday, 8 A.M. – 5 P.M. on Saturdays, and no construction on Sundays. Construction is anticipated to begin Summer 2025 and last less than a year. Impacts of construction on ambient noise levels would be within established standards and considered less than significant.

Operation

Less-than-Significant Impact. The operation of the Proposed Project would result in noise from increased traffic to the area as well as stationary or point-source noise from idling trucks or transportation refrigeration units (TRUs) that may make deliveries to the Project Site. As described in **Appendix I**, much of the traffic visiting the Project Site is pass-by, meaning that the vehicles are already in the area and stop at the gas station or convenience store. The Proposed Project would generate 276 AM and 252 PM peak hour trips. Typically, a doubling of traffic volume on an area roadway can lead to a perceptible increase in noise (3.0 dBA or higher); the Proposed Project would not double traffic and therefore mobile noise sources would not result in significant impacts. Stationary noise sources on the Project Site include idling maintenance and delivery trucks, which would produce occasional noise within commercial noise thresholds. CARB restricts truck idling to no more than five minutes at a time, making the impact on operational noise temporary and limited (California Code of Regulations Title 13, Section 2485). Standard diesel truck idling and TRU (specifically ThermoKing SB-200 Trailer Refrigeration Unit (60- Hertz Standby Electric Reefer)) produce 96 dBA at the source (LSA Associates, 2013). At the nearest noise sensitive receptor approximately 686 feet away, the truck noise would be approximately 40 dBA which is well below City thresholds. The Project Site is located directly beside I-5 and an operating McDonalds, and approximately 175 feet from a different gas station and convenience store. Given these existing noise sources, the ambient noise level following construction of the Proposed Project would be similar to and typical of the current ambient noise level. Therefore, operation of the Proposed Project would have a less-than-significant impact on the ambient noise level within the vicinity.

b) Would the project generate excessive groundborne vibration or groundborne noise levels?

Less-than-Significant Impact. Construction activities and equipment may cause excessive groundborne vibration or groundborne noise. The impacts from such vibrations can include disruption to humans and damage to nearby building structures. Vibrations begin to cause irritation at a peak particle velocity (PPV) of 0.1 inches/second (Caltrans, 2020). Building damage becomes a risk at vibration levels of 0.5 inches/second. Typical construction equipment PPV can be seen in **Table 4.13-3**.

Table 4.13-3: Vibration Source Amplitudes for Construction Equipment

Equipment Category	PPV at 25 ft. (in/sec)	PPV at 100 ft. (in/sec)
Clam Shovel Drop	0.202	0.025
Vibratory Roller	0.210	0.026
Hoe Ram	0.089	0.011
Large Bulldozer	0.089	0.011
Caisson Drilling	0.089	0.011
Loaded Trucks	0.076	0.010
Jackhammer	0.035	0.004
Small Bulldozer	0.003	0.000

Source: Federal Transit Administration (FTA), 2018

The nearest structure to the Project Site is a McDonalds restaurant, approximately 100 feet away. At this distance the potential impacts from PPV would not have significant impacts on surrounding structures. The land use and zoning for the area surrounding the Project Site is commercial, and therefore impacts of groundborne vibration and noise on residences are less than significant. Construction of the Proposed Project would result in vibration velocity levels below the vibration threshold set by Caltrans and any impacts would be considered less than significant.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 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?

Less-than-Significant Impact. The Proposed Project would be located less than a mile to the northwest of Tews Field airport. Tews Field is a small, private airport that receives minimal air traffic to its two runways (Sky Vector, 2023). There would be no people residing on the Project Site that would be exposed to excessive noise levels. Per the City of Shasta Lake General Plan, although aircraft flying overhead is occasionally audible, the aeronautical operations of nearby airports and airfields are “not considered significant sources of noise” for the City (City of Shasta Lake, 2023a). Impacts related to the nearby private airfield would be less than significant.

4.14 POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Induce substantial unplanned 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 people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

4.14.1 Environmental Setting

The estimated population of the City of Shasta Lake was 10,262 in 2023 (US Census, 2023). The Shasta Regional Transportation Agency (SRTA) develops and maintains the regional travel demand model, which forecasts land use and corresponding travel behavior at least 20 years into the future for the region. SRTA projects that the city’s population would increase by an average annual growth rate (AAGR) of 0.5 percent from 2005 to 2040. SRTA estimates that there will be approximately 1,600 additional people in the City between 2020 to 2040 (City of Shasta Lake, 2023a).

Every city and county in California is required to plan for its “fair share” of the statewide housing need. The California Department of Housing and Community Development (HCD) is required to allocate each region’s share of the statewide housing need to Councils of Governments (COG) based on California Department of Finance (DOF) population projections and regional population forecasts used in preparing regional transportation plans. The Regional Housing Needs Allocation (RHNA) for Shasta Lake for the 2018 to 2028 planning period is 238 new housing units, including 28 extremely low-income units, 28 very low-income units, 39 low-income units, 42 moderate-income units, and 101 above moderate-income units. Based on existing zoning and General Plan designations, there is capacity to accommodate housing at a range of different densities (City of Shasta Lake, 2023a).

The Project Site consists of vacant land zoned for commercial use. The Proposed Project includes only on-site improvements, with no off-site roads or infrastructure enhancements proposed. Adjacent properties to the Project Site include Shasta Dam Motel to the north and a McDonalds restaurant to the south. There are several single-family homes located approximately 1 mile east of the Project Site on the opposite side of I- 5, as well as residential areas to the west and southwest.

4.14.2 Impact Assessment

a) Would the project induce substantial unplanned 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)?

Less-than-Significant Impact. Although new employment would be created, the workforce would be expected to be comprised of existing residents of the City of Shasta Lake and Shasta County. The Proposed Project does not include the extension of roads or other infrastructure which would indirectly induce unplanned population growth. Furthermore, the Proposed Project is consistent with the commercial planning and zoning of the Project Site and is compatible with the surrounding land uses. As such, the Proposed Project would have a less-than-significant impact on population growth.

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. No homes exist on the Project Site. The Proposed Project does not include land uses that would displace the existing residences or otherwise necessitate the displacement or construction of replacement housing elsewhere. Therefore, the Proposed Project would have no impact.

4.15 PUBLIC SERVICES

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) 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?	☐	☐	☐	☒

4.15.1 Environmental Setting

Fire protection and emergency medical services within the City of Shasta Lake are provided by the Shasta Lake Fire Protection District (SLFPD). The SLFPD is currently staffed by 9 full-time professional firefighters and one administrative clerk, providing 24-hour coverage for the City of Shasta Lake and surrounding areas. The SLFPD responds to approximately 1,500 incidents a year with its fleet, which includes five engines, a water tender, breathing support, a patrol vehicle, and two quads (City of Shasta Lake, 2024a). SLFPD has one station, which is located at 4126 Ashby Court in the City of Shasta Lake, approximately 1.2 miles west of the Project Site. The nearest hospital to the Project Site Mercy Medical Center Redding, which is located at 2175 Rosaline Avenue in the City of Redding, approximately 8 miles south of the Project Site. Mercy Medical Center is a Level II trauma center that provides a comprehensive range of inpatient and outpatient medical services to the local population as well as numerous specialized services (Dignity Health, 2024).

The City of Shasta Lake contracts with the County Sheriff's Office to protect citizens and property within the City of Shasta Lake. The Shasta Lake Station is comprised of 1 Lieutenant, 2 Sergeants, 10 Deputies, 1 Community Service Officer and 2 Cadets. Together, these officers cover the residential and commercial areas inside the City of Shasta Lake (City of Shasta Lake, 2024b).

The Gateway Unified School District serves the City through seven separate schools, with a total of 2,176 students (National Center for Education Statistics, 2024).

The City of Shasta Lake offers numerous parks and recreational areas. The nearest located recreational area to the Project Site is Clair Engle Park, located approximately 0.7 miles west of the Project Site, which is managed by the City of Shasta Lake’s Parks and Recreation Department and the Public Works Department (City of Shasta Lake, 2024c).

4.15.2 Impact Assessment

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?

Less-than-Significant Impact. The Project Site is served by the SLFPD and the nearest fire station is approximately 1.2 miles west of the Project Site. The Proposed Project would be required to comply with standard requirements including the Shasta Lake Municipal Code and current California Fire Code. The implementation of the Proposed Project would not require additional fire facilities or necessitate new or altered facilities, resulting in a less-than-significant impact.

Police protection?

Less-than-Significant Impact. The Project Site would be served by the County Sherrif’s Office. The nearest Sheriff’s Office is located approximately 1 mile northwest of the Project Site. The proposal for alcohol sales could potentially increase the possibility of public intoxication and Driving Under the Influence (DUI) in the immediate area. However, the Sheriff’s Office encourages owners and the public to report these matters to the police, and consumption of alcohol on the premises will be prohibited. Furthermore, there are two existing gas stations and convenience stores located 175 feet west and 426 feet south of the Project Site. Accordingly, the Proposed Project would not result in the need for new or altered services, or a substantial alteration to the patrol requirements from the Sheriff's Office. Therefore, the Proposed Project would have a less-than-significant impact.

Schools?

Less-than-Significant Impact. Although new employment would be created by the Proposed Project, the workforce would be expected to be comprised of existing residents of the City and County, and the Proposed Project is not anticipated to otherwise induce unplanned population growth. Accordingly, the Proposed Project would not result in adverse physical impacts associated with the provision of new or physically altered school facilities. Therefore, the Proposed Project would have a less-than-significant impact on school facilities.

Parks?

Less-than-Significant Impact. The Proposed Project would not result in the construction of new residences and the addition of employees is minimal to operate and maintain the Proposed Project. Employees are likely to be sourced from the City and County and thus it is not anticipated that increases in population would occur that would result in increased use of existing parks. Therefore, the Proposed Project would have a less-than-significant impact on parks.

Other public facilities?

No Impact. The Proposed Project would not result in a need for additional or other public facilities. Therefore, the Proposed Project would have no impact.

4.16 RECREATION

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

4.16.1 Environmental Setting

The City operates and maintains a number of recreational activities. The nearest located recreational facility to the Project Site is Clair Engle Park, located approximately 0.7 miles west of the Project Site. In addition to City-maintained parks, regional recreational opportunities include the Shasta-Trinity National

Forest, the largest national forest in California. The Whiskeytown-Shasta-Trinity National Recreation Area surrounds Shasta Lake and is one of only 18 national recreation areas managed by the USFS. The lake and surrounding terrain support a large variety of recreation opportunities.

4.16.2 Impact Assessment

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. Increased demand for existing parks or other recreational facilities is typically driven by an increase in population. The Proposed Project would not result in an increase of residents at the Project Site. Therefore, the Proposed Project would not contribute to the substantial deterioration of existing facilities or require the construction of new facilities or expansion of existing facilities. Therefore, there would be no impact.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. As discussed above, the Proposed Project would not include or result in the construction or expansion of recreational facilities that might have adverse physical effect in the environment. Therefore, the Proposed Project would have no impact.

4.17 TRANSPORTATION

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☐	☒

4.17.1 Regulatory Setting

State

Senate Bill 743

SB 743 was signed into law in 2013, with the intent to better align CEQA practices with statewide sustainability goals related to efficient land use, greater multimodal choices, and GHG reductions. The provisions of SB 743 became effective on July 1, 2020. Under SB 743, automobile delay, traditionally measured as level of service (LOS), is no longer used to establish the significance of a transportation impact under CEQA. Instead, impacts are determined by evaluating how VMT would change with implementation of a project.

The City has the discretion to set or apply their own thresholds of significance for VMT, provided the decision to adopt those thresholds is supported by substantial evidence. However, the City does not currently have any adopted guidelines or impact thresholds for VMT. For this reason, statewide guidance, which is documented in the Office of Planning and Research's (OPR) Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR, 2018), was used to determine the significance of the Proposed Project's impact on VMT.

Local

Shasta Lake General Plan, Circulation Element

The Circulation Element includes the following goals and policies that apply to the Proposed Project:

Goal CIR-1: Develop a transportation system that meets the needs of all segments of the community, including residents, businesses, visitors, and the region, through a "complete streets" approach to transportation planning.

> **Policy-CIR-1.4:** Monitor, maintain, and improve, as necessary, the operation, safety, and performance of the street system, including roadway surfaces, capacity, and traffic calming.
>
> **Policy-CIR-1.5:** Strive to attain a LOS "C" and VMT reduction, so that potential congestion is minimized, VMT targets are met, and active transportation needs are addressed.
>
> **Policy-CIR-1.7:** Encourage connectivity and accessibility to a mix of land uses that meet residents' daily needs within walking distance, consistent with the Land Use Element.

Goal CIR-2: Increase options and services for walking and bicycling while improving safety for all modes of transportation.

> **Policy-CIR-2.1:** Monitor, maintain, and improve, as necessary, the operation, safety, and performance of the street system, including roadway surfaces, capacity, and traffic calming. Strive to attain a LOS "C" and VMT reduction to the maximum degree feasible to minimize potential congestion and increase safety on streets and at intersections.
>
> **Policy-CIR-2.7:** Limit the intrusion of commercial truck traffic on City streets, especially in residential neighborhoods, by directing truck traffic to the City's designated truck routes.

Goal CIR-3: Promote alternative travel modes, including transit, pedestrian, and bicycle circulation systems to improve access and public health.

> **Policy-CIR-3.4:** Require sidewalks or an appropriate alternative in all new public and private developments.

Goal CIR-4: Maintain economic health and viability while making improvements to public facilities, utilities infrastructure, and transportation infrastructure, consistent with the General Plan.

> **Policy-CIR-4.1:** Continue to ensure that new development pays its fair share of the costs of transportation and public facilities improvements. Transportation improvements should be based on traffic generated and impacts on service levels and VMT. Ensure adequate public services and facilities are available at the time of project occupancy and that a funding mechanism is in place to ensure long-term maintenance of required public facilities.

> **Policy-CIR-4.2**: Development shall mitigate any adverse impacts of a proposed development project on the existing street system.

GoShasta Regional Active Transportation Plan

The GoShasta Regional Active Transportation Plan was prepared by the SRTA in February 2018 and was updated in August 2019. The Plan includes recommendations for improving bicycle and pedestrian connections as well as access to transit services in unincorporated areas of Shasta County and the cities of Anderson and Shasta Lake (SRTA, 2019).

4.17.2 Environmental Setting

A TIS and VMT Analysis were prepared for the Proposed Project in June and July 2024, respectively, and are included as **Appendix I** and **Appendix J**.

Roadway Network

The Project Site is located on the west side of Cascade Boulevard within the City limits adjacent to and west of I-5. Local access to the Project Site is provided primarily via Shasta Dam Boulevard (State Route [SR] 151), which connects to I-5 at the intersection of Cascade Boulevard. Cascade Boulevard is classified as a Major Collector roadway in the Circulation Element of the City's General Plan (City of Shasta Lake, 2023a).

Bicycle and Pedestrian Facilities, and Public Transportation

There are no marked bicycle lanes on Cascade Boulevard adjacent to the Project Site; however, bicycle route signs are posted along the roadway to indicate that bicycles may share the road with vehicles. There are short segments of sidewalk on Cascade Boulevard that extend from Shasta Dam Boulevard to approximately 325 feet north of the intersection. At the intersection of Cascade Boulevard/Shasta Dam Boulevard, there are signalized pedestrian crossings on the north, south, and west legs with connecting sidewalks that lead westward towards Shasta Lake.

There are no existing bus stops adjacent to the Project Site, but there is a bus stop south of the Cascade Boulevard/Shasta Dam Boulevard intersection adjacent to the Rite Aid approximately 430 feet south of the Project Site. The Redding Area Bus Authority (RABA) Route 1 currently provides bus service to this bus stop, with hourly weekday and Saturday service west into Shasta Lake and south to Redding (RABA, 2021).

4.17.3 Impact Assessment

a) Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less-than-Significant Impact.

Pedestrian/Bicycle Circulation

The Proposed Project would be required to comply with all project-level requirements implemented by a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities and the GoShasta Regional Active Transportation Plan. The Proposed Project is required to submit improvement plans, including roadway improvements, for review and approval by the City Engineer to ensure improvements will be consistent with City standards. Additionally, the Proposed Project would include sidewalks on Cascade Boulevard along the Project Site frontage, which would be consistent and connect with roadway improvements along Cascade Boulevard currently under design as part of the City's Complete Streets efforts. More specifically, the City plans to construct sidewalks along the entire west side of Cascade Boulevard as well as Class II bike lanes between Shasta Dam Boulevard and the future Wonderland Boulevard, which would intersect with the Proposed Project's northernmost driveway (City of Shasta Lake, 2024d). The Proposed Project would provide two short-term bicycle racks and one long-term bicycle locker (**Figure 4**). Thus, the Proposed Project would result in a less-than-significant impact on pedestrian and bicycle circulation.

Transit

The Proposed Project would be required to comply with all project-level requirements implemented by a program, plan, ordinance, or policy addressing the circulation system, including transit facilities. Public transit does not currently directly serve the Project Site although there is one bus stop less than 500 feet from the Project Site. The Proposed Project is consistent with the Circulation Element of the General Plan. Therefore, the Proposed Project would result in a less-than-significant impact to transit.

Roadways

The Proposed Project would be required to comply with all project-level requirements implemented by a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, including the GoShasta Regional Active Transportation Plan. The Proposed Project is required to submit improvement plans, including roadway improvements, for review and approval by the City Engineer to ensure improvements will be consistent with City standards.

A detailed traffic operations analysis was conducted as part of the TIS prepared for the Proposed Project (**Appendix I**). That analysis is not repeated here, as it was primarily conducted to satisfy City requirements not associated with environmental review/CEQA. As stated previously, vehicle delay and LOS are no longer used to determine the significance of a transportation impact pursuant to CEQA Guidelines Section 15064.3. However, with respect to consistency with the City's General Plan, the results of the analysis found that the following two intersections that would be used to access the Project Site would operate at a LOS consistent with Circulation Element Policy-CIR-2.1 (i.e., LOS C or better) both under Existing (year 2024) and Cumulative (year 2045) traffic study scenarios:

- Cascade Boulevard/Shasta Dam Boulevard
- Cascade Boulevard/Wonderland Boulevard (future intersection)

Policy-CIR-4.1 of the Circulation Element requires that development projects pay their fair share of the costs of both construction and maintenance of transportation and public facilities improvements. The payment of established traffic impact or similar fees shall represent compliance with the requirements of this policy with regard to those facilities included in the fee program, provided that the City finds that the fee adequately funds all required transportation and public facilities improvements. If payment of established fees is used to provide compliance with this policy, the City may also require the payment of additional fees if necessary to cover the fair share cost of facilities not included in the fee program. As established in Section 13.08.070 of the City's Municipal Code, the Proposed Project, which is located in the City's Transportation Impact Fee Zone, would be subject to the current Commercial fee based on total square footage. Therefore, by complying with the City's Transportation Impact Fee Zone, the Proposed Project would not conflict with a plan, ordinance or policy addressing the circulation system, and there would be a less-than-significant impact.

b) Would the project conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

Less-than-Significant Impact. To evaluate the significance of the Proposed Project as it relates to VMT, Section 15064.3 of the CEQA Guidelines and OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR Guidelines) were used. Pursuant to Section 15064.3(b) of the CEQA Guidelines, if existing models or methods are not available to estimate the VMT for a particular project being considered, a Lead Agency may analyze the project's VMT qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. The Proposed Project is considered to be primarily a regional / transient serving development that would tend to attract trips from the nearby I-5 corridor, but it would also function as a local-serving retail development that would serve neighboring areas in the City or unincorporated Shasta County. As detailed in the TIS (**Appendix I**), the Proposed Project is expected to generate approximately 1,477 net new daily trips, 138 a.m. peak hour trips, and 126 p.m. peak hour trips. Approximately 75 percent of these trips would originate from traffic on I-5. These diverted freeway trips would not result in an overall increase in VMT, as it is presumed that these trips would occur out of necessity regardless of the Proposed Project, and given the proximity of the Project Site to the freeway, the Proposed Project is not likely to increase the distance that I-5 travelers would drive to obtain the services offered by the Proposed Project, namely fueling and ancillary retail. The remaining trips not diverted from regional traffic on I-5 are expected to be local-serving since the Proposed Project would tend to attract trips from neighboring areas in the City or unincorporated Shasta County (**Appendix J**).

The OPR Guidelines includes the following guidance: "By adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies generally may presume such development creates a *less-than-significant transportation impact*." Furthermore, OPR Guidelines indicate that retail developments that are less than 50,000 SF in size can be assumed to be local-serving, meaning that they would likely shorten the distance of existing vehicle trips, thereby reducing VMT per trip. The size of the Proposed Project (4,761-SF convenience store, 3,388-SF MPD fueling stations, and 3,540-SF diesel fueling stations) is well below the 50,000-SF threshold. Thus, the Proposed Project would have a less-than-significant impact associated with VMT.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less-than-Significant Impact. As described above in **Section 2.2.2**, entry and exit to the Project Site would be provided by three proposed driveways located on Cascade Boulevard. One driveway would provide unrestricted access to the convenience store and the standard 4-dispenser gas island. The other two driveways, designated exclusively for diesel trucks, would serve as entry and exit points, respectively, providing access to the 7-Eleven and the 3-lane diesel station island. Trucks would have the option to utilize the fueling island or follow a roundabout route for entry and exit. An additional driveway would connect the proposed convenience store to the McDonald’s parking lot to the south.

A break in pavement and a row of shrub plantings would delineate the boundary between vehicles accessing the standard fueling area and those entering the diesel fueling area. Directional arrows and parking lot striping, adhering to City standards, would be provided throughout the Project Site to guide vehicle circulation, along with appropriate signage. A "Diesel Entry Only" sign would be installed at the entrance to the diesel fueling station from Cascade Boulevard, and two "Unauthorized Vehicles" signs would be installed at the southernmost driveway and the driveway between the standard vehicle gas island and the existing McDonald's. A red curb with white "no parking fire lane" markings would demarcate the northern boundary of the Project Site. Finally, an "Exit Only" sign would be installed at the exit from the diesel fueling station, directing traffic towards Cascade Boulevard

The access driveways and internal circulation facilities described above would be reviewed and approved in conformance with the City’s street specifications and sight distance standards to ensure the Proposed Project would not result in the introduction of any new hazards or exacerbate any existing hazards. Therefore, the Proposed Project would result in a less-than-significant impact.

d) Result in inadequate emergency access?

No Impact. The Proposed Project would include three access driveways to the Project Site. Access drive standards, radius of curbs, and maneuverability throughout the Project Site would be ensured through conditions imposed upon the Proposed Project as part of the development review process. Therefore, the Proposed Project would have no impact on emergency access.

4.18 TRIBAL CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

4.18.1 Regulatory Setting

Federal

NHPA Section 106

Section 106 of the NHPA of 1966 requires tribal consultation in all steps of the process when a federal agency project or effort may affect historic properties that are either located on tribal lands, or when any Native American tribe or Native Hawaiian organization attaches religious or cultural significance to the historic property (traditional cultural property [TCP]), regardless of the property's location. When such an undertaking occurs on tribal land, the federal agency must notify appropriate Native American tribes of the undertaking and give those tribal groups the opportunity to consult, should they wish to do so.

State

AB 52

AB 52, enacted in 2014, introduced a new category of resources in CEQA known as Tribal Cultural Resources (TCRs), which incorporates tribal cultural values alongside scientific and archaeological considerations when assessing impacts and mitigation. According to PRC, Division 13, Section 21074, TCRs are defined as either:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either: a. Included or determined to be eligible for inclusion in the CRHR, or b. Included in a local register of historical resources as defined in subdivision (k) of PRC Section 5020.1.
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to the eligibility criteria for the CRHR (PRC Section 5024.1(c)). In applying these criteria, the lead agency must consider the significance of the resource to a California Native American tribe.

Native American tribes with cultural ties to a geographic area may have specialized knowledge about their TCRs. Therefore, AB 52 mandates that within 14 days of deciding to move forward with a project or deeming a project application complete, the lead agency must notify California Native American tribes that have requested to be on the agency's notification list. The notice must include a brief description of the project, its location, contact information for the lead agency, and inform the tribe that they have 30 days to request a consultation. The lead agency is required to initiate the consultation process within 30 days of receiving such a request.

Local

City of Shasta Lake General Plan

The City of Shasta Lake's General Plan Goal LU-3 is to ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development. The following objectives and policies that apply to the Proposed Project:

> **POL-LU-3.6:** When working on issues affecting California Indian Tribal Governments, the City will act consistently, respectfully, and sensitively. When there are regulatory, statutory, or procedural impediments limiting the City's ability to work with tribal governments in the area, the City will make every effort to eliminate such impediments.

The City of Shasta Lake's General Plan Goal OS-4 is to promote and protect the City's historical, cultural, and archaeological resources. The following policies are specific to archaeological and historic resources within the City:

> **Policy-OS-4.1:** Preserve historical or archaeological resources from development impacts and include appropriate mitigation to protect such resources.

> **Policy-OS-4.2:** Require consultation with affected communities, such as the Wintu, to determine the culturally appropriate treatment of historical or archaeological resources. This includes proper storage and handling, and potentially placing collections in a curated facility. These procedures should be based on existing federal curation standards.

4.18.2 Environmental Setting

The Project Site is in an area ethnogeographically attributed to the Wintu. The analysis in this section is based on the City of Shasta's General Plan and the Cultural Resources Inventory and Evaluation prepared for the Proposed Project (**Appendix D**).

The Wintu occupied portions of the northern Sacramento Valley and Klamath Mountains, settling along approximately 50-miles the Sacramento River north-south in the watersheds of the upper Trinity, upper Sacramento, and the Pit-McCloud rivers. Shasta, Trinity, Tehama, and Siskiyou counties are within the traditional Wintu territory. Fishing was particularly significant for the Wintu, with salmon being preferred, making the salmon runs in the McCloud and Sacramento rivers critical. Trade consisted primarily of individual bartering, with large inter-village gatherings featuring larger trade activities. The Wintu culture was shaped by influences from northwestern and central California.

A request for a record search of the California NAHC SLF and for a list of local Native American contacts was made on May 11, 2024. The results of the NAHC records search were negative (**Appendix D**). The NAHC provided a list of seven Native American tribes who may have knowledge of cultural resources in the Project Site. Outreach to Native American tribes was initiated by emailing each representative identified. Letters were sent to the Nor-Rel-Muk Wintu Nation, Redding Rancheria, Round Valley Reservation/Covelo Indian Community, Shasta Nation, Winnemem Wintu Tribe, and Wintu Tribe of Northern California. The initial communication introduced the Proposed Project, provided maps of the Project Site, and stated no Native-affiliated cultural resources were identified from the records search and pedestrian survey. No response has yet been received.

In accordance with AB 52, the City of Shasta Lake sent invitations to consult to the following Tribes in October 2024 requesting consultation in compliance with the CEQA review process: Nor-Rel-Muk Nation, Redding Rancheria, Shasta Nation, Winnemem Wintu Tribe, and Wintu Tribe of Northern California. The City of Shasta Lake received one response from the Nor-Rel-Muk Nation stating deference to the Wintu Tribe of Northern California in October 2024. To date, no further responses have been received in response to request for consultation.

4.18.3 Impact Assessment

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

Less-than-Significant Impact with Mitigation. The Project Site does not contain any known property or site features that are eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k). As described in **Section 3.6**, no known tribal cultural resources as defined in PRC Section 21074 have been identified on the Project Site through background research, nor have any TCPs been identified during consultation efforts conducted under Section 106 of the NHPA. TCRs were not identified during consultation with Native American tribes under AB 52. However, because construction of the Proposed Project would require ground-disturbing activities, there is the potential of unanticipated discoveries of subsurface archaeological deposits or human remains, which would be a potentially significant impact. The conclusion of consultation under Section 106 and AB 52 and the application of Mitigation Measures CR-1 and CR-2 would reduce impacts to TCPs or TCRs to a less-than-significant level.

ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less-than-Significant Impact with Mitigation. The Project Site is not listed as a historical resource in the CRHR. As described above, no known tribal cultural resources have been identified and no substantial information has been provided to indicate otherwise. However, it is possible that unknown buried archaeological materials could be found during ground disturbing activities at the development site, including unrecorded Native American materials. If such resources are discovered, the impact on cultural resources could be significant. If human remains are uncovered, compliance with Section 15064.5 I (1) of the CEQA Guidelines and Health and Safety Code Section 7050.5 is required. The application of Mitigation Measures CR-1 and CR-2 would reduce impacts to TCPs or TCRs to a less-than-significant level. Therefore, the Proposed Project will have a less than significant impact with mitigation.

4.19 UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the waste water 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?	☐	☐	☒	☐
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local	☐	☐	☒	☐

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
infrastructure, or otherwise impair the attainment of solid waste reduction goals?				
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

4.19.1 Regulatory Setting

Local

City of Shasta Lake General Plan

The Goal of LU-4 within the City of Shasta Lake General Plan is to provide services to promote healthy lifestyles, safety, and the well-being of all residents. Below are some of the objectives and policies that apply to the Proposed Project:

> **Policy LU-4.2**: Ensure that adequate public service facilities/uses (e.g., schools, parks, fire stations, etc.) and public utilities (e.g., substations, pump stations, transmission lines, etc.) are in place in a timely fashion to protect public safety. Accomplish this through regular, comprehensive, and advanced infrastructure master planning efforts. Appropriate zoning for such facilities will be determined in response to the identified need as it occurs.

Goal CON-1: Protect and conserve water resources and improve and maintain water quality.

> **Policy CON-1.6:** Require new development annexed to the City be connected to the City's wastewater collection system whenever possible.

2016-2026 Water Master Plan and 2016-2026 Wastewater Master Plan

The 2016-2026 Water Master Plan identifies the capacity deficiencies within the existing water distribution system in order to develop alternatives and plan infrastructure to serve future development projected by the City of Shasta Lake.

The 2016-2026 City of Shasta Lake Wastewater Master Plan identifies future growth for 10- and 20-year predictions and necessary improvements.

4.19.2 Environmental Setting

Water and Wastewater Services

The City of Shasta Lake's Public Works Department oversees the water distribution, wastewater collection, and stormwater drainage for the City. Water in the City is provided from Shasta Lake via a long-term contract with the U.S. Bureau of Reclamation via a Central Valley Project contract (City of Shasta, 2023a). The City of Shasta Lake also has various other water supply contracts as outlined in the 2016-2026

Water Master Plan, the current planning documents identifying infrastructure for future development and demand (City of Shasta Lake, 2016). The City owns, operates, and maintains the wastewater collection system which includes approximately 58 miles of sewer mainlines conveying flow to the Shasta Lake Wastewater Treatment Plant (WWTP).

The City of Shasta Lake Planning Division has confirmed via personal communication that they have the capacity to service the Project Site with related sewer and water needs (City of Shasta Lake, 2024e).

Solid Waste Collection and Disposal

Solid waste collection and recycling services for the City of Shasta Lake are provided by Waste Management, Inc. and is disposed of and processed at a facility in the Anderson Cottonwood Disposal in Redding, California (City of Shasta, 2023a).

Natural Gas, Electricity, and Communication Services

The City of Shasta Lake, via the publicly owned City of Shasta Lake Electric Utility, and the privately-owned utility, PG&E, provide electrical services in the vicinity of the Project Site. The Shasta Lake Electric Utility will provide electrical services to the Proposed Project, and has a service territory of approximately 10 square miles in and around the City of Shasta Lake's boundaries. The Electric Utility provides retail electric service to customers located within the City's corporate limits, as well as certain adjacent areas, and serves approximately 4,500 retail customers (meters). The City's electric enterprise was formally known as the Shasta Dam Area Public Utility District, established in 1945. The City owns and operates four small solar installations, the largest of which is 40 kilowatts. The City's 2023 peak demand was 37.20 megawatts and 2023 energy use was 220.1 gigawatt-hours (Shasta Lake Electric, 2024). The Project Site has existing electrical lines immediately adjacent to the Grading Limits along Cascade Boulevard and an existing easement through onto the property. Natural gas throughout the City is supplied by PG&E.

4.19.3 Impact Assessment

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less-than-Significant Impact.

Water and Wastewater Services. The Project Proposed is consistent with the General Plan and zoning designations of the Project Site for commercial uses, and thus the water and wastewater demands of the Proposed Project have been considered in several planning documents. Additionally, the City Planning Division has confirmed that there is sufficient capacity to serve the Project Site for water and wastewater treatment (City of Shasta Lake, 2024e). The water demands of the Proposed Project would be related primarily to the restroom facilities within the convenience store and landscape irrigation. The landscape plan has selected primarily low water use species (**Appendix A**). Therefore, the increase in water demands and wastewater generation resulting from the Proposed Project are expected to be minimal. The existing infrastructure in the vicinity of the Project Site has been planned to accommodate commercial development consistent with the land uses proposed by the project; therefore, the Proposed Project is not likely to require the construction of new or expanded water or wastewater facilities beyond the boundaries of the Project Site. Construction of water supply and sewer connections would occur concurrently with development of the Proposed Project and would take place entirely within the Project Site. The construction of these facilities could result in temporary environmental impacts which have been assessed throughout **Section 4** of this IS/MND. As described herein, all impacts of the Proposed Project would be less than significant or reduced to less than significant through the implementation of mitigation measures. Therefore, the Proposed Project would not result in the construction or relocation of water or wastewater utilities which could cause significant environmental effects. This is a less-than-significant impact.

Stormwater. Construction of two retention ponds would occur concurrently with development of the Proposed Project and would take place entirely within the Project Site. The construction of these ponds could result in temporary environmental impacts which have been assessed throughout **Section 4** of this IS. The capacity of these detention basins is greater than the calculated 100-year storm event, and an overflow swale will be constructed should the capacity be exceeded. This will allow the runoff to be diverted downstream following its natural condition. As a result, the impacts related to stormwater would be less-than-significant impact.

Natural Gas, Electricity, and Communication Services. These services would be provided via new connections to existing infrastructure located along Cascade Boulevard. Construction of electric facilities would occur concurrently with development of the Proposed Project and would take place entirely within the Project Site. The construction of these facilities could result in temporary environmental impacts which have been assessed throughout **Section 4** of this IS. As described herein, all impacts of the Proposed Project would be less than significant or reduced to less than significant through the implementation of mitigation measures. Therefore, the Proposed Project would not result in the construction or relocation of utilities which could cause significant environmental effects. This is a less-than-significant impact.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less-than-Significant Impact. The water demands for the Project Site have been considered within the City of Shasta General Plan and the commercial zoning for future development in the Project area. Additionally, the City of Shasta Lake's Land Planning Division has confirmed that there is sufficient capacity to meet the minor increase in water demand of the Proposed Project (City of Shasta Lake, 2024e). Therefore, the Proposed Project would result in a less-than-significant impact on future water supplies.

c) Would the project result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less-than-Significant Impact. The City of Shasta Lake provides wastewater treatment services and maintains a WWTP. The wastewater demands for the Project Site have been considered within the City of Shasta General Plan and the commercial zoning for future development in the Project area. Additionally, the City of Shasta Lake's Land Planning Division has confirmed that the City wastewater infrastructure has sufficient capacity to meet the demands of the Proposed Project (City of Shasta Lake, 2024e). Therefore, the Proposed Project would result in a less-than-significant impact on future wastewater treatment.

d) Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less-than-Significant Impact. Waste Management provides solid waste collection services with processing and disposal occurring at the Anderson Cottonwood Disposal in Redding, California. The Proposed Project would generate solid waste during construction and operation. Construction has the potential to generate solid waste related to the demolition and removal of existing structures. Construction debris would be contained in designated bins and picked up by the Waste Management waste hauler for disposal at the Anderson Cottonwood Disposal site. Operation of the Proposed Project would include solid waste generated as a result of the operation and maintenance of a gas station. The solid waste demands for the Project Site have been considered within the City of Shasta General Plan and the commercial zoning for future development in the project area. Therefore, the Project would result in a less-than-significant impact on producing excess solid waste.

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less-than-Significant Impact. Proposed Project construction and operation would not generate substantial amounts of solid waste and thus, the Proposed Project would not conflict with any federal, State, and local management and reduction statutes and regulations related to solid waste. Further, the Proposed Project would be subject to compliance with existing statutes and regulations by the City, State, or federal law. Therefore, the Proposed Project would have a less-than-significant impact.

4.20 WILDFIRE

Would the project:	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☒	☐	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

4.20.1 Regulatory Setting

State California Department Forestry and Fire Protection

State Responsibility Areas (SRA)s are lands in California where CalFire holds legal and financial responsibility for wildfire protection and administers fire hazard classifications and building standards. Local Responsibility Areas (LRAs), on the other hand, include city lands, cultivated agricultural areas, unincorporated non-flammable regions, and lands not meeting the criteria for SRAs or Federal Responsible Areas. CalFire is directed by California PRC Section 4201 through 4204 and California Government Code Section 51175-51189 to map fire hazard zones within both SRAs and LRAs based on factors such as fuels, terrain, and weather. These Fire Hazard Severity Zones (FHSZs) reflect the likelihood of an area burning over a 30- to 50-year period without considering fuel reduction efforts, and they also influence building code requirements aimed at reducing ignition risks in wildland-urban interface areas. Additionally, these maps rate wildlife hazards as “moderate”, “high”, or “very high” based on factors such as fuel loading, slope, and fire weather.

Local

City of Shasta Lake General Plan 2040

The City of Shasta Lake’s General Plan Goal HS-1 is to minimize the risk to life and property from wildfire. There are a number of policies and objectives in place to accomplish this goal, those that are related to the Proposed Project are included below:

> **POL-HS-3.2**: Ensure emergency responders have adequate water supplies around the city, particularly in developed areas with limited access in high fire hazard zones.
>
> **POL-HS-3.3:** Limit new development in high fire hazard zones to those projects which can meet established standards for adequate emergency and evacuation access and water supplies.
>
> **POL-HS-3.4:** Collaborate with local, state, tribal, and federal entities to address wildfire risk on lands surrounding the city.

City of Shasta Lake Wildfire Mitigation Plan

The City of Shasta Lake’s Wildfire Mitigation Plan focuses on reducing the risk and impact of wildfires through a combination of proactive strategies and community involvement. The plan emphasizes the need to manage and reduce vegetation that can fuel wildfires, including the removal of dead or overgrown vegetation, creating defensible space around properties, and implementing controlled burns or other methods to manage fuel loads. The plan also includes upgrading infrastructure through enhancing the resiliency of power lines, and ensuring that roads and water supply systems can support firefighting efforts.

4.20.2 Environmental Setting

The Project Site is located on a relatively flat property within the City of Shasta Lake’s Community Commercial District (City of Shasta Lake Municipal Code, 2024). The Project Site was identified by CalFire as a VHFHSZ, which is currently being reviewed by local jurisdiction prior to adoption (CalFire, 2025).

The City of Shasta Lake has nine active treated water reservoirs at six different sites totaling over 6 million gallons, and one active raw water reservoir approximately 0.17 million gallons (City of Shasta Lake, 2024f). The Project Site will be served by the City's water supply.

4.20.3 Impact Assessment

a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

Less-than-Significant Impact. Implementation of the Proposed Project would alter the Project Site's existing land use and would add additional vehicle and truck traffic and commercial uses requiring evacuation in case of an emergency, but is consistent with the City's planned commercial land uses for the Project Site. Additionally, implementation of the Proposed Project would not conflict with the City's emergency response and/or evacuation plans, since no alterations are directly or indirectly proposed to the nearby arterial and collector roadways. As such, the Proposed Project would have less-than-significant impact.

b) Due to slope, prevailing winds, and other factors, would the project exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less-than-Significant Impact with Mitigation. The Project Site is located on a relatively flat property with minimal slope and is not subject to strong prevailing winds or other factors that would exacerbate wildfire risks. However, the Project Site was identified by CalFire as a VHFHSZ, which is currently being reviewed by local jurisdiction prior to adoption (CalFire, 2025). While there are no strong prevailing the winds, in order to reduce the potential risk of wildfire, Mitigation Measure HAZ-1 mandates actions to reduce fire risk during construction. Furthermore, the Proposed Project would be developed and operated in compliance with all current California Fire Code regulations Therefore, the Proposed Project would have a less-than-significant impact with mitigation incorporated.

c) Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less-than-Significant Impact. The Grading Limits is located on property that is planned and zoned for commercial uses and is located adjacent to existing urban infrastructure including roadways and public utilities. There are existing above-ground utilities adjacent to the Project Site and while connection to these lines will be necessary, no expansion of these electrical lines is required. The Project Site is not within a high fire risk area and would therefore not exacerbate fire risk or result in temporary or ongoing impacts to the environment. Therefore, the Proposed Project would have a less-than-significant impact.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact. The Project Site is located on a relatively flat property with minimal slope and, as described in **Section 4.11**, is not subject to downslope, downstream flooding, or landslides. Therefore, the Proposed Project would have no impact.

4.21 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less than Significant Impact with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Does the project have the potential to substantially 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, substantially 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 cumulatively considerable? ("Cumulatively 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?	☐	☒	☐	☐

4.21.1 Impact Assessment

a) Does the project have the potential to substantially 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, substantially 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?

Less-than-Significant Impact with Mitigation. The potential project-related impacts to the habitats of plant and wildlife species is addressed in **Section 4.4** of this document. The Proposed Project does have the potential to impact protected trees and nesting birds. Mitigation Measures BIO-1 through BIO-3 have been identified to address potential impacts to biological resources and reduce these impacts to a less-than-significant level. The Proposed Project would not substantially restrict the range or number of endangered plants or animals, nor would it impact historical resources.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively 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.)

Less-than-Significant Impact with Mitigation. CEQA Guidelines Section 15064(i)states that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of a project are cumulatively considerable. The Proposed Project would have the potential to result in impacts to the environment, but these impacts, in addition to being fully mitigated, are primarily related to construction and are therefore short-term and temporary. Long-term operation impacts of the Proposed Project are minimal and existing ordinances and regulations exist to ensure that compliance with statutory and regulatory standards is maintained throughout the operational life of the Project. Where applicable, the Initial Study identifies mitigation measures to potential environmental impacts resulting from implementation of the Proposed Project. Potential impacts resulting from Project are therefore considered less than significant with incorporation of mitigation measures

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less-than-Significant Impact with Mitigation. The analyses of environmental issues contained in this Initial Study indicate that the Proposed Project is not expected to have substantial impact on human beings, either directly or indirectly, with the exception of short-term impacts to air quality. Mitigation Measure AQ-1 will be enacted to ensure that fugitive dust during the construction period is managed and minimized, reducing this potential impact to less than significant. Standard requirements and conditions of approval have been incorporated in the Proposed Project to reduce all potentially significant impacts to less than significant. Therefore, the Proposed Project would have a less-than-significant impact.

Mitigation Measures

Mitigation Measure AQ-1 will minimize the potential for construction dust.

Compliance with Mitigation Measures BIO-1 through BIO-4 previously identified in this document would ensure that potential impact to biological resources that may result from the project construction would be reduced to less than significant. Mitigation Measure BIO-3 would also ensure consistency with General Plan goals and policies pertaining to riparian habitat protection.

Potential effects to unknown cultural, paleontological, and tribal cultural resources would be reduced to less than significant with the implementation of Mitigation Measures CUL-1, CUL-2, and GEO-1.

Mitigation Measure GHG-1 ensures compliance with EV charging regulations to minimize potential impacts due to climate change, while Mitigation Measures HAZ-1 and HAZ-2 minimize the potential for hazardous materials impacts due to construction.

Stormwater quality impacts are minimized through implementation of Mitigation Measure HYD-1.

Section 5 | References

CalFire, 2019. California Forest Practice Rules. Available online at: https://bof.fire.ca.gov/media/9095/2019-forest-practice-rules-and-act_final_version-ada.pdf. Accessed March 2025.

CalFire, 2025. Fire Hazard Severity Zones in State Responsibility Area. Available online at: https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones. Accessed March 2025.

CalGreen, 2024. 2022 California Green Building Standards Code, Title 24, Part 11 (CALGreen) with July 2024 Supplement. Available online at: https://codes.iccsafe.org/content/CAGBC2022P3/chapter-5-nonresidential-mandatory-measures#CAGBC2022P3_Ch05_SubCh5.1. Accessed July 2024.

California Geologic Survey, 2002. California Geomorphic Provinces. Available online at: https://www.conservation.ca.gov/cgs/Documents/Publications/CGS-Notes/CGS-Note-36.pdf. Accessed July 2024.

Caltrans, 2019. California Department of Transportation (CalTrans): List of eligible and officially designated State Scenic Highways Updated August 2019. Available online at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways. Accessed July 2024.

Caltrans, 2020. Transportation and Construction Vibration Guidance Manual. Accessed July 2024. Available online at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf.

CAPCOA, 2022. California Emissions Estimator Model User's Guide. Available online at: https://www.caleemod.com/documents/user-guide/01_User%20Guide.pdf. Accessed July 2024.

CARB, 2016. Ambient Air Quality Standards. Available online at: https://ww2.arb.ca.gov/resources/california-ambient-air-quality-standards. Accessed July 2024.

CARB, 2022a. 2022 Area Designations for State Ambient Air Quality Standards Ozone. Available online at: https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations. Accessed July 2024.

CARB, 2022b. 2022 Scoping Plan for Achieving Carbon Neutrality. Adopted December 2022. Available online at: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf. Accessed July 2024.

CARB, 2024. Current Air District Rules. Available online at: https://ww2.arb.ca.gov/current-air-district-rules. Accessed July 2024.

Central Valley RWQCB, 1995. Concurrence with Request for Underground Storage Tank (UST) Site Investigation Case Closure, UST Case File #45152, Ron's Shasta Lake Chevron, 1666 Cascade

Boulevard, City of Shasta Lake , Shasta County. Available online at: https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0608900149. Accessed July 2024.

Central Valley RWQCB, 2009. No Further Action Required, Underground Storage Tank Case #450340. Former Texaco SS, 1661 Cascade Boulevard, Shasta Lake, Shasta County. Available online at: https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000000495. Accessed July 2024.

Central Valley RWQCB, 2019. The Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin: California Regional Water Quality Control Board Central Valley Region (CVRWQCB), Fourth Edition, Revised February 2019 (With Approved Amendments). Available online at: https://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/#basinplans. Accessed July 2024.

City of Shasta Lake, 2016. 2016-2026 Water Master Plan. Available online at: https://cityofshastalake.org/DocumentCenter/View/1299/2016-2026-Water-Master-Plan?bidId=. Accessed September 2024.

City of Shasta Lake, 2023a. 2040 General Plan. Available online at: https://cityofshastalake.org/1207/General-Plan-2040. Accessed July 2024.

City of Shasta Lake, 2023b. Interim Zoning Ordinance. Available online at: https://www.cityofshastalake.org/DocumentCenter/View/3768/Codified-Interim-Zoning-Ordinance-IZO. Accessed July 2024.

City of Shasta Lake, 2023c. General Plan Draft Environmental Impact Report. Available online at: https://cityofshastalake.org/1207/General-Plan-2040. Accessed July 2024.

City of Shasta Lake, 2024a. Fire District - Shasta Lake Fire Protection. Available online at: https://shastalakefpd.us/. Accessed July 2024.

City of Shasta Lake, 2024b. Sheriff's Office. Available online at: https://cityofshastalake.org/187/Sheriffs-Office. Accessed July 2024.

City of Shasta Lake, 2024c. Parks and Recreation. Available online at: https://cityofshastalake.org/253/Parks-Recreation. Accessed July 2024.

City of Shasta Lake, 2024d. Link Shasta – Active Transportation Loop, May 30, 2024. Available online at: https://cityofshastalake.org/1259/Link-Shasta---Active-Transportation-Loop

City of Shasta Lake, 2024e Personal communication from Peter Bird, AICP to Mike Singelyn. RE: VMT Study for 7-11 Cascade. July 30, 2024.

City of Shasta Lake, 2024f. Wildfire Mitigation Plan. Version 2.1. Approved by Resolution CC-2024-26. Effective: July 1, 2024.

City of Shasta Lake Municipal Code, 2024. The City of Shasta Lake: Code of Ordinances Supplement 22 Update 3. Available online at: https://library.municode.com/ca/shasta_lake/codes/code_of_ordinances. Accessed June 2024.

Department of Conservation (DOC), 2015. Fault Activity Map of California. Available online at: https://maps.conservation.ca.gov/cgs/fam/. Accessed July 2024.

DOC, 2021. EQ Zapp: California Earthquake Hazards Zone Application. Available online at: https://www.conservation.ca.gov/cgs/geohazards/eq-zapp. Accessed July 2024.

DOC, 2020. California Department of Conservation (DOC): California Important Farmland Finder. Available online at: https://www.conservation.ca.gov/dlrp/fmmp. Accessed July 2024.

DOC, 2023. DOC Maps: Mines and Mineral Resources. Available online at: https://maps.conservation.ca.gov/mineralresources/#webmaps. Accessed July 2024.

Dignity Health, 2024. Mercy Medical Center Redding. Available online at: https://www.dignityhealth.org/north-state/about-us/hospital-fast-facts. Accessed July 2024.

DWR, 2024. SGMA Basin Prioritization Dashboard. Available online at: https://gis.water.ca.gov/app/bp-dashboard/final/. Accessed September 2024.

Federal Transit Administration, 2018. Transit Noise and Vibration Impact Assessment. Accessed July 2024. Available online at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf.

Intergovernmental Panel on Climate Change, 2014. Climate change 2014 Synthesis Report Summary for Policymakers. Available online at: https://www.ipcc.ch/site/assets/uploads/2018/02/AR5_SYR_FINAL_SPM.pdf. Accessed April 17, 2024.

LSA Associates, 2013. LSA, June 2013. Noise Impact Analysis – Bloomington Truck Terminal. Accessed July 2024. Available online at: http://www.sbcounty.gov/Uploads/lus/Valley/Pacific_Industrial/Noise.pdf.

National Center for Education Statistics, 2024. Search for Public School Districts. Available online at: https://nces.ed.gov/ccd/districtsearch/district_detail.asp?Search=2&ID2=0614950&DistrictID=0614950&details=. Accessed July 2024.

NRCS, 2024. Custom Soil Resource Report for Shasta County Area, California. Available online at: https://websoilsurvey.nrcs.usda.gov/app/. Accessed July 2024.

Redding Area Bus Authority (RABA), 2021. *RABA Ride Guide – Route 1*, revised August 2021. Available online at: https://cms3.revize.com/revize/reddingbusauthority/Document%20Center/About%20Raba/RABARideGuide.pdf

Sacramento Valley Air Quality Engineering and Enforcement Professionals (SVAQEEP), 2021. Available online at: https://www.shastacounty.gov/sites/default/files/fileattachments/air_quality/page/2410/2021_nsvaq_attainment_plan.pdf. Accessed July 2024.

SCAQMD, 1997. Rule 3:3 - Gasoline Loading, Transfer and Dispensing. Available online at: https://ww2.arb.ca.gov/current-air-district-rules. Accessed July 2024.

Shasta County, 2004. Shasta County General Plan. Available online at: https://www.shastacounty.gov/planning/page/general-plan. Accessed July 2024.

Shasta County, 2014. Emergency Operations Plan. Available online at: https://www.shastacounty.gov/county-administrative-office/page/emergency-operations-plan. Accessed July 2024.

Shasta County, 2022. Hazardous Materials Area Plan. Available online at: https://www.shastacounty.gov/environmental-health/page/hazardous-material-area-plan. Accessed July, 2024.

Shasta County, 2023. Air Quality. Available online at: https://www.shastacounty.gov/planning/page/general-plan. Accessed July 2024.

Shasta County, 2024a. Underground Tanks. Available online at: https://www.shastacounty.gov/environmental-health/page/underground-tanks. Accessed July, 2024.

Shasta County, 2024b. Hazmat Business Plan. Available online at: https://www.shastacounty.gov/environmental-health/page/hazmat-business-plans. Accessed July, 2024.

Shasta County, 2024c. Title 17 -Zoning. Available online at: https://library.municode.com/ca/shasta_county/codes/code?nodeId=CD_ORD_TIT17ZO_CH17.26RUREDI. Accessed July 2024.

Shasta Lake Electric, 2024. Electric. Available online at: https://cityofshastalake.org/868/Electric-Utility. Accessed September 2024.

Shasta Regional Transportation Agency (SRTA), 2019. GoShasta Regional Active Transportation Plan, updated August 2019. Available online at: https://srta.ca.gov/286/GoShasta-Plan-Active-Transportation-Docu

Sky Vector, 2023. Tews Field Airport Information. Accessed July 2024. Available online at: https://skyvector.com/airport/CA53/Tews-Field-Airport.

State of California Governor's Office of Planning and Research (OPR), 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*, December 2018. Available online at: https://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf

SWRCB, 2022. Final California 2020 Integrated Report (303(d) List/305(b) Report): Sacramento River (Keswick Dam to Cottonwood Creek), CAR5081000019990126144739. Available online at: https://www.waterboards.ca.gov/water_issues/programs/tmdl/2020_2022state_ir_reports_revised_final/apx-b/01137.shtml. Accessed September 2024.

SWRCB, 2024. GeoTracker. Available online at: https://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000000495. Accessed July 2024.

UCMP, 2024. Shasta County. Available online at: https://ucmpdb.berkeley.edu/Browse_US_states2.html. Accessed July 2024.

US Census, 2023. Quick facts. Available online at: https://www.census.gov/quickfacts/fact/table/shastalakecitycalifornia,US/PST045223. Accessed July 2024.

USDA, 2002. Hydrologic Soil Groups. Available online at: https://efotg.sc.egov.usda.gov/references/Agency/SD/Archived_hydgrp_100415.pdf. Accessed July 2024.

USDA-NRCS, 2018. Official Soil Series Descriptions. Available online at: https://soilseries.sc.egov.usda.gov/OSD_Docs/A/AUBURN.html. Accessed July 2024.

U.S. Department of Transportation, 2006. FHWA Highway Construction Noise Handbook. Accessed July 2024. Available online at: https://rosap.ntl.bts.gov/view/dot/8837/dot_8837_DS1.pdf.

USEPA, 2024. California Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Available online at: https://www3.epa.gov/airquality/greenbook/anayo_ca.html. Accessed July 2024.

USGS, 2024a. Liquefication Susceptibility. Available online at: https://earthquake.usgs.gov/education/geologicmaps/liquefaction.php. Accessed July 2024.

USGS, 2024b. U.S. Landslide Inventory. Available online at: https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=ae120962f459434b8c904b456c82669d. Accessed July 2024.

World Record Academy, 2022. World's Largest Grindstone: world record set in Shasta Lake, California. Available online at: https://www.worldrecordacademy.org/2022/07/worlds-largest-grindstone-world-record-set-in-shasta-lake-california-422224. Accessed June 2024.

Section 6 | Report Preparers

CITY OF SHASTA LAKE

4477 Main Street
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- Emma Miller, Environmental Analyst
- Dana Hirschberg, GIS/Graphics

GHD

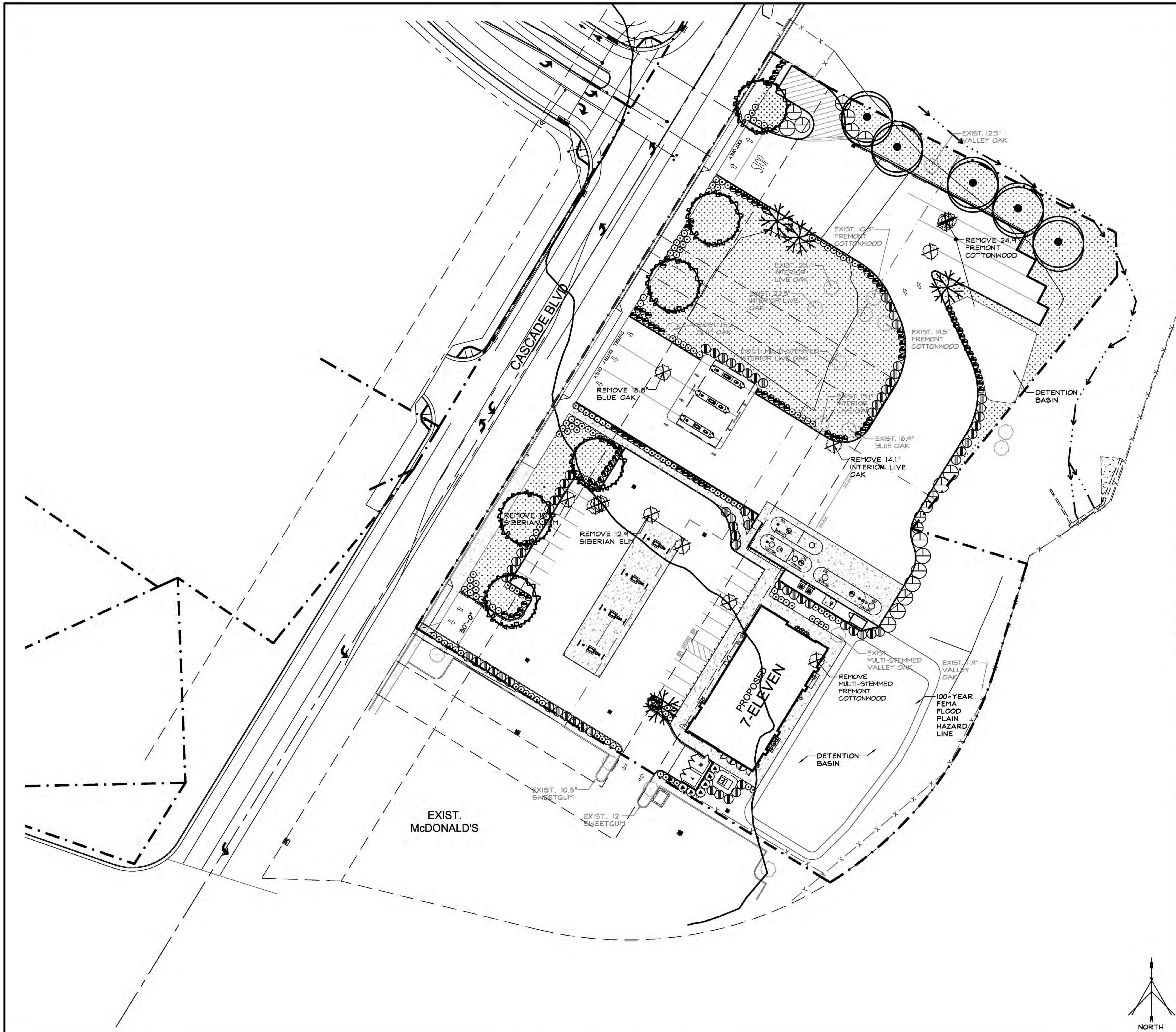
Transportation Impact Study

943 Reserve Drive, Roseville, CA 95747

- Kamesh Vedula, Principal

Appendix A

Landscape Plan



LANDSCAPE PLAN — SCALE: 1"=30'-0" — 8

SYMBOL	DESCRIPTION	(MULCO VALUE)
	TREES	
	PISTACIA CHINENSIS 'KEITH DAVEY' 24" BOX CHINESE PISTACHE	(LOW)
	LAGERSTROEMIA INDICA 'NATCHEZ' 24" BOX CRAPE MYRTLE 'WHITE'	(LOW)
	QUERCUS AGRIFOLIA 24" BOX CALIFORNIA LIVE OAK	(LOW)
	EXISTING TREE TO REMAIN - PROTECT FROM DAMAGE DURING CONSTRUCTION	
	SHRUBS	
	RHAPHIOLEPIS UMBELLATA 'MINOR', 5 GAL. DWARF YEDDA HAWTHORN	(LOW)
	PITTOSPORUM TOBIRA 'VARIEGATA', 5 GAL. VARIEGATED JAPANESE PITTOSPORUM	(LOW)
	LAVANDOLA STOECHESES, 1 GAL. SPANISH LAVENDER	(LOW)
	MUHLENBERGIA CAPILLARIS 'REGAL MIST', 1 GAL. REGAL MIST PINK MUHLY GRASS	(LOW)
	FICUS REPENS, 5 GAL. CREEPING FIG	(LOW)
	MYOPORUM P. 'PUTAH CREEK', 1 GAL. @ 4'O.C. MYOPORUM	
	EXISTING SHRUB/BUSH TO REMAIN - PROTECT FROM DAMAGE DURING CONSTRUCTION	

TOTAL LANDSCAPE AREA = 13,024 S.F.

PLANTING PLAN — 2

VICINITY MAP — SCALE: N.T.S. — 3

4

DATE	REVISION

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(STAMP INVALID UNLESS SIGNED)

PROPOSED BUILDING
7-ELEVEN, INC.
1661 CASCADE BLVD.
SHASTA LAKE, CALIFORNIA 96019
LANDSCAPE PLAN

ISSUE DATE:	1-19-24
REV. DATE:	
PROJECT NO.:	23002.03
DRAWN BY:	NL
SHEET:	L100

Appendix B

Storm Drainage Report

STORM DRAIN ANALYSIS
FOR
711 GAS STATION
CITY OF SHASTA LAKE

Prepared for:
Vermeltfoort Architects, Inc
8525 North Cedar, Suite 106
Fresno, CA 93720

111 Mission Ranch Blvd. Ste. 100
Chico, CA 95926

March 13, 2025

Prepared by or under the supervision of:

Richard D. Guevara, PE. RCE 82860

Draft Print
03/13/2025 11:45:23 AM

Project Description

The project proposes construction of a gas station on the property located at 1661 Cascade Blvd, less than 0.2 miles from Interstate 5. The development includes a convenience store with front parking, 3 gas pumps for semi, 4 regular pump spaces, and two detention ponds. The following storm drain analysis applies to these improvements.

Environmental Setting

Vegetation, Topography and Soils

The project site currently has 2 abandoned buildings and is covered with dry brush. The site has a 4 percent slope from the South to North and drains toward the adjacent creek. The soil type is gravel loam, as per the USDA Web Soil Survey.

Drainage Areas

The pre-developed site consists of one tributary area. The existing drains to the adjacent creek that runs from the North to the Southeast. The water eventually makes its way to the Sacramento River. (See Exhibit A: Pre-Developed Tributary Area Map)

The post-developed site will consist of two tributary areas. Post-developed run-off for Tributary No. 1 will slope towards the east of the project area into the Detention Basin No. 1. Run-off for Tributary No. 2 will be conveyed by a series of drain inlets to Detention Basin No. 2 at the rear side of the building (See Exhibit B: Post-construction tributary area). The size of the retention ponds required for the 100-year storm buildout condition was determined utilizing the following:

- Caltrans *Highway Design Manual*, 2020 edition. Figure 819.2A Runoff Coefficients for Undeveloped Areas Watershed Types
- Assumed roof area is equal to the building square footage.

100-Year Analysis

The method chosen to analyze the site for a 100-year storm event is the Rational Method. This method calculates the peak runoff using the following equation and site variables: Q=CIA. "Q" is the peak flow. "C" is the runoff coefficient which takes into account factors such as surface permeability, vegetative cover, slope, and surface roughness (See Exhibit C: Drainage Runoff Calculation). "I" is the design storm intensity in inches/hour found utilizing information from NOAA website for the project specific location. The "A" is the area of the tributary area in acres. These values will be used to determine the volume of the pond required to capture and detain the runoff from the 100-year storm rain events.

In the pre-development state, The stormdrain runoff generally drains to the north into the channel adjacent to the site. The pre-development time of concentration for the flow across the site has been determined using Hydraflow Hydrographs Extension utilizing TR-55 method shown in Caltrans Highway Design Manual for overland flow. (See Exhibit D: Hydraflow Hydrograph Report)

For analysis, the predevelopment tributary area was divided to two, matching the proposed tributary area.

Pre-Construction Runoff Flow (Tributary No. 1)

T_c = 20 min
C = 0.50
Area = 1.72 acres
i_{100yr} = 3.200 in/hr

Q_{100} = 2.752 cfs

Pre-Construction Runoff Flow (Tributary No. 2)

T_c = 16 min
C = 0.50
Area = 1.33 acres
i_{100yr} = 3.572 in/hr

Q_{100} = 2.376 cfs

Storm drain runoffs from the post development state will be conveyed by a series of swales, gutters, and drop inlets to two proposed detention ponds. Below is a summary of the resulting peak flow due runoffs from the site.

Post-Construction Runoff Flow (Tributary No. 1)

T_c = 10 min
C = 0.67
Area = 1.72 acres
i_{100yr} = 4.501 in/hr

Q_{100} = 5.186 cfs

Post-Construction Runoff Flow (Tributary No. 2)

T_c = 10 min
C = 0.69
Area = 1.33 acres
i_{100yr} = 4.501 in/hr

Q_{100} = 4.13 cfs

To mitigate the increase in peak runoff flows generated by the post development conditions, two detention basins are proposed to capture and detain the 100-year runoffs. The sizes of the detention ponds required for the project has been determined by utilizing Hydraflow Hydrograph Extension for Autocad Civil 2022 (See Exhibit D: Hydraflow Hydrograph Report).

The storage required for capturing the runoff from 100-year storm event are shown below:

Area	Required Storage 100-year (cf)	Total Storage Provided (cf)
Tributary No. 1	1,518	6,037
Tributary No. 2	1,681	39,333

Conclusion

The site was analyzed to determine the required volumes and sizes of the two detention basins that will be utilized on detaining peak flow runoffs from a 100-year storm event.

Control outlet structure will be installed at each basin releasing a flow that is less than or equal to pre-construction flow.

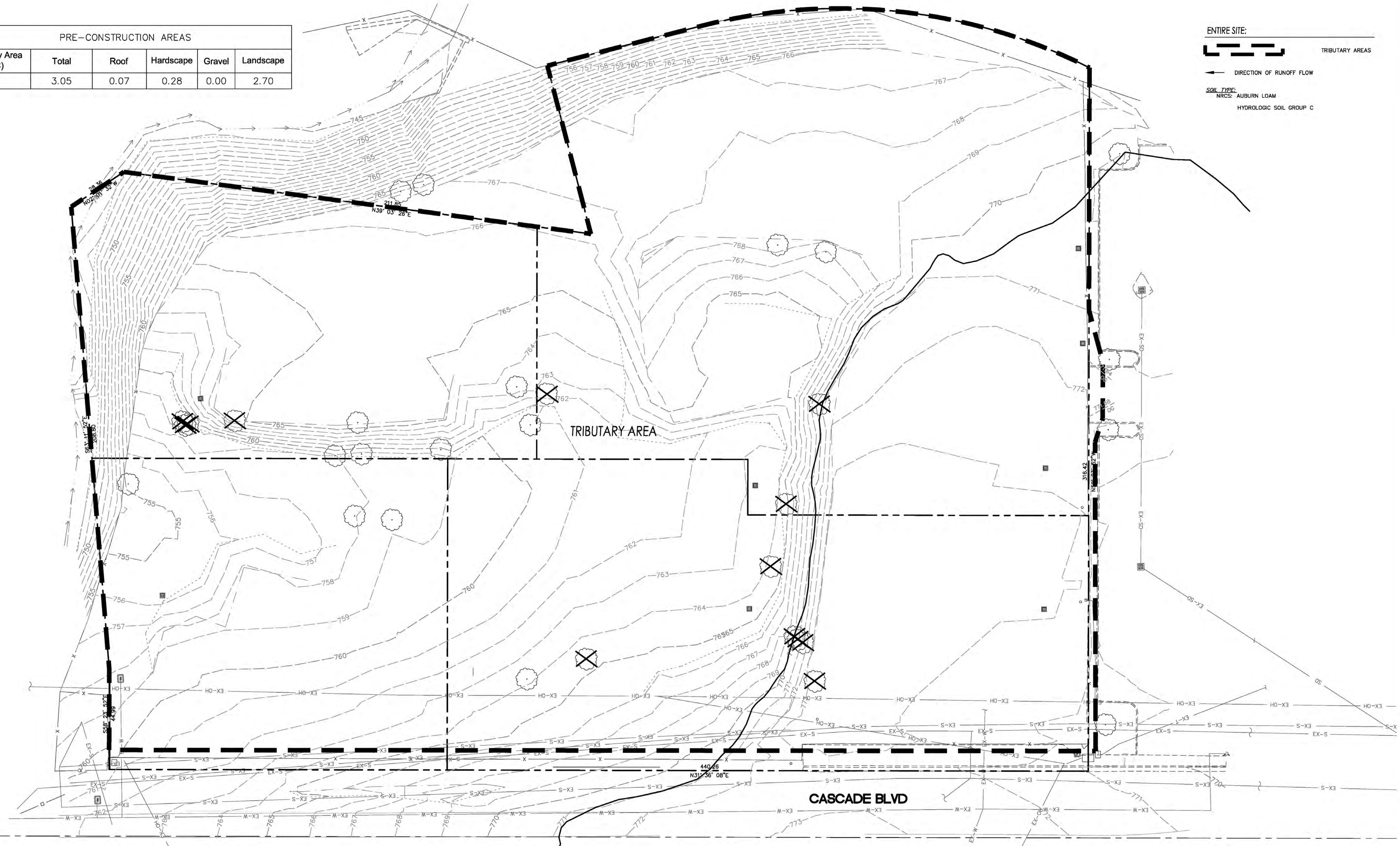
The two retention ponds will be constructed on a 2:1 side slope with depths of 4 feet and 10 feet. In a scenario where the runoff is higher than the runoff from 100-year storm event, a grate will be installed on top of the outlet structure as an overflow.

Exhibits

EXHIBIT A

PRE-DEVELOPED TRIBUTARY AREA MAP

PRE-CONSTRUCTION AREAS					
Tributary Area (AC)	Total	Roof	Hardscape	Gravel	Landscape
1	3.05	0.07	0.28	0.00	2.70



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REGISTERED PROFESSIONAL ENGINEER
RICHARD D. GUEVARRA
CIVIL
STATE OF CALIFORNIA
PRELIMINARY

Designed: RDG	Revision	Date	By	
Drawn By: CPH				
Approved:				
Date: 9/11/2024				

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VERMELTFOORT ARCHITECTS, INC.
1661 CASCADE BLVD.
SHASTA LAKE, CALIFORNIA

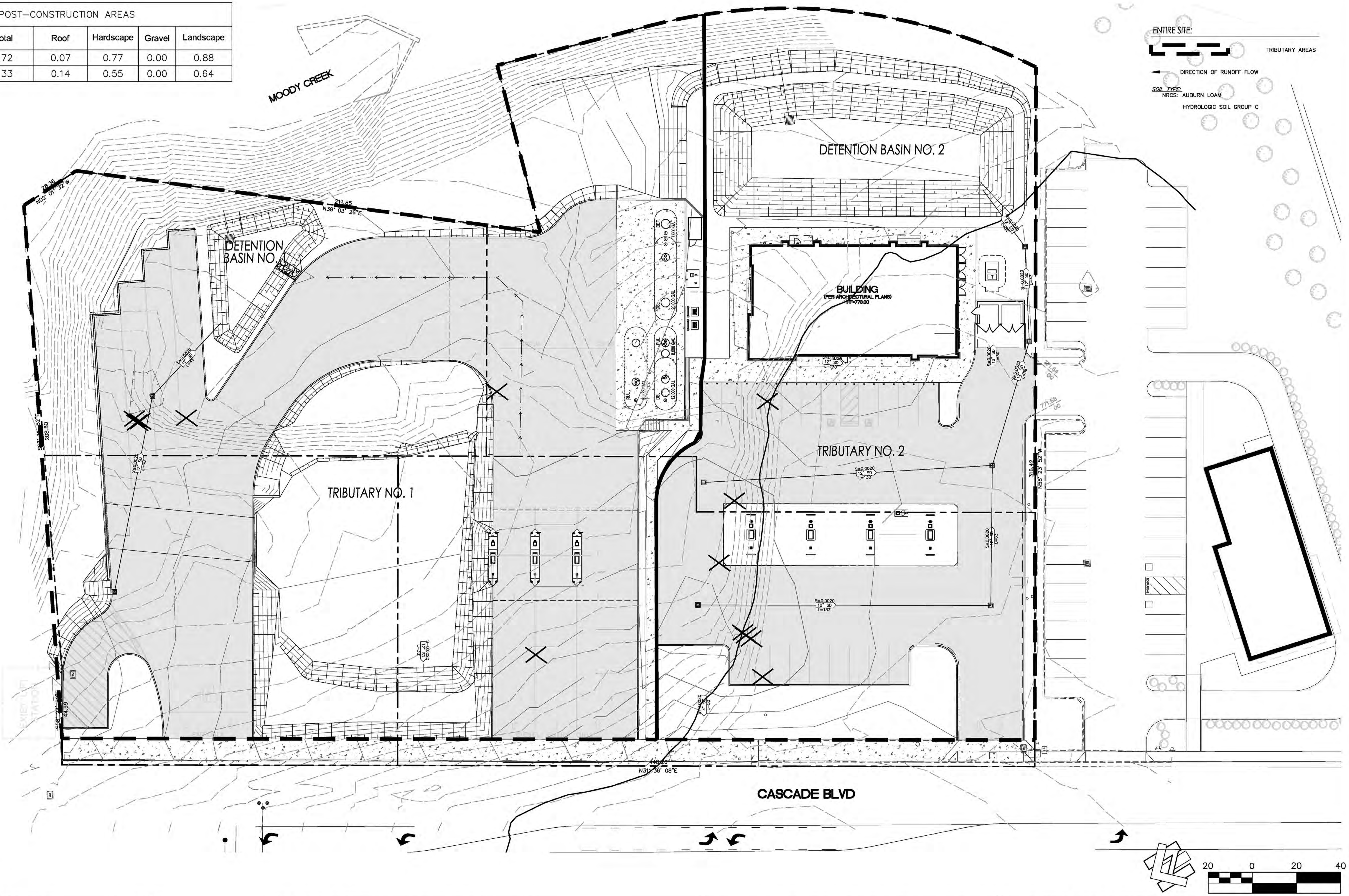
PRE-CONSTRUCTION TRIBUTARY AREA
7-ELEVEN GAS STATION

APN Number	Job Number	Scale	Sheet
007-390-031,036,038,039	24-047	1"= 20' Horz. N/A Vert.	Sheet 1 Of 1

EXHIBIT B

POST-DEVELOPED TRIBUTARY AREA MAP

POST-CONSTRUCTION AREAS					
Tributary Area (AC)	Total	Roof	Hardscape	Gravel	Landscape
1	1.72	0.07	0.77	0.00	0.88
2	1.33	0.14	0.55	0.00	0.64



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		Revision	Date	By
Designed:	RDG			
Drawn By:	CPH			
Approved:				
Date:	9/11/2024			

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POST-CONSTRUCTION TRIBUTARY AREA
7-ELEVEN GAS STATION

APN Number	Job Number	Scale	Sheet
007-390-031,036,038,039	24-047	1"= 20' Horz. N/A Vert.	Sheet 1 Of 1

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EXHIBIT C

DRAINAGE RUNOFF CALCULATION

3-5-2025
Job #24-047

NORTHSTAR

7-ELEVEN GAS STATION
SHASTA LAKE, CA
EXHIBIT C - DRAINAGE RUNOFF CALCULATIONS

PRE-CONSTRUCTION RUNOFF

From Highway Design Manual, Figure 819.2A

Slope=	0.17	5 to 10 percent slopes
Surface Permeability=	0.12	Low drained soils
Vegetation=	0.06	Good woodland area
Surface=	0.10	Low surface depressions
Total=	0.45	

Surface Type	**"C"**		**Area (Acres)**	**C*A**
Building Roofs	0.95		0.07	0.07
Paving and Hardscape	0.90		0.28	0.25
Gravel	0.80		0.00	0.00
Landscaping	0.45		2.70	1.22
		Totals =	3.05	1.53

C-pre = 0.50

Storm Intensities / Peak Flow
(intensities per NOAA)

	Intensity (in/hr)	**Total Peak Flow (cfs)**
10 year	1.905	2.92
100 year	2.711	4.15

POST-CONSTRUCTION RUNOFF

			Tributay 1		Tributay 2	
Surface Type	**"C"**		**Area (Acres)**	**C*A**	**Area (Acres)**	**C*A**
Building Roofs	0.95		0.07	0.07	0.14	0.13
Paving and Hardscape	0.90		0.77	0.69	0.55	0.49
Gravel	0.80		0.00	0.00	0.00	0.00
Landscaping	0.45		0.88	0.40	0.65	0.29
		Totals =	1.72	1.15	1.33	0.91
C-post =			**0.67**		**0.69**	

Storm Intensities / Peak Flow
(intensities per NOAA)

	Intensity (in/hr)	Tributay 1 **Total Peak Flow (cfs)**	Tributay 2 **Total Peak Flow (cfs)**
10 year	3.31	3.82	3.03
100 year	4.72	5.45	4.32

EXHIBIT D

HYDRAFLOW HYDROGRAPH REPORT

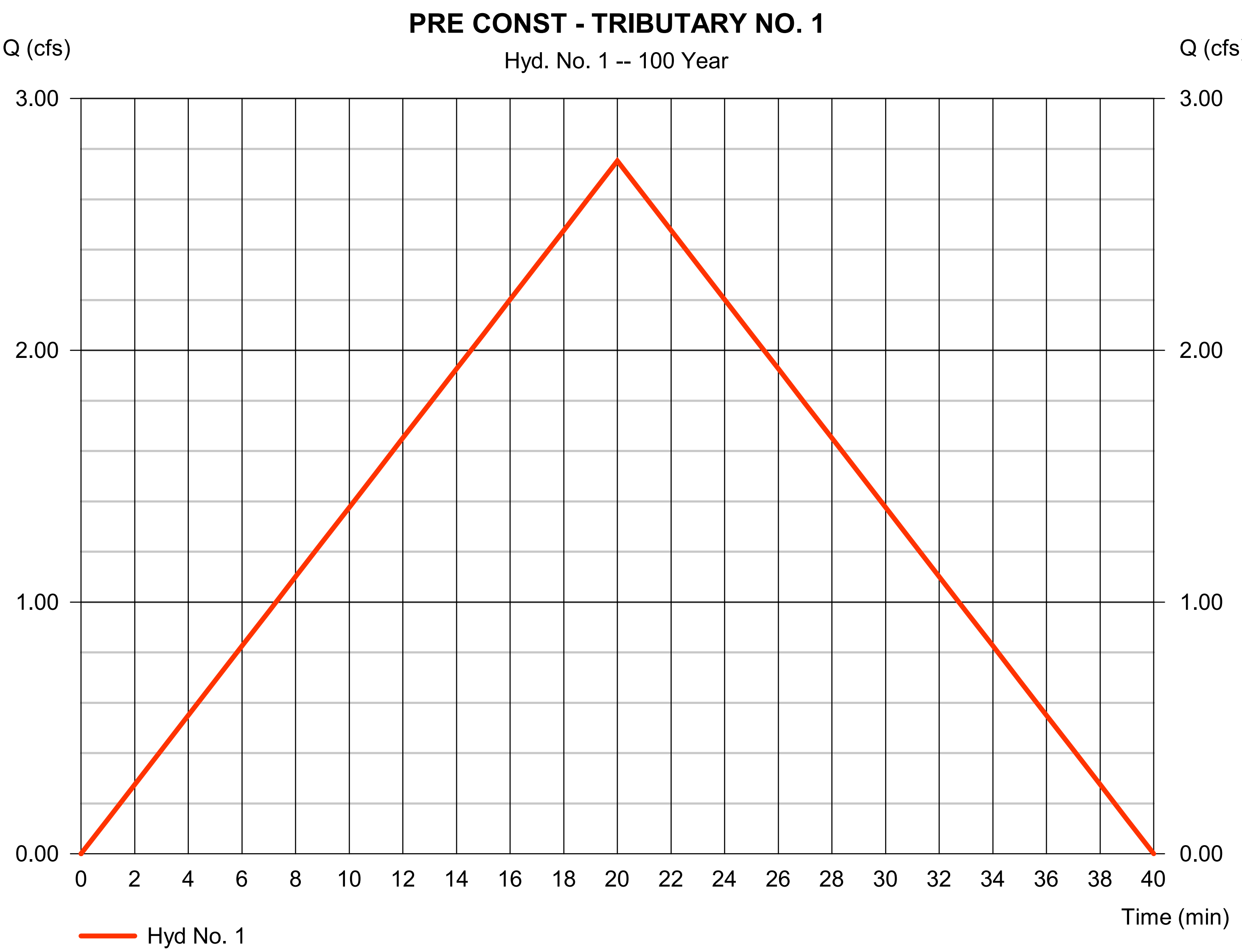
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Thursday, 03 / 13 / 2025

Hyd. No. 1

PRE CONST - TRIBUTARY NO. 1

Hydrograph type	= Rational	Peak discharge	= 2.752 cfs
Storm frequency	= 100 yrs	Time to peak	= 20 min
Time interval	= 1 min	Hyd. volume	= 3,303 cuft
Drainage area	= 1.720 ac	Runoff coeff.	= 0.5
Intensity	= 3.200 in/hr	Tc by TR55	= 20.00 min
IDF Curve	= SHASTA LAKE.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hyd. No. 1

PRE CONST - TRIBUTARY NO. 1

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.400		0.011		0.011		
Flow length (ft)	=	200.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	4.84		0.00		0.00		
Land slope (%)	=	5.50		0.00		0.00		
Travel Time (min)	**=**	**20.28**	**+**	**0.00**	**+**	**0.00**	**=**	**20.28**
Shallow Concentrated Flow								
Flow length (ft)	=	0.00		0.00		0.00		
Watercourse slope (%)	=	0.00		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=0.00			0.00		0.00		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=0.00							
				0.00				
						0.00		
Flow length (ft)	({0})0.0			0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc .... **20.00 min**

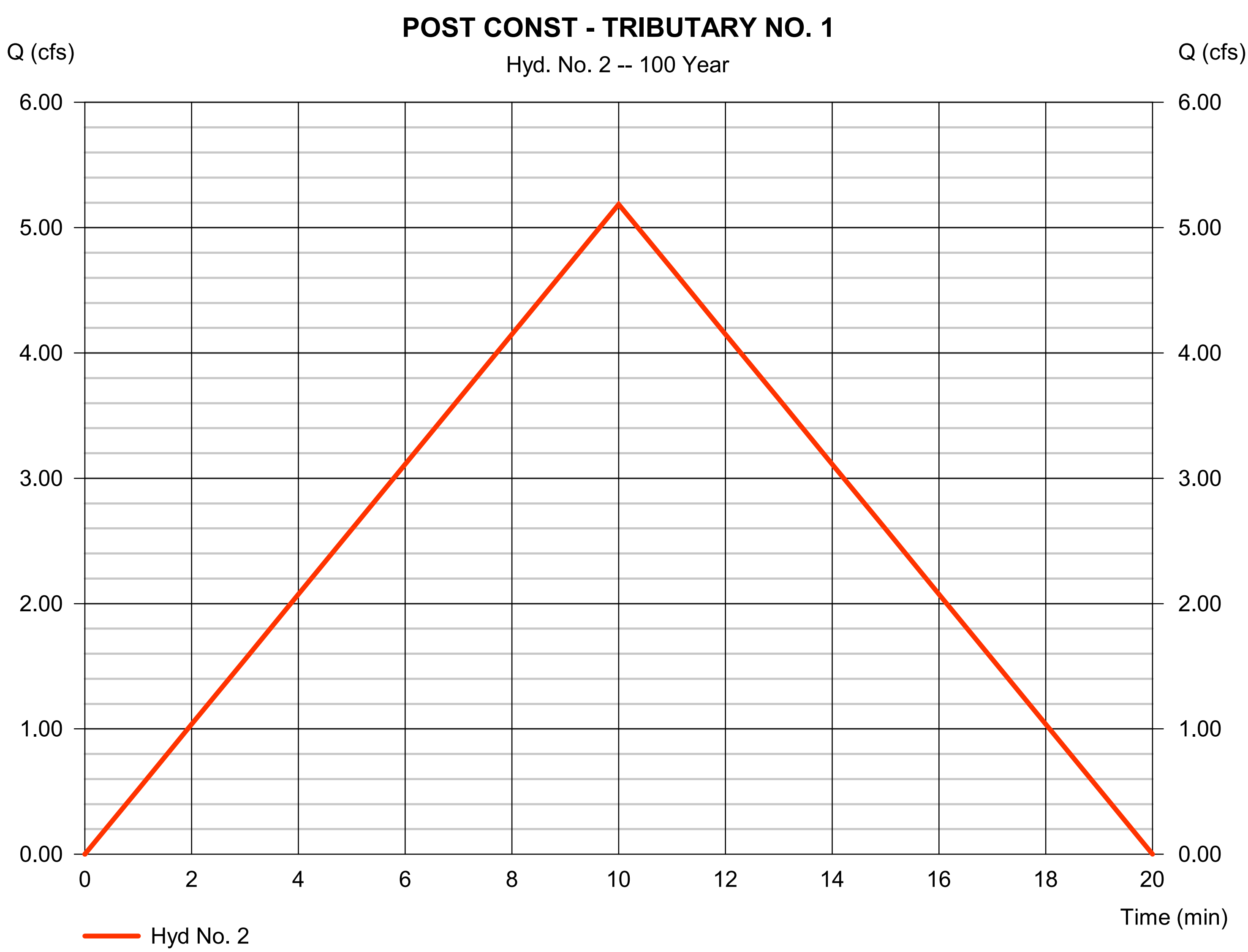
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Thursday, 03 / 13 / 2025

Hyd. No. 2

POST CONST - TRIBUTARY NO. 1

Hydrograph type	= Rational	Peak discharge	= 5.186 cfs
Storm frequency	= 100 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 3,112 cuft
Drainage area	= 1.720 ac	Runoff coeff.	= 0.67
Intensity	= 4.501 in/hr	Tc by User	= 10.00 min
IDF Curve	= SHASTA LAKE.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

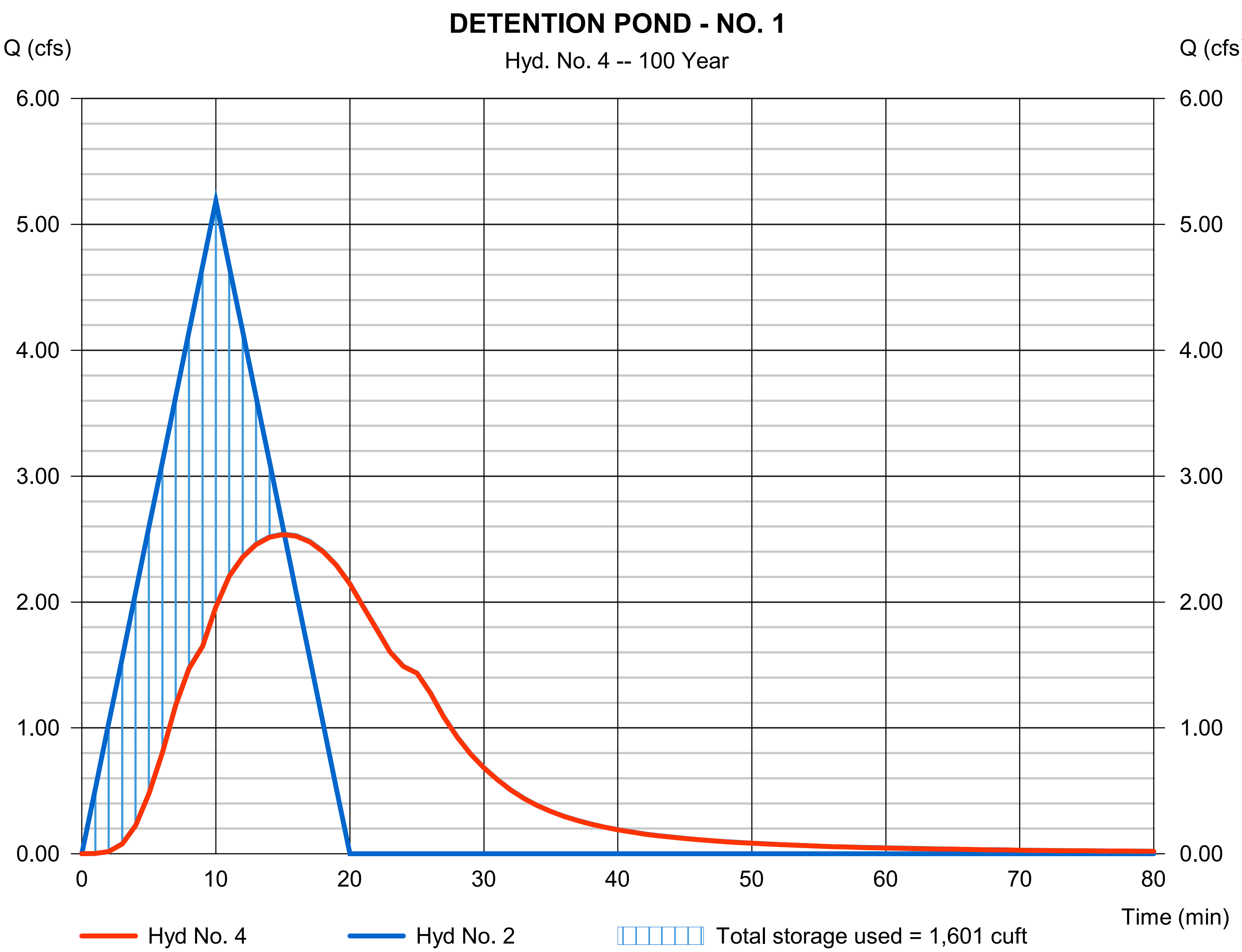
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Thursday, 03 / 13 / 2025

Hyd. No. 4

DETENTION POND - NO. 1

Hydrograph type	= Reservoir	Peak discharge	= 2.536 cfs
Storm frequency	= 100 yrs	Time to peak	= 15 min
Time interval	= 1 min	Hyd. volume	= 3,097 cuft
Inflow hyd. No.	= 2 - POST CONST - TRIBUTARY NO. 1	Max. Elevation	= 759.94 ft
Reservoir name	= DETENTION POND - NO. 1	Max. Storage	= 1,601 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 1 - DETENTION POND - NO. 1

Pond Data

Trapezoid - Bottom L x W = 40.0 x 23.0 ft, Side slope = 2.00:1, Bottom elev. = 758.50 ft, Depth = 4.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	758.50	920	0	0
0.40	758.90	1,023	389	389
0.80	759.30	1,132	431	819
1.20	759.70	1,245	475	1,295
1.60	760.10	1,364	522	1,816
2.00	760.50	1,488	570	2,387
2.40	760.90	1,617	621	3,007
2.80	761.30	1,751	673	3,681
3.20	761.70	1,890	728	4,409
3.60	762.10	2,035	785	5,194
4.00	762.50	2,184	844	6,037

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 10.00	Inactive	Inactive	Inactive
Span (in)	= 10.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 758.50	0.00	0.00	0.00
Length (ft)	= 30.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	Inactive	Inactive	Inactive
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.100 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	758.50	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.04	39	758.54	0.01 ic	---	---	---	---	---	---	---	0.000	---	0.007
0.08	78	758.58	0.03 ic	---	---	---	---	---	---	---	0.000	---	0.026
0.12	117	758.62	0.06 ic	---	---	---	---	---	---	---	0.001	---	0.058
0.16	155	758.66	0.10 ic	---	---	---	---	---	---	---	0.001	---	0.101
0.20	194	758.70	0.15 ic	---	---	---	---	---	---	---	0.001	---	0.154
0.24	233	758.74	0.22 ic	---	---	---	---	---	---	---	0.001	---	0.219
0.28	272	758.78	0.29 ic	---	---	---	---	---	---	---	0.002	---	0.292
0.32	311	758.82	0.37 ic	---	---	---	---	---	---	---	0.002	---	0.373
0.36	350	758.86	0.46 ic	---	---	---	---	---	---	---	0.002	---	0.463
0.40	389	758.90	0.56 ic	---	---	---	---	---	---	---	0.002	---	0.560
0.44	432	758.94	0.66 ic	---	---	---	---	---	---	---	0.002	---	0.663
0.48	475	758.98	0.77 ic	---	---	---	---	---	---	---	0.002	---	0.771
0.52	518	759.02	0.88 ic	---	---	---	---	---	---	---	0.002	---	0.882
0.56	561	759.06	0.99 ic	---	---	---	---	---	---	---	0.002	---	0.996
0.60	604	759.10	1.11 ic	---	---	---	---	---	---	---	0.002	---	1.111
0.64	647	759.14	1.22 ic	---	---	---	---	---	---	---	0.003	---	1.227
0.68	690	759.18	1.34 ic	---	---	---	---	---	---	---	0.003	---	1.341
0.72	733	759.22	1.42 oc	---	---	---	---	---	---	---	0.003	---	1.418
0.76	776	759.26	1.47 oc	---	---	---	---	---	---	---	0.003	---	1.469
0.80	819	759.30	1.49 oc	---	---	---	---	---	---	---	0.003	---	1.497
0.84	867	759.34	1.48 oc	---	---	---	---	---	---	---	0.003	---	1.482
0.88	914	759.38	1.57 oc	---	---	---	---	---	---	---	0.003	---	1.575
0.92	962	759.42	1.66 oc	---	---	---	---	---	---	---	0.003	---	1.663
0.96	1,009	759.46	1.74 oc	---	---	---	---	---	---	---	0.003	---	1.747
1.00	1,057	759.50	1.82 oc	---	---	---	---	---	---	---	0.003	---	1.827
1.04	1,105	759.54	1.90 oc	---	---	---	---	---	---	---	0.003	---	1.904
1.08	1,152	759.58	1.97 oc	---	---	---	---	---	---	---	0.003	---	1.977
1.12	1,200	759.62	2.05 oc	---	---	---	---	---	---	---	0.003	---	2.048
1.16	1,247	759.66	2.11 oc	---	---	---	---	---	---	---	0.003	---	2.117
1.20	1,295	759.70	2.18 oc	---	---	---	---	---	---	---	0.003	---	2.184
1.24	1,347	759.74	2.25 oc	---	---	---	---	---	---	---	0.003	---	2.248

Continues on next page...

DETENTION POND - NO. 1

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
1.28	1,399	759.78	2.31 oc	---	---	---	---	---	---	---	0.003	---	2.311
1.32	1,451	759.82	2.37 oc	---	---	---	---	---	---	---	0.003	---	2.372
1.36	1,503	759.86	2.43 oc	---	---	---	---	---	---	---	0.003	---	2.431
1.40	1,556	759.90	2.49 oc	---	---	---	---	---	---	---	0.003	---	2.489
1.44	1,608	759.94	2.54 oc	---	---	---	---	---	---	---	0.003	---	2.546
1.48	1,660	759.98	2.60 oc	---	---	---	---	---	---	---	0.003	---	2.602
1.52	1,712	760.02	2.65 oc	---	---	---	---	---	---	---	0.003	---	2.656
1.56	1,764	760.06	2.71 oc	---	---	---	---	---	---	---	0.003	---	2.709
1.60	1,816	760.10	2.76 oc	---	---	---	---	---	---	---	0.003	---	2.762
1.64	1,873	760.14	2.81 oc	---	---	---	---	---	---	---	0.003	---	2.813
1.68	1,930	760.18	2.86 oc	---	---	---	---	---	---	---	0.003	---	2.863
1.72	1,987	760.22	2.91 oc	---	---	---	---	---	---	---	0.003	---	2.913
1.76	2,045	760.26	2.96 oc	---	---	---	---	---	---	---	0.003	---	2.961
1.80	2,102	760.30	3.01 oc	---	---	---	---	---	---	---	0.003	---	3.009
1.84	2,159	760.34	3.05 oc	---	---	---	---	---	---	---	0.003	---	3.056
1.88	2,216	760.38	3.10 oc	---	---	---	---	---	---	---	0.003	---	3.103
1.92	2,273	760.42	3.15 oc	---	---	---	---	---	---	---	0.003	---	3.149
1.96	2,330	760.46	3.19 oc	---	---	---	---	---	---	---	0.003	---	3.194
2.00	2,387	760.50	3.23 oc	---	---	---	---	---	---	---	0.003	---	3.238
2.04	2,449	760.54	3.28 oc	---	---	---	---	---	---	---	0.003	---	3.282
2.08	2,511	760.58	3.32 oc	---	---	---	---	---	---	---	0.004	---	3.325
2.12	2,573	760.62	3.36 oc	---	---	---	---	---	---	---	0.004	---	3.368
2.16	2,635	760.66	3.41 oc	---	---	---	---	---	---	---	0.004	---	3.410
2.20	2,697	760.70	3.45 oc	---	---	---	---	---	---	---	0.004	---	3.452
2.24	2,759	760.74	3.49 oc	---	---	---	---	---	---	---	0.004	---	3.493
2.28	2,821	760.78	3.53 oc	---	---	---	---	---	---	---	0.004	---	3.534
2.32	2,883	760.82	3.57 oc	---	---	---	---	---	---	---	0.004	---	3.574
2.36	2,945	760.86	3.61 oc	---	---	---	---	---	---	---	0.004	---	3.614
2.40	3,007	760.90	3.65 oc	---	---	---	---	---	---	---	0.004	---	3.653
2.44	3,075	760.94	3.69 oc	---	---	---	---	---	---	---	0.004	---	3.692
2.48	3,142	760.98	3.73 oc	---	---	---	---	---	---	---	0.004	---	3.731
2.52	3,210	761.02	3.76 oc	---	---	---	---	---	---	---	0.004	---	3.769
2.56	3,277	761.06	3.80 oc	---	---	---	---	---	---	---	0.004	---	3.806
2.60	3,344	761.10	3.84 oc	---	---	---	---	---	---	---	0.004	---	3.844
2.64	3,412	761.14	3.88 oc	---	---	---	---	---	---	---	0.004	---	3.881
2.68	3,479	761.18	3.91 oc	---	---	---	---	---	---	---	0.004	---	3.917
2.72	3,546	761.22	3.95 oc	---	---	---	---	---	---	---	0.004	---	3.954
2.76	3,614	761.26	3.99 oc	---	---	---	---	---	---	---	0.004	---	3.990
2.80	3,681	761.30	4.02 oc	---	---	---	---	---	---	---	0.004	---	4.025
2.84	3,754	761.34	4.06 oc	---	---	---	---	---	---	---	0.004	---	4.061
2.88	3,827	761.38	4.09 oc	---	---	---	---	---	---	---	0.004	---	4.096
2.92	3,899	761.42	4.13 oc	---	---	---	---	---	---	---	0.004	---	4.131
2.96	3,972	761.46	4.16 oc	---	---	---	---	---	---	---	0.004	---	4.165
3.00	4,045	761.50	4.19 oc	---	---	---	---	---	---	---	0.004	---	4.199
3.04	4,118	761.54	4.23 oc	---	---	---	---	---	---	---	0.004	---	4.233
3.08	4,191	761.58	4.26 oc	---	---	---	---	---	---	---	0.004	---	4.267
3.12	4,263	761.62	4.30 oc	---	---	---	---	---	---	---	0.004	---	4.300
3.16	4,336	761.66	4.33 oc	---	---	---	---	---	---	---	0.004	---	4.333
3.20	4,409	761.70	4.36 oc	---	---	---	---	---	---	---	0.004	---	4.366
3.24	4,487	761.74	4.39 oc	---	---	---	---	---	---	---	0.004	---	4.399
3.28	4,566	761.78	4.43 oc	---	---	---	---	---	---	---	0.004	---	4.431
3.32	4,644	761.82	4.46 oc	---	---	---	---	---	---	---	0.004	---	4.463
3.36	4,723	761.86	4.49 oc	---	---	---	---	---	---	---	0.005	---	4.495
3.40	4,801	761.90	4.52 oc	---	---	---	---	---	---	---	0.005	---	4.527
3.44	4,880	761.94	4.55 oc	---	---	---	---	---	---	---	0.005	---	4.558
3.48	4,958	761.98	4.59 oc	---	---	---	---	---	---	---	0.005	---	4.590
3.52	5,037	762.02	4.62 oc	---	---	---	---	---	---	---	0.005	---	4.621
3.56	5,115	762.06	4.65 oc	---	---	---	---	---	---	---	0.005	---	4.651
3.60	5,194	762.10	4.68 oc	---	---	---	---	---	---	---	0.005	---	4.682
3.64	5,278	762.14	4.71 oc	---	---	---	---	---	---	---	0.005	---	4.713
3.68	5,362	762.18	4.74 oc	---	---	---	---	---	---	---	0.005	---	4.743
3.72	5,447	762.22	4.77 oc	---	---	---	---	---	---	---	0.005	---	4.773
3.76	5,531	762.26	4.80 oc	---	---	---	---	---	---	---	0.005	---	4.803
3.80	5,616	762.30	4.83 oc	---	---	---	---	---	---	---	0.005	---	4.832
3.84	5,700	762.34	4.86 oc	---	---	---	---	---	---	---	0.005	---	4.862
3.88	5,784	762.38	4.89 oc	---	---	---	---	---	---	---	0.005	---	4.891
3.92	5,869	762.42	4.91 ic	---	---	---	---	---	---	---	0.005	---	4.920
3.96	5,953	762.46	4.94 ic	---	---	---	---	---	---	---	0.005	---	4.948
4.00	6,037	762.50	4.97 ic	---	---	---	---	---	---	---	0.005	---	4.976

...End

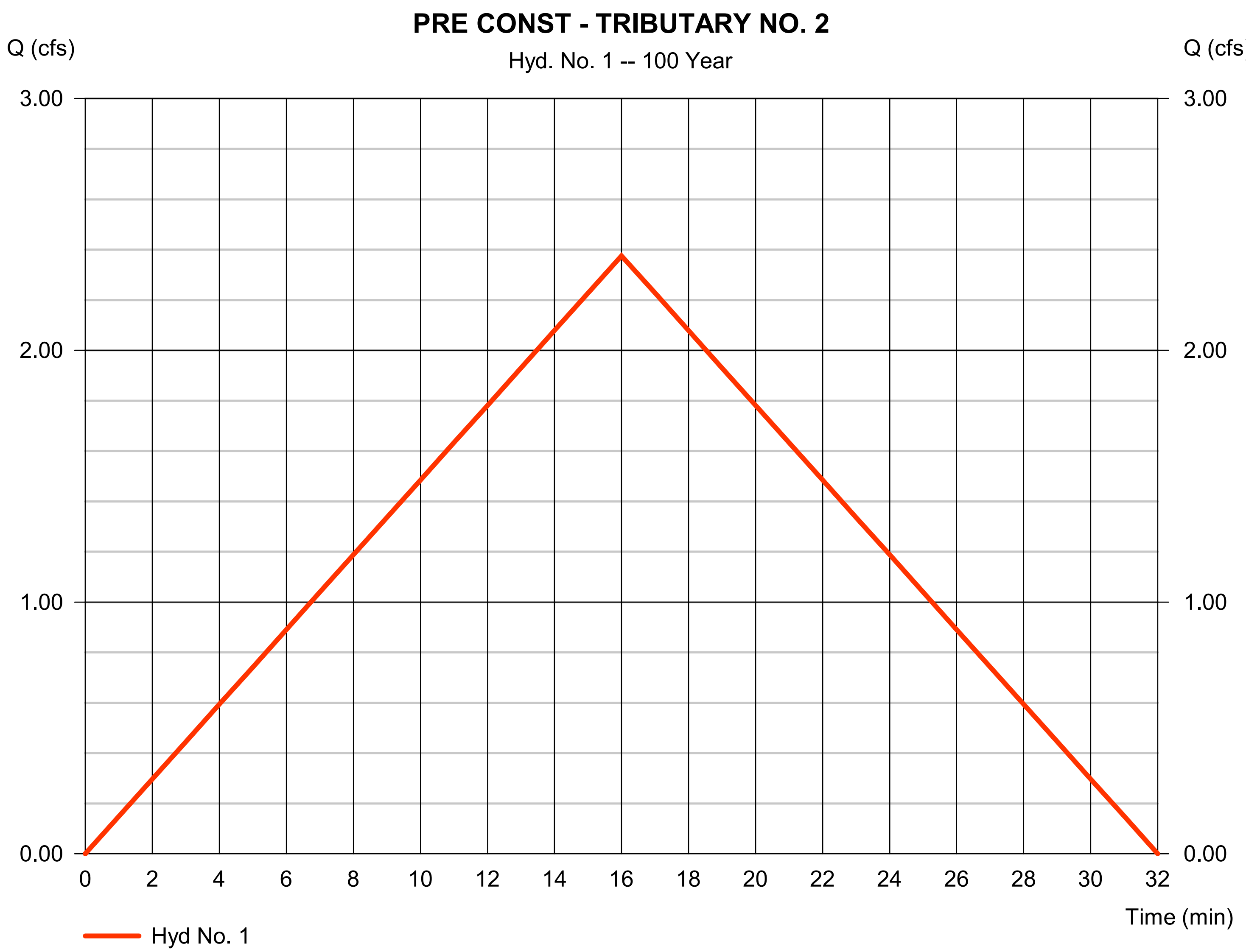
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Thursday, 03 / 13 / 2025

Hyd. No. 1

PRE CONST - TRIBUTARY NO. 2

Hydrograph type	= Rational	Peak discharge	= 2.376 cfs
Storm frequency	= 100 yrs	Time to peak	= 16 min
Time interval	= 1 min	Hyd. volume	= 2,280 cuft
Drainage area	= 1.330 ac	Runoff coeff.	= 0.5
Intensity	= 3.572 in/hr	Tc by TR55	= 16.00 min
IDF Curve	= SHASTA LAKE.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022

Hyd. No. 1

PRE CONST - TRIBUTARY NO. 2

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.400		0.011		0.011		
Flow length (ft)	=	150.0		0.0		0.0		
Two-year 24-hr precip. (in)	=	4.84		0.00		0.00		
Land slope (%)	=	5.50		0.00		0.00		
Travel Time (min)	**=**	**16.11**	**+**	**0.00**	**+**	**0.00**	**=**	**16.11**
Shallow Concentrated Flow								
Flow length (ft)	=	0.00		0.00		0.00		
Watercourse slope (%)	=	0.00		0.00		0.00		
Surface description	=	Paved		Paved		Paved		
Average velocity (ft/s)	=0.00			0.00		0.00		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**
Channel Flow								
X sectional flow area (sqft)	=	0.00		0.00		0.00		
Wetted perimeter (ft)	=	0.00		0.00		0.00		
Channel slope (%)	=	0.00		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=0.00			0.00		0.00		
Flow length (ft)	({0})0.0			0.0		0.0		
Travel Time (min)	**=**	**0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc .... **16.00 min**

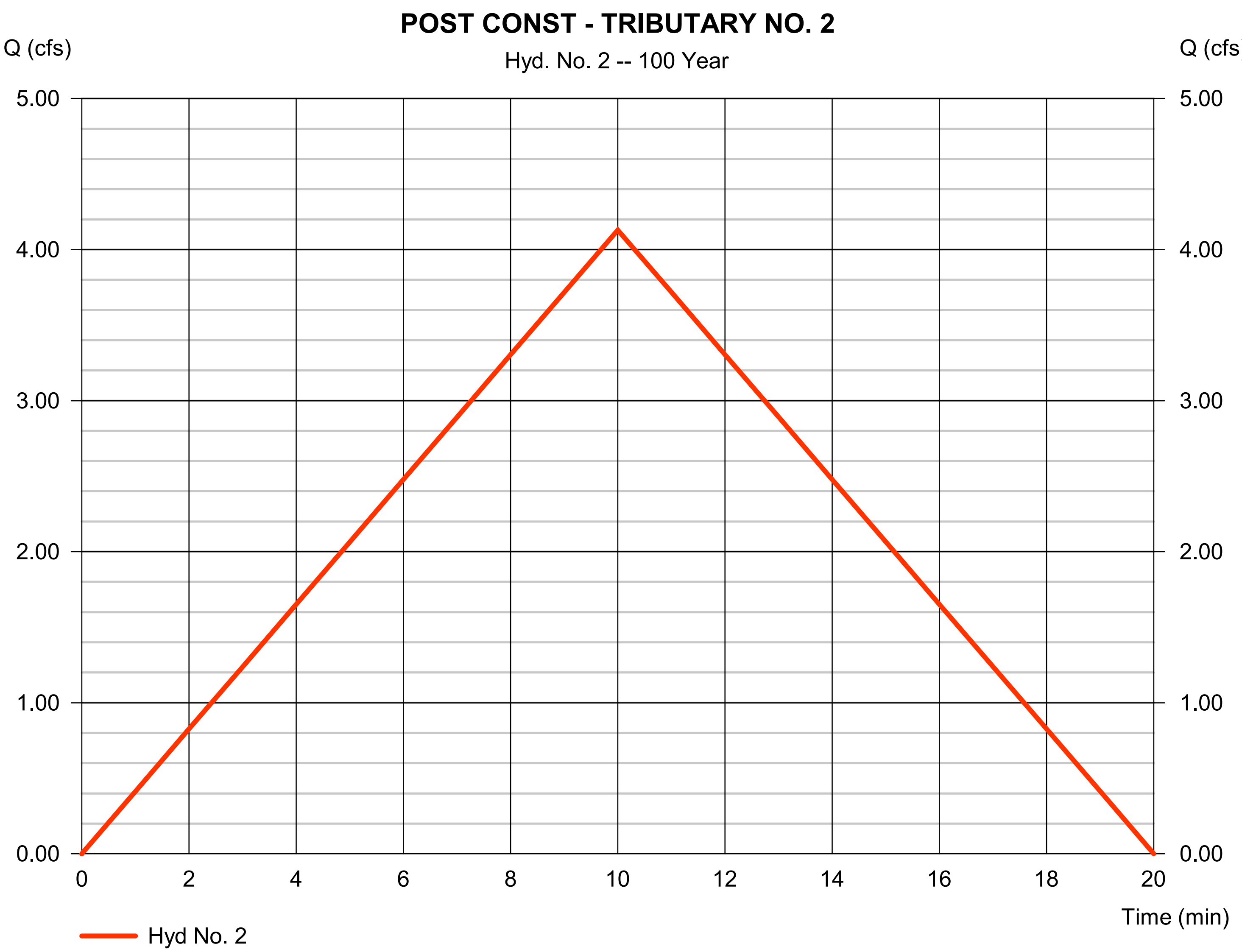
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Thursday, 03 / 13 / 2025

Hyd. No. 2

POST CONST - TRIBUTARY NO. 2

Hydrograph type	= Rational	Peak discharge	= 4.130 cfs
Storm frequency	= 100 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 2,478 cuft
Drainage area	= 1.330 ac	Runoff coeff.	= 0.69
Intensity	= 4.501 in/hr	Tc by User	= 10.00 min
IDF Curve	= SHASTA LAKE.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

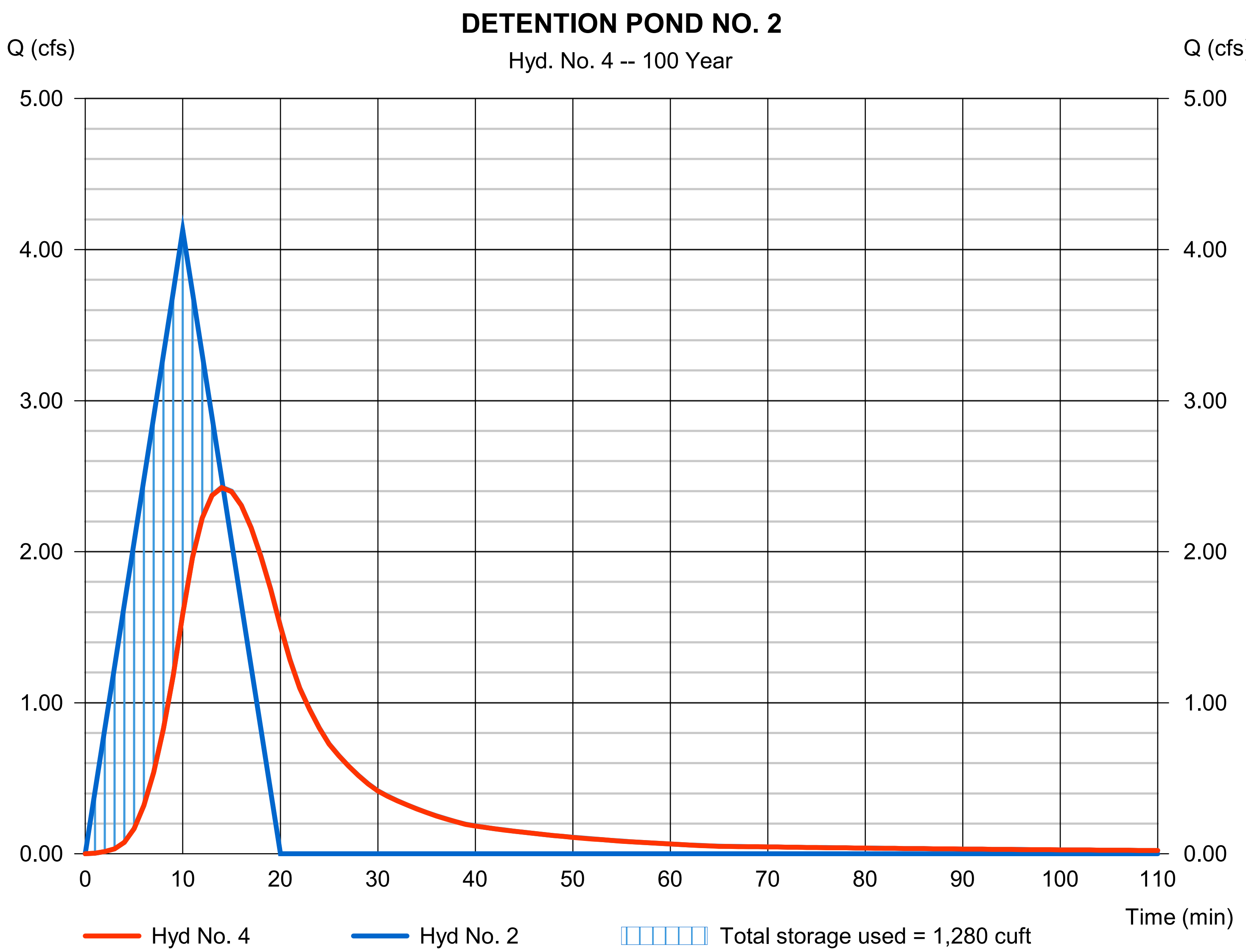
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Thursday, 03 / 13 / 2025

Hyd. No. 4

DETENTION POND NO. 2

Hydrograph type	= Reservoir	Peak discharge	= 2.424 cfs
Storm frequency	= 100 yrs	Time to peak	= 14 min
Time interval	= 1 min	Hyd. volume	= 2,468 cuft
Inflow hyd. No.	= 2 - POST CONST - TRIBUTARY NO. 2	Max. Elevation	= 763.78 ft
Reservoir name	= DETENTION POND NO. 2	Max. Storage	= 1,280 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 Thursday, 03 / 13 / 2025

Pond No. 1 - DETENTION POND NO. 2

Pond Data

Trapezoid -Bottom L x W = 80.0 x 18.0 ft, Side slope = 2.00:1, Bottom elev. = 763.00 ft, Depth = 10.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	763.00	1,440	0	0
1.00	764.00	1,848	1,641	1,641
2.00	765.00	2,288	2,065	3,707
3.00	766.00	2,760	2,521	6,228
4.00	767.00	3,264	3,009	9,237
5.00	768.00	3,800	3,529	12,767
6.00	769.00	4,368	4,081	16,848
7.00	770.00	4,968	4,665	21,513
8.00	771.00	5,600	5,281	26,795
9.00	772.00	6,264	5,929	32,724
10.00	773.00	6,960	6,609	39,333

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	Inactive	Inactive	Inactive
Span (in)	= 15.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 763.00	0.00	0.00	0.00
Length (ft)	= 30.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	Inactive	Inactive	Inactive
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.100 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	763.00	0.00	---	---	---	---	---	---	---	0.000	---	0.000
0.10	164	763.10	0.05 ic	---	---	---	---	---	---	---	0.000	---	0.050
0.20	328	763.20	0.19 ic	---	---	---	---	---	---	---	0.001	---	0.194
0.30	492	763.30	0.42 ic	---	---	---	---	---	---	---	0.001	---	0.424
0.40	657	763.40	0.73 ic	---	---	---	---	---	---	---	0.002	---	0.732
0.50	821	763.50	1.10 ic	---	---	---	---	---	---	---	0.002	---	1.106
0.60	985	763.60	1.54 ic	---	---	---	---	---	---	---	0.003	---	1.540
0.70	1,149	763.70	2.02 ic	---	---	---	---	---	---	---	0.003	---	2.018
0.80	1,313	763.80	2.53 ic	---	---	---	---	---	---	---	0.003	---	2.530
0.90	1,477	763.90	2.91 oc	---	---	---	---	---	---	---	0.004	---	2.911
1.00	1,641	764.00	3.25 oc	---	---	---	---	---	---	---	0.004	---	3.250
1.10	1,848	764.10	3.52 oc	---	---	---	---	---	---	---	0.004	---	3.525
1.20	2,054	764.20	3.68 oc	---	---	---	---	---	---	---	0.004	---	3.689
1.30	2,261	764.30	3.94 oc	---	---	---	---	---	---	---	0.005	---	3.940
1.40	2,467	764.40	4.46 oc	---	---	---	---	---	---	---	0.005	---	4.467
1.50	2,674	764.50	4.93 oc	---	---	---	---	---	---	---	0.005	---	4.938
1.60	2,881	764.60	5.36 oc	---	---	---	---	---	---	---	0.005	---	5.368
1.70	3,087	764.70	5.76 oc	---	---	---	---	---	---	---	0.005	---	5.766
1.80	3,294	764.80	6.13 oc	---	---	---	---	---	---	---	0.005	---	6.138
1.90	3,500	764.90	6.48 oc	---	---	---	---	---	---	---	0.005	---	6.489
2.00	3,707	765.00	6.82 oc	---	---	---	---	---	---	---	0.005	---	6.822
2.10	3,959	765.10	7.13 oc	---	---	---	---	---	---	---	0.005	---	7.140
2.20	4,211	765.20	7.41 ic	---	---	---	---	---	---	---	0.006	---	7.420
2.30	4,463	765.30	7.65 ic	---	---	---	---	---	---	---	0.006	---	7.652
2.40	4,715	765.40	7.87 ic	---	---	---	---	---	---	---	0.006	---	7.877
2.50	4,967	765.50	8.09 ic	---	---	---	---	---	---	---	0.006	---	8.096
2.60	5,219	765.60	8.30 ic	---	---	---	---	---	---	---	0.006	---	8.309
2.70	5,472	765.70	8.51 ic	---	---	---	---	---	---	---	0.006	---	8.516
2.80	5,724	765.80	8.71 ic	---	---	---	---	---	---	---	0.006	---	8.719
2.90	5,976	765.90	8.91 ic	---	---	---	---	---	---	---	0.006	---	8.917
3.00	6,228	766.00	9.11 ic	---	---	---	---	---	---	---	0.006	---	9.111
3.10	6,529	766.10	9.29 ic	---	---	---	---	---	---	---	0.007	---	9.301

Continues on next page...

DETENTION POND NO. 2

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.20	6,830	766.20	9.48 ic	---	---	---	---	---	---	---	0.007	---	9.487
3.30	7,131	766.30	9.66 ic	---	---	---	---	---	---	---	0.007	---	9.670
3.40	7,432	766.40	9.84 ic	---	---	---	---	---	---	---	0.007	---	9.849
3.50	7,733	766.50	10.02 ic	---	---	---	---	---	---	---	0.007	---	10.02
3.60	8,034	766.60	10.19 ic	---	---	---	---	---	---	---	0.007	---	10.20
3.70	8,335	766.70	10.36 ic	---	---	---	---	---	---	---	0.007	---	10.37
3.80	8,635	766.80	10.53 ic	---	---	---	---	---	---	---	0.007	---	10.53
3.90	8,936	766.90	10.69 ic	---	---	---	---	---	---	---	0.007	---	10.70
4.00	9,237	767.00	10.85 ic	---	---	---	---	---	---	---	0.008	---	10.86
4.10	9,590	767.10	11.01 ic	---	---	---	---	---	---	---	0.008	---	11.02
4.20	9,943	767.20	11.17 ic	---	---	---	---	---	---	---	0.008	---	11.18
4.30	10,296	767.30	11.33 ic	---	---	---	---	---	---	---	0.008	---	11.33
4.40	10,649	767.40	11.48 ic	---	---	---	---	---	---	---	0.008	---	11.49
4.50	11,002	767.50	11.63 ic	---	---	---	---	---	---	---	0.008	---	11.64
4.60	11,355	767.60	11.78 ic	---	---	---	---	---	---	---	0.008	---	11.79
4.70	11,708	767.70	11.93 ic	---	---	---	---	---	---	---	0.008	---	11.93
4.80	12,061	767.80	12.07 ic	---	---	---	---	---	---	---	0.009	---	12.08
4.90	12,414	767.90	12.22 ic	---	---	---	---	---	---	---	0.009	---	12.22
5.00	12,767	768.00	12.36 ic	---	---	---	---	---	---	---	0.009	---	12.37
5.10	13,175	768.10	12.50 ic	---	---	---	---	---	---	---	0.009	---	12.51
5.20	13,583	768.20	12.64 ic	---	---	---	---	---	---	---	0.009	---	12.65
5.30	13,991	768.30	12.77 ic	---	---	---	---	---	---	---	0.009	---	12.78
5.40	14,399	768.40	12.91 ic	---	---	---	---	---	---	---	0.009	---	12.92
5.50	14,807	768.50	13.04 ic	---	---	---	---	---	---	---	0.009	---	13.05
5.60	15,215	768.60	13.18 ic	---	---	---	---	---	---	---	0.010	---	13.19
5.70	15,624	768.70	13.31 ic	---	---	---	---	---	---	---	0.010	---	13.32
5.80	16,032	768.80	13.44 ic	---	---	---	---	---	---	---	0.010	---	13.45
5.90	16,440	768.90	13.57 ic	---	---	---	---	---	---	---	0.010	---	13.58
6.00	16,848	769.00	13.70 ic	---	---	---	---	---	---	---	0.010	---	13.71
6.10	17,315	769.10	13.82 ic	---	---	---	---	---	---	---	0.010	---	13.83
6.20	17,781	769.20	13.95 ic	---	---	---	---	---	---	---	0.010	---	13.96
6.30	18,248	769.30	14.07 ic	---	---	---	---	---	---	---	0.011	---	14.08
6.40	18,714	769.40	14.20 ic	---	---	---	---	---	---	---	0.011	---	14.21
6.50	19,181	769.50	14.32 ic	---	---	---	---	---	---	---	0.011	---	14.33
6.60	19,647	769.60	14.44 ic	---	---	---	---	---	---	---	0.011	---	14.45
6.70	20,114	769.70	14.56 ic	---	---	---	---	---	---	---	0.011	---	14.57
6.80	20,580	769.80	14.68 ic	---	---	---	---	---	---	---	0.011	---	14.69
6.90	21,047	769.90	14.80 ic	---	---	---	---	---	---	---	0.011	---	14.81
7.00	21,513	770.00	14.92 ic	---	---	---	---	---	---	---	0.011	---	14.93
7.10	22,041	770.10	15.03 ic	---	---	---	---	---	---	---	0.012	---	15.05
7.20	22,570	770.20	15.15 ic	---	---	---	---	---	---	---	0.012	---	15.16
7.30	23,098	770.30	15.26 ic	---	---	---	---	---	---	---	0.012	---	15.28
7.40	23,626	770.40	15.38 ic	---	---	---	---	---	---	---	0.012	---	15.39
7.50	24,154	770.50	15.49 ic	---	---	---	---	---	---	---	0.012	---	15.50
7.60	24,682	770.60	15.60 ic	---	---	---	---	---	---	---	0.012	---	15.62
7.70	25,210	770.70	15.71 ic	---	---	---	---	---	---	---	0.013	---	15.73
7.80	25,738	770.80	15.83 ic	---	---	---	---	---	---	---	0.013	---	15.84
7.90	26,266	770.90	15.94 ic	---	---	---	---	---	---	---	0.013	---	15.95
8.00	26,795	771.00	16.04 ic	---	---	---	---	---	---	---	0.013	---	16.06
8.10	27,388	771.10	16.15 ic	---	---	---	---	---	---	---	0.013	---	16.17
8.20	27,980	771.20	16.26 ic	---	---	---	---	---	---	---	0.013	---	16.27
8.30	28,573	771.30	16.37 ic	---	---	---	---	---	---	---	0.013	---	16.38
8.40	29,166	771.40	16.47 ic	---	---	---	---	---	---	---	0.014	---	16.49
8.50	29,759	771.50	16.58 ic	---	---	---	---	---	---	---	0.014	---	16.59
8.60	30,352	771.60	16.68 ic	---	---	---	---	---	---	---	0.014	---	16.70
8.70	30,945	771.70	16.79 ic	---	---	---	---	---	---	---	0.014	---	16.80
8.80	31,538	771.80	16.89 ic	---	---	---	---	---	---	---	0.014	---	16.91
8.90	32,131	771.90	17.00 ic	---	---	---	---	---	---	---	0.014	---	17.01
9.00	32,724	772.00	17.10 ic	---	---	---	---	---	---	---	0.014	---	17.11
9.10	33,385	772.10	17.20 ic	---	---	---	---	---	---	---	0.015	---	17.21
9.20	34,046	772.20	17.30 ic	---	---	---	---	---	---	---	0.015	---	17.32
9.30	34,707	772.30	17.40 ic	---	---	---	---	---	---	---	0.015	---	17.42
9.40	35,368	772.40	17.50 ic	---	---	---	---	---	---	---	0.015	---	17.52
9.50	36,029	772.50	17.60 ic	---	---	---	---	---	---	---	0.015	---	17.62
9.60	36,689	772.60	17.70 ic	---	---	---	---	---	---	---	0.015	---	17.72
9.70	37,350	772.70	17.80 ic	---	---	---	---	---	---	---	0.016	---	17.81
9.80	38,011	772.80	17.90 ic	---	---	---	---	---	---	---	0.016	---	17.91
9.90	38,672	772.90	17.99 ic	---	---	---	---	---	---	---	0.016	---	18.01
10.00	39,333	773.00	18.09 ic	---	---	---	---	---	---	---	0.016	---	18.11

...End

Appendix C

Floodplain Analysis

Technical Memo

Date:	March 11, 2025		
To:	City of Shasta Public Works	**From:**	Richard Guevarra, PE
Cc:	Mekena Galka, PE	**NS#:**	24-047
RE:	7 11 Gas Station (Shasta) – FEMA “No-Fill” or ”Zero-Rise” Analysis		

This technical memorandum was prepared to address the base flood elevation for the 100-year flow at Moody Creek adjacent to the project area and provide a “No-fill” or “Zero-rise” analysis data for the proposed development as outlined in Title 44 of the Code of Federal Regulations, Section 60.3(d)(3). The project site is classified to be within the Special Flood Hazard Areas – Zone AE and the base flood elevation has been determined to be 772.99 ft based on the design hydraulic study for Cascade Boulevard Bridge at Moody Creek.

It has been determined that the hydraulics and flooding of Moody Creek is due to the presence of the undersized culverts downstream I-5 which results in a large backwater at the project area (See Figure 1: Project Location). Any significant fill added to the area within FEMA flood plain boundary may result in flooding at the areas downstream.

The development of 711 Gas Station has taken this into consideration and has designed the site to avoid additional fill at the areas within the FEMA flood plain boundary. The earthwork calculation shows that the site will have a total of 50 Cu. Yd. (Cut) which demonstrates that the development will not have any impact to the base flood elevation during the 100-yr storm event. (See Exhibit A: Preliminary Grading Plans)

It is in my professional opinion that the project meets FEMA’s “zero-rise” requirements within the FEMA flood plain boundary.

Thank you and please do not hesitate to contact me at (530)893-1600 with any questions or if any additional information is required.

NorthStar

Richard Guevarra
Senior Engineer, PE 82860

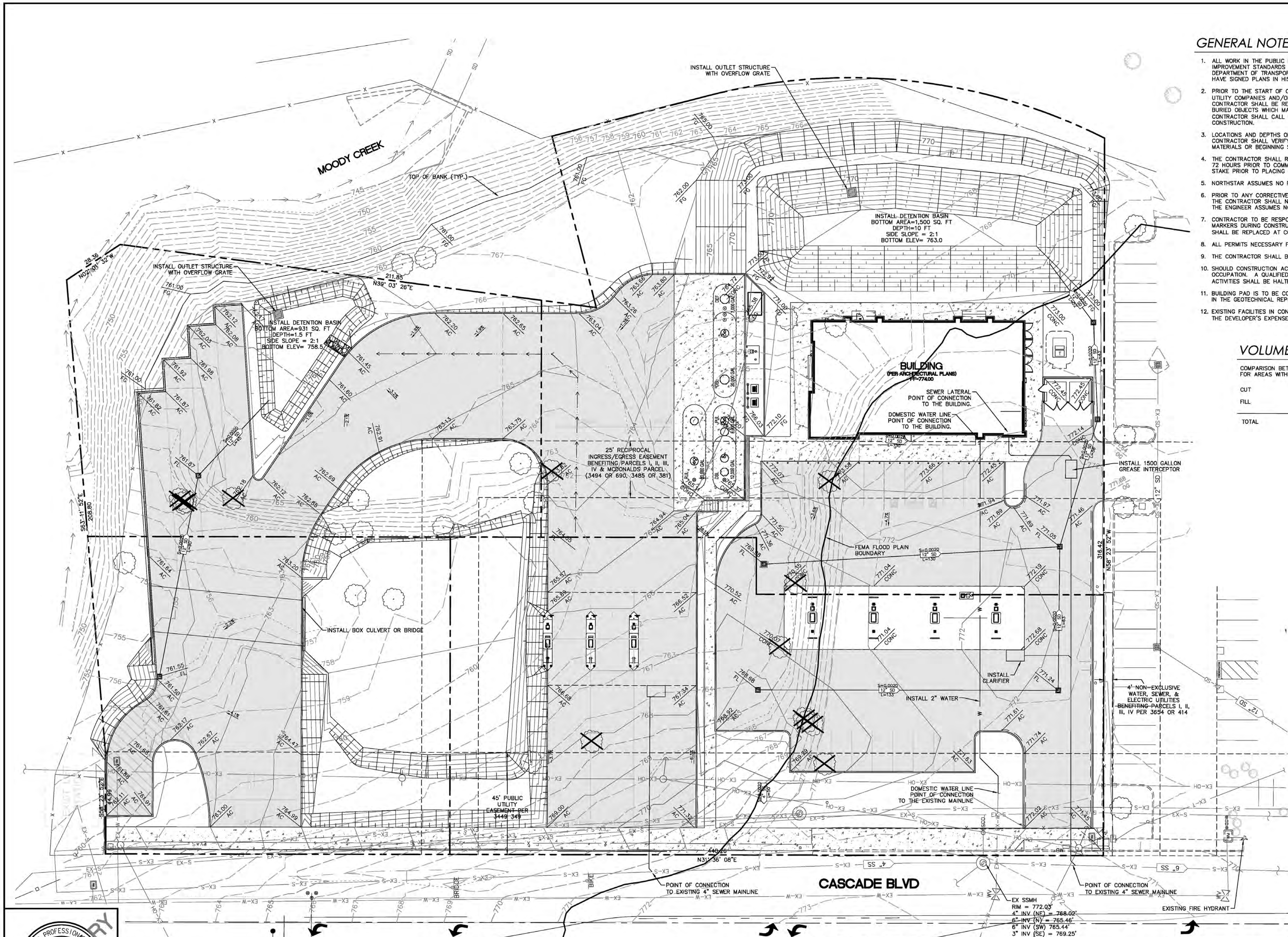
EXHIBITS

- EXHIBIT A – PRELIMINARY GRADING AND DRAINAGE PLAN

Figure 1: Project location

EXHIBIT A

PRELIMINARY GRADING AND DRAINAGE PLAN



GENERAL NOTES

1. ALL WORK IN THE PUBLIC RIGHT OF WAY SHALL BE DONE IN ACCORDANCE WITH THE CITY OF SHASTA IMPROVEMENT STANDARDS AND SPECIFICATIONS, AND APPLICABLE PORTIONS OF THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD PLANS AND SPECIFICATIONS DATED 2024. CONTRACTOR SHALL HAVE SIGNED PLANS IN HIS POSSESSION PRIOR TO COMMENCEMENT OF WORK.
2. PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES AND/OR UTILITY DISTRICTS AS TO THE LOCATION OF ALL UNDERGROUND FACILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL UNDERGROUND FACILITIES OR OTHER BURIED OBJECTS WHICH MAY BE ENCOUNTERED BUT WHICH ARE NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT (USA) AT 811 AT LEAST 3 DAYS PRIOR TO CONSTRUCTION.
3. LOCATIONS AND DEPTHS OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE EXISTENCE, LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ORDERING MATERIALS OR BEGINNING SITE CONSTRUCTION.
4. THE CONTRACTOR SHALL REQUEST CONSTRUCTION STAKES FOR ANY PARTICULAR PHASE OF WORK AT LEAST 72 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION. CONTRACTOR SHALL REQUEST A FORM OR GRADE STAKE PRIOR TO PLACING OF IMPROVEMENTS.
5. NORTHSTAR ASSUMES NO RESPONSIBILITY FOR ANY WORK CONSTRUCTED IF STAKED BY OTHERS.
6. PRIOR TO ANY CORRECTIVE ACTION BY THE CONTRACTOR WHICH IS NECESSARY DUE TO STAKING ERRORS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER FOR RE-STAKING AND VERIFICATION OF PREVIOUS STAKING. THE ENGINEER ASSUMES NO LIABILITY FOR THE COST INCURRED FOR THIS WORK.
7. CONTRACTOR TO BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS DURING CONSTRUCTION. ALL SUCH MONUMENTS OR MARKERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE.
8. ALL PERMITS NECESSARY FOR THIS JOB ARE TO BE ACQUIRED BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL ESTIMATES AND QUANTITIES.
10. SHOULD CONSTRUCTION ACTIVITIES EXPOSE BURIED ARTIFACTS OR OTHER EVIDENCE OF EARLY HISTORIC OCCUPATION. A QUALIFIED ARCHAEOLOGIST SHALL BE CONTACTED IMMEDIATELY. ALL CONSTRUCTION ACTIVITIES SHALL BE HALTED UNTIL THE ARCHAEOLOGIST'S RECOMMENDATIONS ARE IMPLEMENTED.
11. BUILDING PAD IS TO BE COMPACTED TO 90% MINIMUM RELATIVE COMPACTION PER ASTM 1557 OR AS STATED IN THE GEOTECHNICAL REPORT.
12. EXISTING FACILITIES IN CONFLICT WITH IMPROVEMENTS ARE TO BE RELOCATED OR ADJUSTED TO GRADE AT THE DEVELOPER'S EXPENSE.

VOLUME CALCULATIONS

COMPARISON BETWEEN FINISH GRADE AND EXISTING GRADE FOR AREAS WITHIN FEMA BOUNDARY

CUT	4,400 CU. YD.
FILL	4,350 CU. YD.
TOTAL	50 CU. YD (CUT)

S:\PROJECTS\2024\24-047 711 GAS STATION (SHASTA)\CS\DWG\24-047 B – PRELIM GRADING.DWG 3/13/25 RGUEVARRA

REGISTERED PROFESSIONAL ENGINEER RICHARD D. GUEVARRA No. 83660 CIVIL STATE OF CALIFORNIA

PRELIMINARY

		Revision	Date	By
Designed:	RDG			
Drawn By:	CPH			
Approved:				
Date:	3/13/2025			

NORTHSTAR
111 MISSION RANCH BLVD. SUITE 100, CHICO, CA 95926
PHONE: (530) 893-1600 www.northstareng.com

VERMELTFOORT ARCHITECTS, INC.
1661 CASCADE BLVD.
SHASTA LAKE, CALIFORNIA

PRELIMINARY GRADING AND DRAINAGE PLAN

7-ELEVEN GAS STATION

APN Number	Job Number	Scale	Sheet
007-390-031,036,038,039	24-047	1"= 20' Horz. N/A Vert.	Sheet 1 Of 1

Appendix D

Cultural Report

Confidential Report – Bound Separately

Appendix E

Biological Resources Assessment

Biological Resources Assessment

7-Eleven Convenience Store
Shasta Lake, CA

Prepared for: VAI

March 2025

acorn environmental

Table of Contents

List of Figures

List of Tables

List of Attachments

Section 1 | Introduction

1.1 PURPOSE OF ASSESSMENT

This assessment provides information about the biological resources within the Project Area, the regulatory environment affecting such resources, any potential Project-related impacts upon these resources, and mitigation measures and other recommendations to reduce the significance of these impacts.

1.2 DESCRIPTION OF PROPOSED PROJECT AND PROJECT SITE

This Biological Resources Assessment was conducted on a 3.07-acre property (APNs 007-390-031, 007-390-036, 007-390-038, and 007-390-039) at 1661 Cascade Boulevard, in the City of Shasta Lake, California (the "Project Site"). **Figure 1** and **Figure 2** show the location of the Project Site and the topography, and **Figure 3** presents an aerial photograph of the Project Site and the immediate vicinity.

VAI (Applicant) proposes the construction of a 7-Eleven convenience store and fueling station (the "Proposed Project"). A site plan is provided in **Figure 4**. The Grading Limits refer to the approximately 2.24-acre footprint within which construction would occur. Some revegetation, including planting native oak trees along Moody Creek and planting shrubs, would occur on the Project Site outside of the Grading Limits.

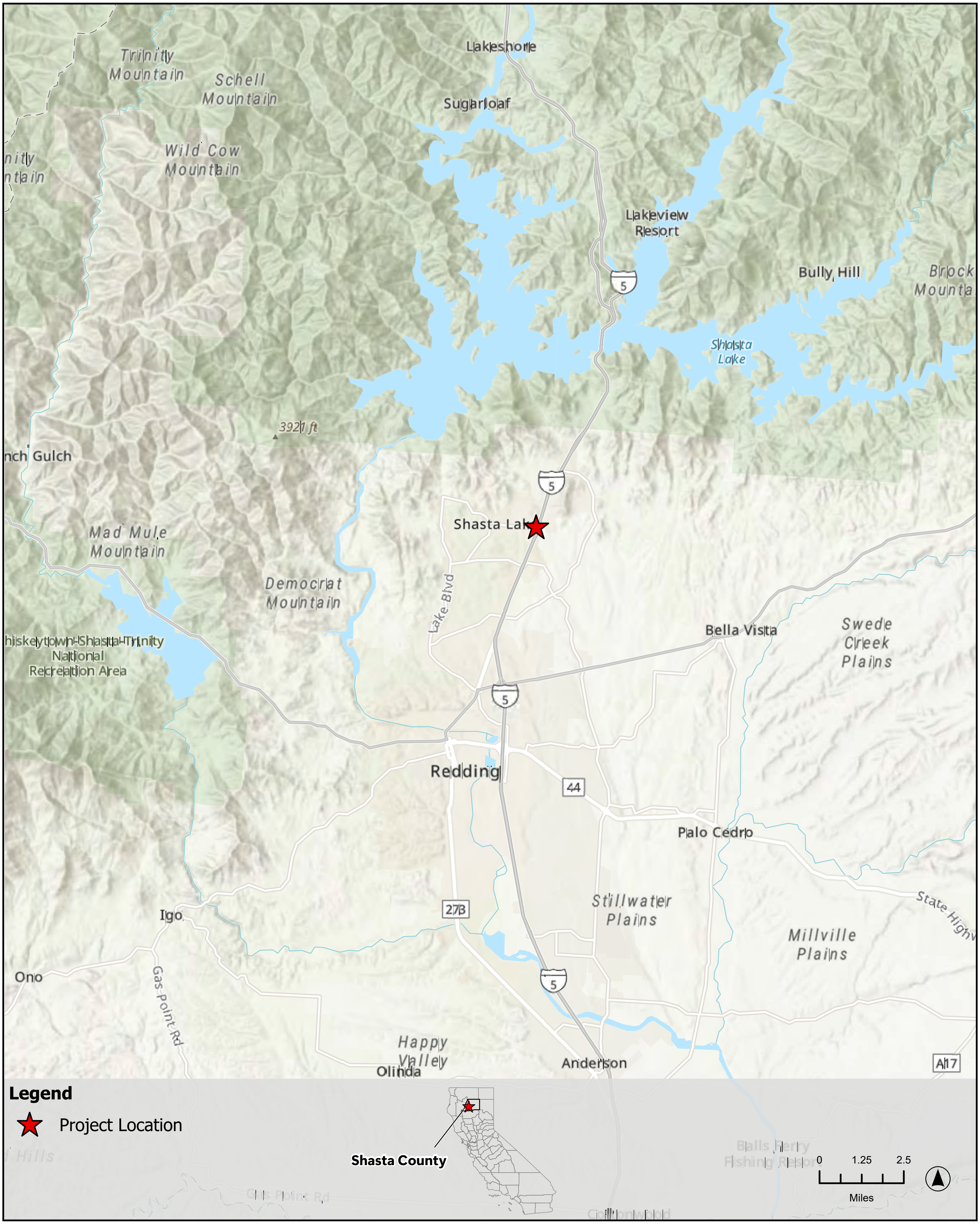
Construction would begin with the demolition of an existing vacant gas station on the Project Site. Approximately 40 percent of the Project Site is currently covered with trees, some of which would need to be removed during site preparation. The convenience store will be 4,761 square feet (SF) in size. There would be two proposed fueling areas. The car fuel island will consist of four standard Multi-Product Dispenser (MPD) fueling stations, totaling approximately 3,600 SF. The truck fuel island will consist of three diesel fueling stations, totaling approximately 2,385 SF. There will be two 20,000-gallon underground fuel tanks and one 27,000-gallon underground fuel tank. The Proposed Project includes other site improvements such as 20 parking stalls for passenger vehicles and various driveways.

1.3 REGULATORY SETTING

The following section summarizes some of the applicable regulations of biological resources on real property in California.

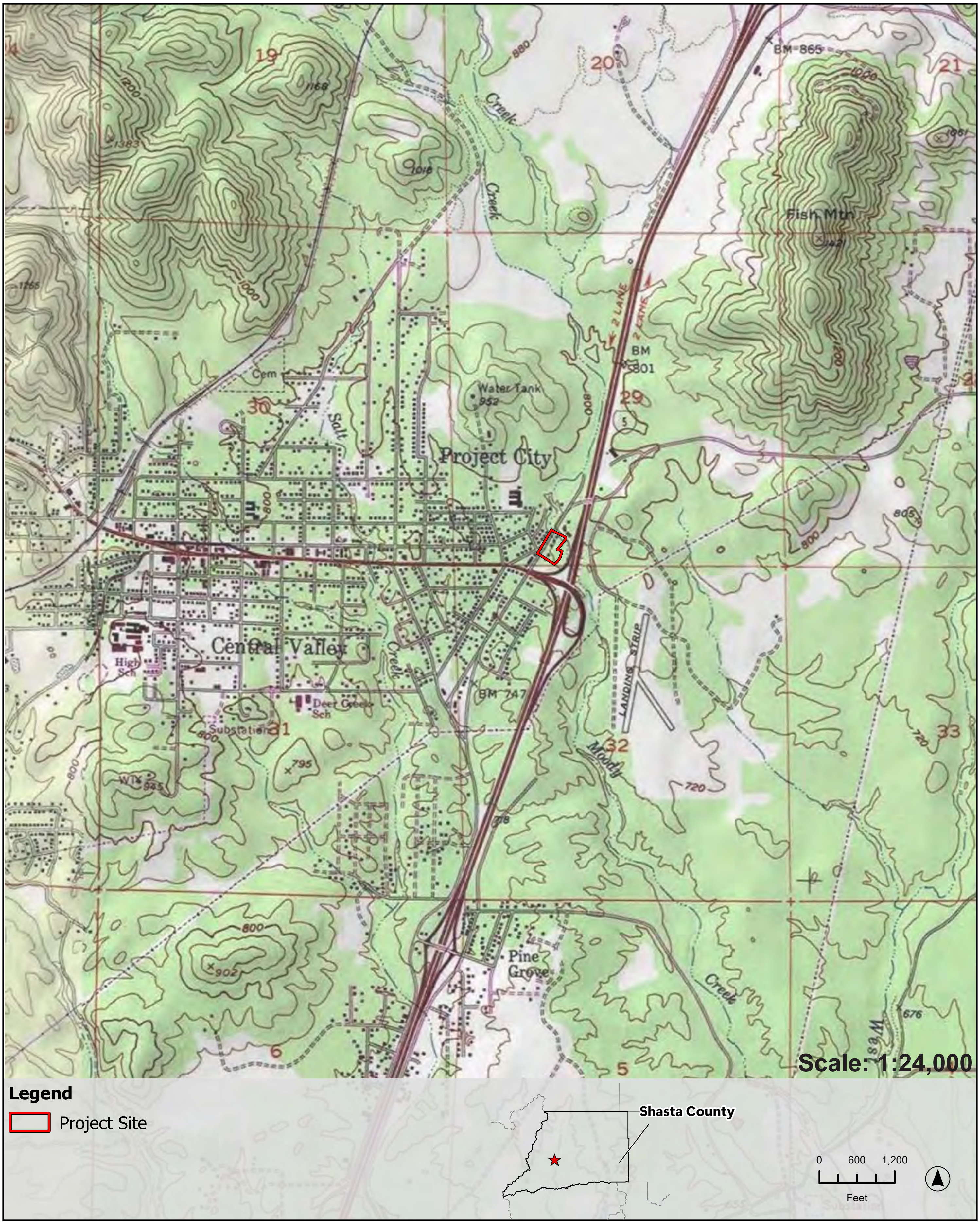
1.3.1 Special-Status Species Regulations

The United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service implement the Federal Endangered Species Act of 1973 (FESA) (16 USC §1531 et seq.). Threatened and endangered species on the federal list (50 CFR §17.11, 17.12) are protected from "take" (direct or indirect harm), unless a FESA Section 10 Permit is granted or a FESA Section 7 Biological Opinion with incidental take provisions is rendered.



Esri, NASA, NGA, USGS, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 1
Regional Location

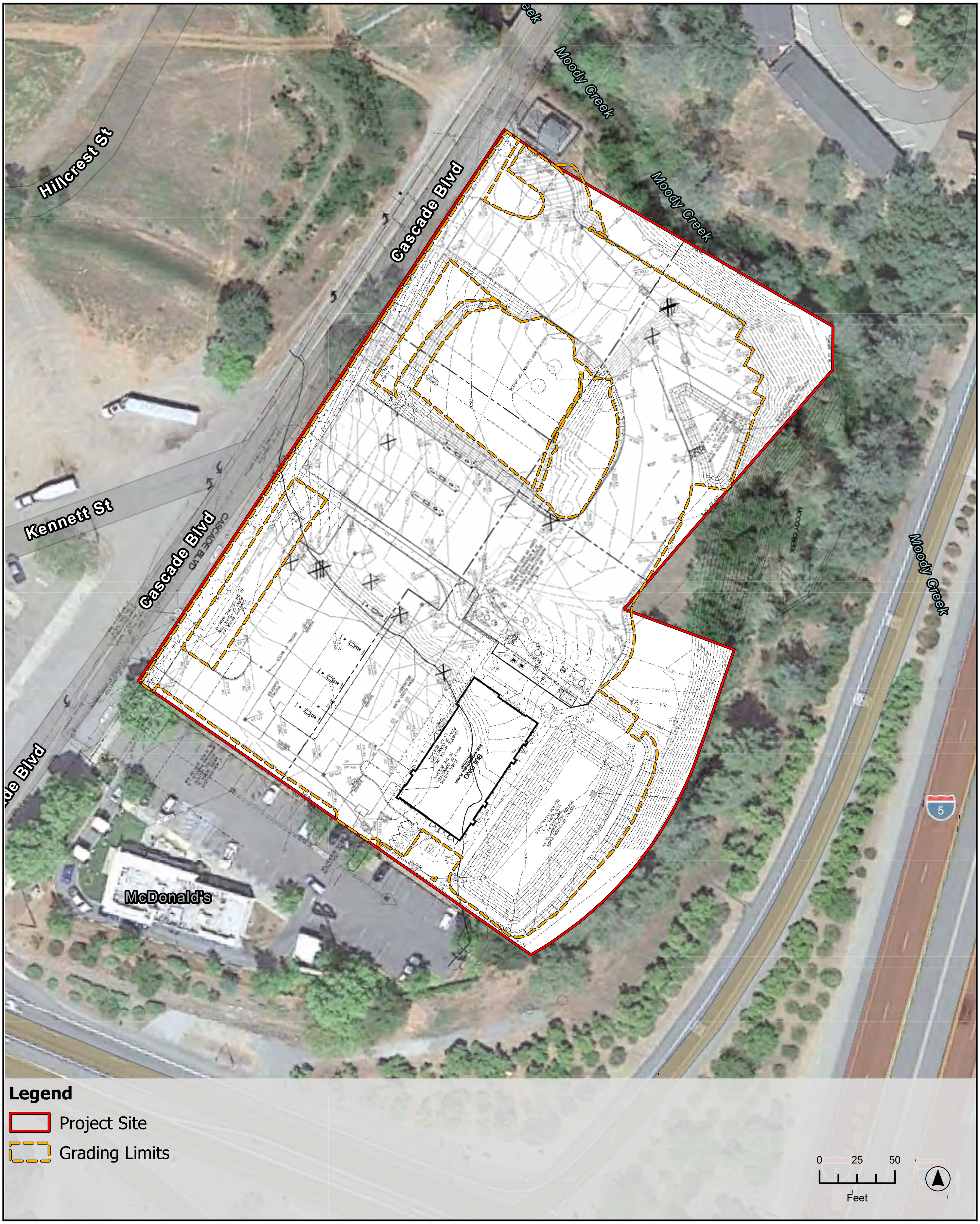


Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Copyright:© 2013 National Geographic Society, i-cubed

Figure 2
Site and Vicinity

Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 3
Aerial Overview



Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 4
Site Plan

Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present in the project area and determine whether the proposed project will have a potentially significant impact upon such species. Under FESA, habitat loss is considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC §1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant and would require mitigation. Species that are candidates for listing are not protected under FESA; however, USFWS advises that a candidate species could be elevated to listed status at any time, and therefore, applicants should regard these species with special consideration.

The California Endangered Species Act of 1970 (CESA) (California Fish and Game Code §2050 et seq., and CCR Title 14, §670.2, 670.51) prohibits "take" (defined as hunt, pursue, catch, capture, or kill) of species listed under CESA. A CESA permit must be obtained if a project will result in take of listed species, either during construction or over the life of the project. Section 2081 establishes an incidental take permit program for state-listed species. Under CESA, California Department of Fish and Wildlife (CDFW) has the responsibility for maintaining a list of threatened and endangered species designated under state law (CFG Code 2070). CDFW also maintains lists of species of special concern, which serve as "watch lists." Pursuant to requirements of CESA, an agency reviewing proposed projects within its jurisdiction must determine whether any state-listed species may be present in the Project Site and determine whether the proposed project will have a potentially significant impact upon such species. Project-related impacts to species on the CESA list would be considered significant and would require mitigation.

California Fish and Game Code Sections 4700, 5050, and 5515 designates certain mammal, amphibian, and reptile species "fully protected", making it unlawful to take, possess, or destroy these species except under issuance of a specific permit. The California Native Plant Protection Act of 1977 (CFG Code §1900 et seq.) requires CDFW to establish criteria for determining if a species or variety of native plant is endangered or rare. Section 19131 of the code requires that landowners notify CDFW at least 10 days prior to initiating activities that will destroy a listed plant to allow the salvage of plant material.

Many bird species, especially those that are breeding, migratory, or of limited distribution, are protected under federal and state regulations. Under the Migratory Bird Treaty Act of 1918 (16 USC §703-711), migratory bird species and their nests and eggs that are on the federal list (50 CFR §10.13) are protected from injury or death, and project-related disturbances must be reduced or eliminated during the nesting cycle. California Fish and Game Code (§3503, 3503.5, and 3800) prohibits the possession, incidental take, or needless destruction of any bird nests or eggs. Fish and Game Code §3511 designates certain bird species "fully protected", making it unlawful to take, possess, or destroy these species except under issuance of a specific permit. The Bald and Golden Eagle Protection Act (16 USC §668) specifically protects bald and golden eagles from harm or trade in parts of these species.

California Environmental Quality Act (CEQA) (Public Resources Code §15380) defines "rare" in a broader sense than the definitions of threatened, endangered, or fully protected. Under the CEQA definition, CDFW can request additional consideration of species not otherwise protected. CEQA requires that the impacts of a project upon environmental resources must be analyzed and assessed using criteria determined by the lead agency. Sensitive species that would qualify for listing but are not currently listed may be afforded protection under CEQA. The CEQA Guidelines (§15065) require that a substantial reduction in numbers of a rare or endangered species be considered a significant effect. CEQA Guidelines (§15380) provide for assessment of unlisted species as rare or endangered under CEQA if the species can be shown to meet the criteria for listing. Plant species on the California Native Plant Society (CNPS) Lists 1A, 1B, or 2 are typically considered rare under CEQA. California "Species of Special Concern" is a category conferred by CDFW on those species that are indicators of regional habitat changes or are considered potential future protected species. While they do not have statutory protection, Species of Special Concern are typically considered rare under CEQA and thereby warrant specific protection measures.

1.3.2 Water Resource Protection

Real property that contains water resources are subject to various federal and state regulations and activities occurring in these water resources may require permits, licenses, variances, or similar authorization from federal, state, and local agencies, as described below.

The Federal Water Pollution Control Act Amendments of 1972 (as amended), commonly known as the Clean Water Act (CWA), established the basic structure for regulating discharges of pollutants into "waters of the United States" (U.S.). Waters of the U.S. includes essentially all surface waters, all interstate waters and their tributaries, all impoundments of these waters, and all wetlands adjacent to these waters. CWA Section 404 requires approval prior to dredging or discharging fill material into any waters of the U.S. The permitting program is designed to minimize impacts to waters of the US, and when impacts cannot be avoided, requires compensatory mitigation. The U.S. Army Corps of Engineers (USACE) is responsible for administering Section 404 regulations. Substantial impacts to jurisdictional wetlands may require an Individual Permit. Small-scale projects may require only a Nationwide Permit, which typically has an expedited process compared to the Individual Permit process. Mitigation of wetland impacts is required as a condition of the CWA Section 404 Permit and may include on-site preservation, restoration, or enhancement and/or off-site restoration or enhancement. The characteristics of the restored or enhanced wetlands must be equal to or better than those of the affected wetlands to achieve no net loss of wetlands.

Under CWA Section 401, every applicant for a federal permit or license for any activity which may result in a discharge to a water body must obtain State Water Quality Certification that the proposed activity will comply with State water quality standards. The California State Water Resources Control Board is responsible for administering CWA Section 401 regulations.

Section 10 of the Rivers and Harbors Act of 1899 requires approval from USACE prior to the commencement of any work in or over navigable waters of the US, or which affects the course, location, condition, or capacity of such waters. Navigable waters of the US are defined as waters that have been used in the past, are now used, or are susceptible to use, as a means to transport interstate or foreign commerce up to the head of navigation. Rivers and Harbors Act Section 10 permits are required for construction activities in these waters.

California Fish and Game Code (Section 1601 - 1607) protects fishery resources by regulating "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." CDFW requires notification prior to commencement, and issuance of a Lake or Streambed Alteration Agreement, if a proposed project will result in the alteration or degradation of ''waters of the State." The limit of CDFW jurisdiction is subject to the judgment of the Department; currently, this jurisdiction is interpreted to be the "stream zone", defined as "that portion of the stream channel that restricts lateral movement of water" and delineated at "the top of the bank or the outer edge of any riparian vegetation, whichever is more landward". CDFW reviews the proposed actions and, if necessary, submits to the applicant a proposal for measures to protect affected fish and wildlife resources. The final proposal that is mutually agreed upon by the CDFW and the applicant is the Streambed Alteration Agreement. Projects that require a Streambed Alteration Agreement may also require a CWA 404 Section Permit and/or CWA Section 401 Water Quality Certification.

For construction projects that disturb one or more acres of soil, the landowner or developer must obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 2009-0009-DWQ).

Section 2 | Environmental Setting

The Project Site is located within the High Cascade Range geographic subregion, which is contained within the Cascade Ranges geographic region of the larger California Floristic Province (Baldwin et al. 2012).

This region has a Mediterranean-type climate, characterized by distinct seasons of hot, dry summers and wet, moderately-cold winters. The Project Site and vicinity is in Climate Zone 2B – Warmer-Summer Intermountain Climate, defined by long warm summers and chilly winters (Sunset, 2021). The topography of the Project Site is a portion of a small valley in between foothills of the Cascade Range. The elevation ranges from approximately 756 to 777 above mean sea level.

Drainage runs north and east into Moody Creek, a tributary of Stillwater Creek, and eventually flows into the Sacramento River. The land use of the Project Site is a vacant commercial lot. There is an existing abandoned gas station building on site, approximately 1,800 square feet in size, and associated pavement. The rest of the Project Site is wooded open space. The surrounding land uses are transportation corridors (Highway I-5, Shasta Dam Boulevard, and Cascade Boulevard), rural and urban residential, and commercial, including Shasta Dam Motel to the north, McDonald's restaurant to the south, and Arco gas station to the west. Moody Creek is at the northern and eastern edges of the Project Site.

Section 3 | Methods

3.1 PRELIMINARY DATA GATHERING AND RESEARCH

Prior to conducting the field survey, the following information sources were reviewed:

- Previous biological resource studies pertaining to the Project Site or vicinity
- United States Geologic Service (USGS) 7.5 degree-minute topographic quadrangles of the Project Site and vicinity
- Aerial photography of the Project Site
- CNDDB, electronically updated monthly by subscription
- A query of the California Native Plant Society's database *Inventory of Rare and Endangered Plants of California* (online edition)
- USFWS National Wetlands Inventory (NWI) mapper
- USFWS species list (IPaC Trust Resources Report)

3.2 FIELD SURVEYS

Consulting biologist Kristen Ahrens, M.S., conducted a biological field assessment on May 20, 2024, and collected data on wildlife and plant species present, as well as habitat types and jurisdictional waters. Variable-intensity pedestrian surveys were performed. Fauna and flora observed were recorded in a field notebook and identified to the lowest possible taxon. Survey efforts emphasized the search for federally-listed species that had documented occurrences in the CNDDB within the vicinity of the Project Site. Habitat types occurring in the Project Site were mapped on aerial photographs and information on habitat conditions and the suitability of habitats to support listed species was also recorded. The Project Site was also assessed for the presence of potentially-jurisdictional water features, including riparian zones, isolated wetlands and vernal pools, and other biologically-sensitive aquatic habitats. Additional surveys were conducted by Biologist Kimberlina Gomez, M.S. and Senior Biologist and Certified Arborist Dr. Geo Graening on August 12, 2024 in support of the Arborist Assessment for the Proposed Project.

3.3 MAPPING AND OTHER ANALYSES

Locations of species' occurrences and habitat boundaries within the Project Site were recorded on color aerial photographs and then digitized to produce the habitat maps. The boundaries of potentially jurisdictional water resources within the Project Site were identified and measured in the field and similarly digitized to calculate acreage and to produce informal delineation maps. Geographic analyses were performed using geographical information system software (ArcGIS 10, ESRI, Inc.). Vegetation communities (assemblages of plant species growing in an area of similar biological and environmental factors) were classified by Vegetation Series (distinctive associations of plants, described by dominant species and particular environmental setting) using the CNPS Vegetation Classification system (Sawyer and Keeler-Wolf, 1995). Wetlands and other aquatic habitats were classified using USFWS National Wetlands Inventory Classification System for Wetland and Deepwater Habitats, or "Cowardin class" (Cowardin et al., 1979; USFWS 2007).

Informal wetland delineation methods consisted of an abbreviated, visual assessment of the three requisite wetland parameters (hydrophytic vegetation, hydric soils, hydrologic regime) defined in the

USACE Wetlands Delineation Manual (Environmental Laboratory, 1987). Wildlife habitats were classified according to the CDFW's California Wildlife Habitat Relationships System (CDFW, 2023a). Species' habitat requirements and life histories were identified using the following sources: Baldwin et al. (2012); CNPS (2023), Calflora (2023); CDFW (2023b); and University of California at Berkeley (2023a,b).

Section 4 | Results

4.1 INVENTORY OF FLORA AND FAUNA FROM FIELD SURVEY

All plants detected during the field survey of the Project Site are listed in **Attachment A**. The following animals were detected within the Project Site during the field survey:

> Western fence lizard (*Sceloporus occidentalis*), honey bee (*Apis* sp.), bumble bee (*Bombus* sp.), California pipevine swallowtail caterpillar (*Cattus philenor hirsute*), ladybird beetle (Coccinellidae), dragonflies (Odonata), America Crow (*Corvus brachyrhynchos*); Ash-throated Flycatcher (*Myiarchus cinerascens*); Black Pheobe (*Sayornis nigricans*); California Towhee (*Melozone crissalis*); Golden-crowned Sparrow (*Zonotrichia atricapilla*); House Sparrow (*Passer domesticus*); Red-tailed Hawk (*Buteo jamaicensis*), Turkey Vulture (*Cathartes aura*), White-breasted Nuthatch (*Sitta carolinensis*), Yellow-rumped Warbler (*Setophaga coronata*).

No federally-listed species were detected. No special-status species were detected.

4.2 TERRESTRIAL VEGETATION COMMUNITIES

General vegetation communities occurring on the Project Site were mapped (**Figure 5** and **Table 1**) and consist of ruderal/developed; riparian and channel; annual grassland; and mixed oak-conifer woodland. Photos of habitats are in **Attachment B**, and descriptions are as follows.

Table 1: Habitat Types

Habitat Type	Acreage with Grading Limits	Acreage within Project Site
Ruderal/Disturbed	0.54	0.70
Annual Grassland	0.88	1.11
Mixed Oak-Conifer Woodland	0.82	1.22
Riparian	0.00	0.02
Channel (Moody Creek)	0.00	0.02
Total	**2.24**	**3.07**

4.2.1 Ruderal/Disturbed

These areas consist of disturbed or converted natural habitat that is now either in a ruderal state, graded, or urbanized with roads, structures, and/or utility infrastructure. Vegetation within this habitat type consists primarily of nonnative weedy or invasive species or ornamental plants lacking a consistent community structure. Conspicuous species present were: tree of heaven (*Ailanthus altissima*), mimosa (*Albizia julibrissin*), mulberry (*Morus alba*), olive (*Olea europaea*), Chinese pistache (*Pistacia chinensis*), and purple leaf plum (*Prunus cerasifera*). There is approximately 0.70 acre of ruderal/disturbed habitat within the Project Site and 0.54 acre within the Grading Limits.

Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 5
Vegetation Community Types

4.2.2 Annual Grassland

This habitat consists of non-native pasture grasses and weedy forbs within areas of canopy openings. Plant species common in this community are European annual grasses (*Avena*, *Bromus*, *Hordeum*, *Lolium*) and herbs such as clovers (*Trifolium*), vetch (*Vicia villosa*), wild radish (*Raphanus raphanistrum*), and mustards (*Hirschfeldia*, *Brassica*). There are approximately 1.11 acres of annual grassland within the Project Site and 0.88 acre of this within the Grading Limits.

4.2.3 Mixed Oak-Conifer Woodland

The dominant tree species are gray pine(*Pinus sabiniana*), blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), and interior live oak (*Quercus wislizeni*). The understory contains western redbud

(*Cercis occidentalis*) and California bay laurel (*Umbellularia californica*). The herbaceous layer is similar to that of the annual grassland community. There are approximately 1.22 acres of mixed oak-conifer woodland within the Project Site and 0.82 acre within the Grading Limits.

4.2.4 Riparian Habitat and Channel

The riparian habitat occurs in a narrow band along Moody Creek in the northeastern corner of the Project Site. The overstory consists of sycamore (*Platanus occidentalis*), white alder (*Alnus rhombifolia*), and western cottonwood (*Populus fremontii*). The understory is dense and consists of a mixture of Himalayan blackberry (*Rubus armeniacus*), California wild grape (*Vitis californica*), poison oak (*Toxicodendron diversilobum*), and willows (*Salix* spp.). There is 0.02 acre of riparian habitat in the northeastern portion of the Project Site, none of which falls within the Grading Limits.

The Moody Creek channel is scoured in some places while other places contain willows, fiddledock (*Rumex pulcher*), and giant reed (*Arundo donax*). The 0.02 acre of stream channel on the Project Site falls entirely outside of the Grading Limits.

4.3 WILDLIFE HABITAT TYPES

Wildlife habitat types were classified using CDFW's Wildlife Habitat Relationship System. The Project Site contains the following wildlife habitat types: Valley Foothill Riparian; Blue Oak Woodland; Valley Oak Woodland; Annual Grassland; Riverine; Urban; and Barren.

4.4 CRITICAL HABITAT AND SPECIAL-STATUS HABITAT

No critical habitat for any federally-listed species occurs within the Project Site. The CNDDB reported no special-status habitats within the Project Site. The CNDDB did report the following special-status habitats in a 10-mile radius of the Project Site: Great Valley Cottonwood Riparian Forest; Great Valley Valley Oak Riparian Forest; Great Valley Willow Scrub. The Project Site contains one special-status habitat: riparian habitat along the Moody Creek corridor.

4.5 HABITAT PLANS AND WILDLIFE CORRIDORS

Wildlife movement corridors link remaining areas of functional wildlife habitat that are separated primarily by human disturbance, but natural barriers such as rugged terrain and abrupt changes in vegetation cover are also possible. Wilderness and open lands have been fragmented by urbanization, which can disrupt migratory species and separate interbreeding populations. Corridors allow migratory movements and act as links between these separated populations.

No designated wildlife corridors exist within or near the Project Site. The narrow riparian corridor of Moody Creek functions somewhat as a wildlife corridor, but it is disrupted by road crossings and culverts. No fishery resources exist in or near the Project Site. Moody Creek is not a perennial stream, so it does not function as a fish nursery. The Project Site is not located within any adopted Habitat Conservation Plan or Natural Community Conservation Plan.

4.6 LISTED SPECIES AND OTHER SPECIAL-STATUS SPECIES

For the purposes of this assessment, “special status” is defined to be species that are of management concern to state or federal natural resource agencies, and include those species that are:

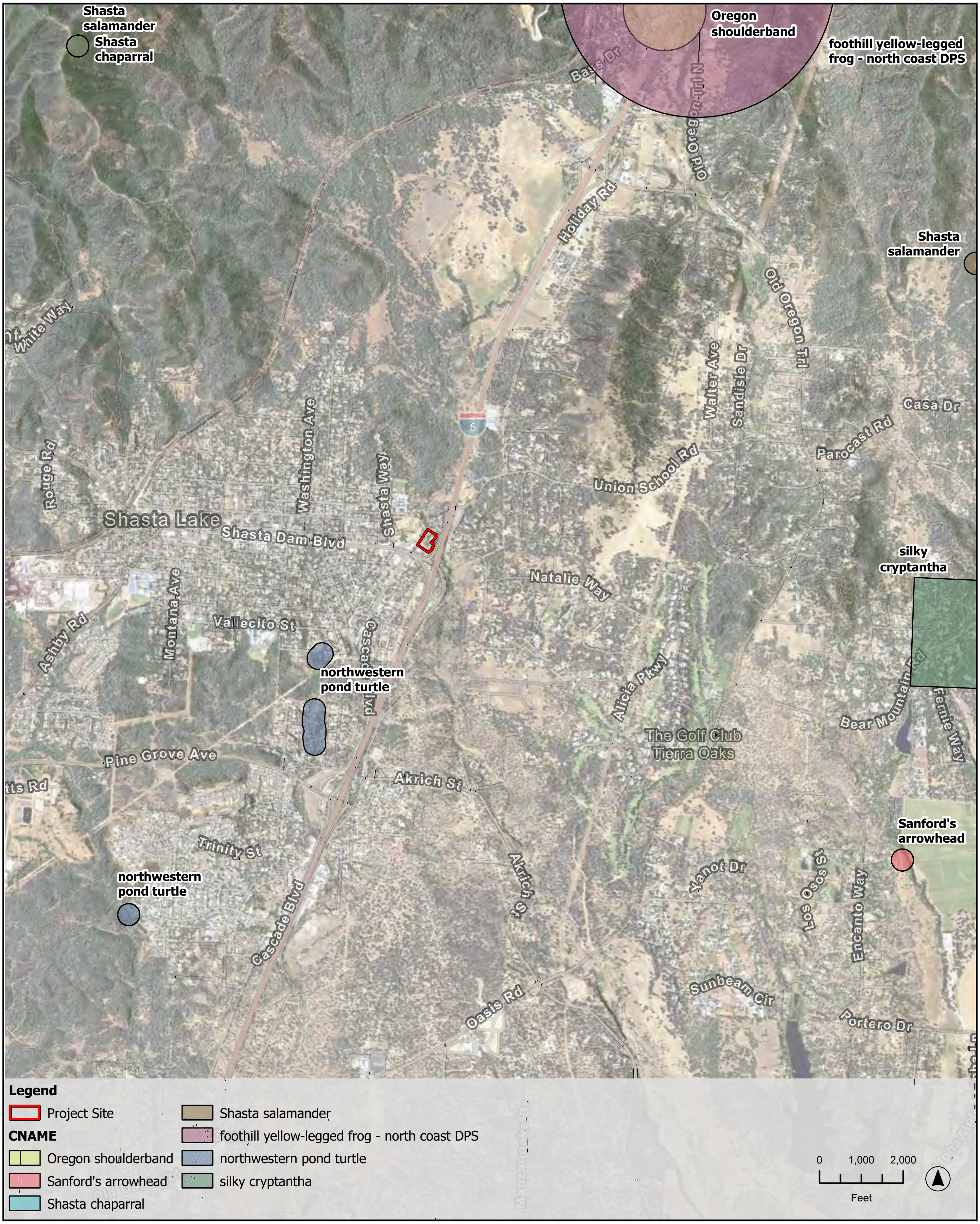
- Listed as endangered, threatened, proposed, or candidate for listing under the Federal Endangered Species Act;
- Listed as endangered, threatened, rare, or proposed for listing, under the California Endangered Species Act of 1970;
- Designated as endangered or rare, pursuant to California Fish and Game Code (§1901);
- Designated as fully protected, pursuant to California Fish and Game Code (§3511, §4700, or §5050);
- Designated as a species of special concern by CDFW;
- Plants considered to be rare, threatened or endangered in California by the California Native Plant Society (CNPS); this consists of species on Lists 1A, 1B, and 2 of the CNPS Ranking System; or
- Plants listed as rare under the California Native Plant Protection Act.

4.6.1 Reported Occurrences of Listed Species and Other Special-status Species

A list of special-status plant and animal species that have occurred within the Project Site and vicinity was compiled based upon the following:

- Any previous and readily-available biological resource studies pertaining to the Project Site;
- Informal consultation with USFWS by generating an electronic Species List (Information for Planning and Conservation website at https://ecos.fws.gov/ipac/); and
- A spatial query of the CNDDB using the standard 9 quadrangle boundary
- A query of the California Native Plant Society’s database Inventory of Rare and Endangered Plants of California (online edition).

The CNDDB was queried and any reported occurrences of special-status species were plotted in relation to the Project Site boundary using GIS software (**Figure 6**). The CNDDB reported no special-status species occurrences within the Project Site. Within a 10-mile buffer of the Project Site boundary, the CNDDB reported several special-status species occurrences, summarized in the table in **Attachment C** along with any additional CNPS species.



Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 6
CNDDB Species

The CNDDB does report three occurrences near the Project Site: western pond turtle (*Emys marmorata*) 1 mile south of the Project Site, in Salt Creek; foothill yellow-legged frog (*Rana boylii*), 3 miles north of the Project Site in a non-specific location from a 1945 record that CDFW presumes to be extirpated; and the Oregon shoulderband snail (*Helminthoglypta hertleini*), a scientific collection with the vague locale info of "Mountain Gate."

A USFWS species list was generated online using the USFWS' IPaC Trust Resource Report System (see **Attachment D**). This list is generated using a regional and/or watershed approach and does not necessarily indicate that the Project Site provides suitable habitat. The following listed species should be considered in the impact assessment:

- BIRDS
  - Northern Spotted Owl (*Strix occidentalis caurina*) – Threatened
- REPTILES
  - Northwestern Pond Turtle (*Actinemys marmorata*) – Proposed Threatened
- AMPHIBIANS
  - Western Spadefoot (*Spea hammondii*) – Proposed Threatened
- INSECTS
  - Monarch Butterfly (*Danaus plexippus*) – Candidate
  - Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*) – Proposed Endangered
  - Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*) – Threatened
- CRUSTACEANS
  - Shasta Crayfish (*Pacifastacus fortis*) – Endangered
  - Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) – Threatened

Migratory birds should also be considered in the impact assessment.

4.6.2 Listed Species or Special-status Species Observed During Field Survey

During the field survey, no special-status species were detected within the Project Site.

4.6.3 Potential for Listed Species or Special-status Species to Occur in the Project Site

See **Attachment C** for a complete table of special-status species and their potential to occur in the Project Site and vicinity.

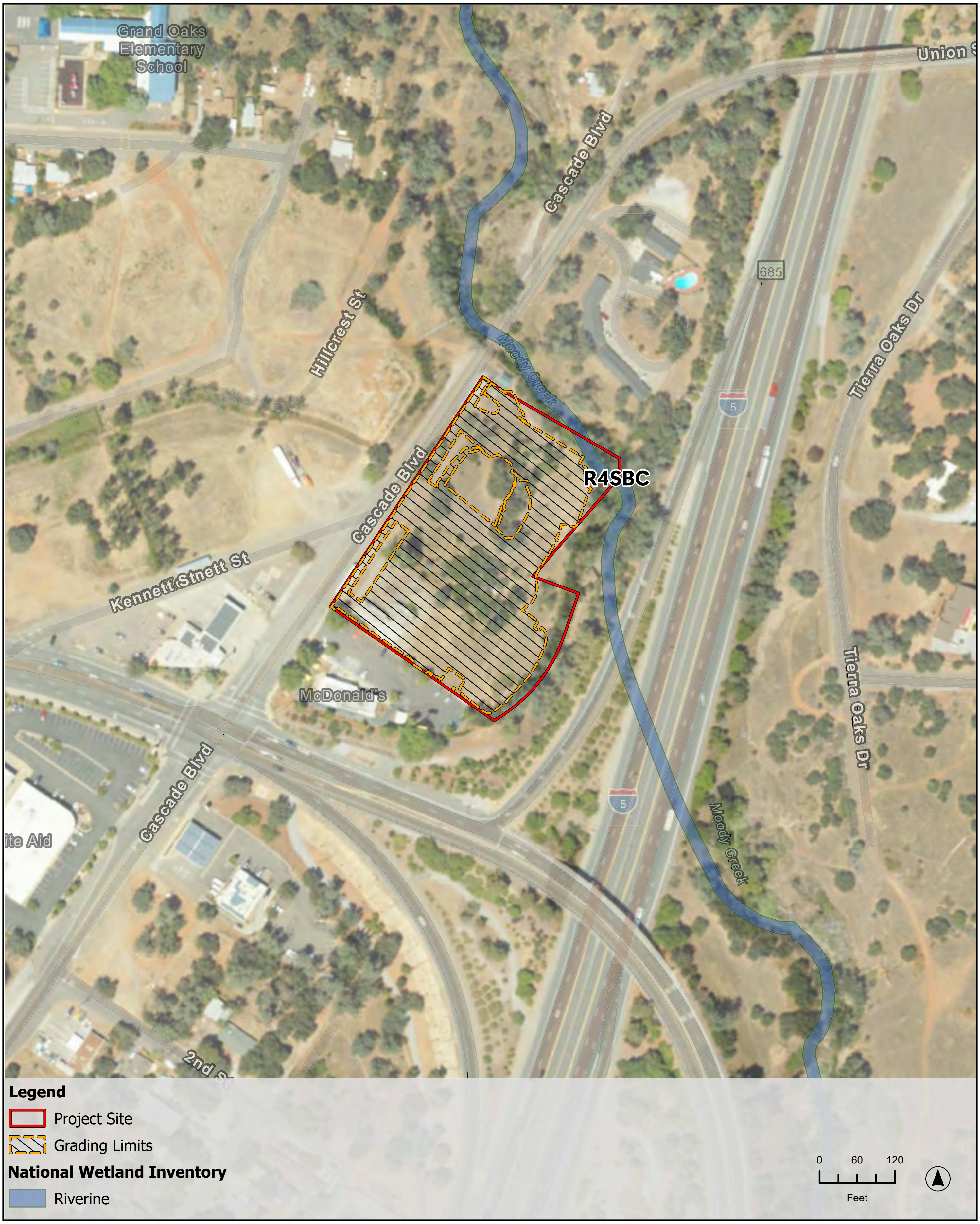
The ruderal/developed and non-native grasslands within the Project Site have a very low potential for harboring special-status species due to the dominance of aggressive non-native grasses and forbs and periodic weed maintenance. However, the grassland within the Project Site may contain suitable foraging habitat for Crotch's bumblebee (*Bombus crotchii*) should flowering plants with pollen be present. The mixed oak-conifer woodland has a low to moderate potential to harbor special-status species, and may provide suitable roosting habitat for special status bat species. Should trees contain cavities, crevices, or exfoliating bark, suitable roosting habitat may occur within woodland habitat and roosting could also occur within the abandoned gas station structure. Moody Creek and its narrow riparian corridor are an attractant for wildlife, but the flow is intermittent, with the channel dry most of the summer. Moody Creek has some potential to support special-status amphibians and reptiles, such as foothill yellow-legged frog, western spadefoot, and northwestern pond turtle. Moody Creek is not able to sustain a fishery resource.

4.7 POTENTIALLY-JURISDICTIONAL WATER RESOURCES

The USFWS National Wetland Inventory reported a riverine feature (Moody Creek) within the Project Site (**Figure 7**).

A preliminary assessment for the presence of potentially-jurisdictional water resources within the Project Site was also conducted during the field survey. One water feature was detected on the Project Site: a segment of an intermittent channel (Moody Creek) in the northeast corner of the Project Site (see **Figure 5**).

There is riparian habitat along both sides of the channel in a narrow band. Riverine wetlands are generally lacking. There are no vernal pools or other isolated wetlands on the Project Site.



Source: Esri, USDA FSA, Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Figure 7
National Wetland Inventory

Section 5 | Impact Analyses and Recommended Avoidance and Minimization Measures

This section establishes the impact criteria, then analyzes potential Project-related impacts upon the known biological resources within the Project Area, and then suggests avoidance and minimization measures to reduce these impacts to a less-than-significant level.

The significance of impacts to biological resources depends upon the proximity and quality of vegetation communities and wildlife habitats, the presence or absence of special-status species, and the effectiveness of measures implemented to protect these resources from Project-related impacts. As defined by CEQA, the Project would be considered to have a significant adverse impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a special-status species in local or regional plans, policies, or regulations, or by USFWS or CDFW
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by USFWS or CDFW
- 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
- 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
- Conflict with any county or municipal policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved governmental habitat conservation plan.

5.1 POTENTIAL DIRECT / INDIRECT ADVERSE EFFECTS UPON SPECIAL-STATUS SPECIES

Will the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No direct impacts to special-status species are expected from implementation of the Proposed Project. The ruderal/developed and non-native grasslands within the Project Site have a very low potential for harboring special-status species due to the dominance of aggressive non-native grasses and forbs and periodic weed maintenance. Crotch's bumblebee may occur in the area, but the disturbance level is high due to human activity such as mowing, which minimizes the potential for roosting to occur on the Project

Site. The mixed oak-conifer woodland has a low to moderate potential to harbor special-status species, which could include nesting birds or roosting bats. Moody Creek and its narrow riparian corridor are an attractant for wildlife, but the flow is intermittent, with the channel dry most of the summer. This renders Moody Creek less useful to special-status amphibians and not able to sustain a fishery resource in the vicinity of the Project Site. The Proposed Project was designed to avoid the Moody Creek channel and its riparian vegetation. No special-status species were observed within the Project Site. However, special-status invertebrates (Crotch's bumblebee), mammals (special-status bat species), reptiles and amphibians (foothill yellow-legged frog, western spadefoot, and northwestern pond turtle) could migrate into the Project Site between the time that the field survey was completed and the start of construction. This is a potentially significant impact.

Special-status bird species were reported in databases (CNDDB and USFWS) in the vicinity of the Project Site. The Project Site and adjacent trees and utility poles contain suitable nesting habitat for various bird species. If construction activities are conducted during the nesting season (typically February through August), nesting birds could be directly impacted by tree removal and indirectly impacted by noise, vibration, and other construction-related disturbance. Therefore, construction activities are considered a potentially significant impact to nesting birds.

5.1.1 Recommended Measures

Because special-status animal species that occur in the vicinity could migrate onto the Project Site between the time that the field survey was completed and the start of construction, a pre-construction survey for special-status animals should be performed by a qualified biologist to ensure that special-status species are not present. In particular, the survey should search for foothill yellow-legged frog, western spadefoot, northwestern pond turtle, Crotch's bumblebee, and special-status bat habitat. Once the pre-construction surveys confirm that foothill yellow-legged frog and other special-status species are not present, the construction crew shall immediately install animal exclusion fencing to separate construction areas from the riparian habitat and channels outside of the impact area. The fencing shall be constructed out of plastic weed cloth or construction fabric, shall be keyed into the ground, and shall be supported by stakes and wire mesh, as needed. Fencing shall also be opaque, three feet in height, and installed with a smooth material such that it cannot be climbed. Furthermore, trees within the Project Site will also be examined for cavities, crevices, and/or exfoliating bark. If any special-status species are detected, construction should be delayed, and the appropriate wildlife agency (CDFW and/or USFWS) should be consulted and project impacts and mitigation reassessed.

If construction activities would occur during the nesting season (typically February through August), a pre-construction survey for the presence of special-status bird species or any nesting bird species should be conducted by a qualified biologist within 500 feet of proposed construction areas. If active nests are identified in these areas, CDFW and/or USFWS should be consulted to develop measures to avoid "take" of active nests prior to the initiation of any construction activities. Avoidance measures may include establishment of a buffer zone using construction fencing or the postponement of vegetation removal until after the nesting season, or until after a qualified biologist has determined the young have fledged and are independent of the nest site.

5.2 POTENTIAL DIRECT / INDIRECT ADVERSE EFFECTS UPON SPECIAL-STATUS HABITATS OR NATURAL COMMUNITIES OR CORRIDORS

Will the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

The Project Site is not within any designated listed species' critical habitat. There is one sensitive habitat at the northern edge of the Project Site: the riparian habitat along Moody Creek. The Proposed Project has been designed to avoid all impacts to the sensitive riparian habitat type, and therefore no mitigation is required.

5.2.1 Recommended Measures

No avoidance or minimization measures are required.

5.3 POTENTIAL DIRECT / INDIRECT ADVERSE EFFECTS ON JURISDICTIONAL WATER RESOURCES

Will the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

There is one water resource, an intermittent channel (Moody Creek), in the northeast corner of the Project Site. There are no wetlands on the Project Site. The Proposed Project has been designed to avoid the channel with a setback of at least 10 feet. Because of this avoidance, no direct impacts to water resources are expected.

Potential indirect impacts to water resources could occur during construction. Surface water quality has the potential to be degraded from storm water transport of sediment from disturbed soils or by accidental release of hazardous materials or petroleum products from sources such as heavy equipment servicing or refueling. This is a potentially significant impact. However, for projects that disturb at least one acre of soil, the landowner and its designated general contractor must enroll under the State Water Quality Control Board's Construction General Permit prior to the initiation of construction. In conjunction with enrollment under this Permit, a Storm Water Pollution Prevention Plan, Erosion Control Plan, and a Hazardous Materials Management/Spill Response Plan must be created and implemented during construction to avoid or minimize the potential for erosion, sedimentation, or accidental release of hazardous materials. Implementation of these measures mandated by law would reduce potential construction-related impacts to water quality to a less-than-significant level.

5.3.1 Recommended Measures

No avoidance or minimization measures are required.

5.4 POTENTIAL IMPACTS TO WILDLIFE MOVEMENT, CORRIDORS, ETC.

Will the project 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?

No designated wildlife corridors exist within or near the Project Site. The narrow riparian corridor of Moody Creek functions somewhat as a wildlife corridor, but it is disrupted by road crossings and culverts. No fishery resources exist in or near the Project Site. Moody Creek is not a perennial stream, so it does not function as a fish nursery. Implementation of the Proposed Project will not 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. The Project Site is not located within any adopted Habitat Conservation Plan or Natural Community Conservation Plan.

5.4.1 Recommended Measures

No avoidance or minimization measures are required.

5.5 POTENTIAL CONFLICTS WITH ORDINANCES, HABITAT CONSERVATION PLANS, ETC.

Will the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? Will the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Approximately 40 percent of the site is currently covered with trees (some native, some ornamental), the majority of which would need to be removed during site preparation. Shasta Lake Code of Ordinances Chapter 12.36 - Tree Conservation protects trees that are at least 10 inches in diameter, with the exception of gray pine. The Proposed Project would impact trees protected by the Tree Conservation ordinance.

The Project Site is not within the coverage area of any adopted Habitat Conservation Plan or Natural Community Conservation Plan. Thus, the Proposed Project does not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or another approved governmental habitat conservation plan.

Shasta Lake Municipal Code Section 12.36.062 requires Pre-Development Review for Major Projects where it is proposed to remove more than five protected trees. A certified arborist inventories all of the trees on the Project Site and produced a tree delineation map that identifies which trees are Protected Trees and which trees are also Heritage Trees (under separate cover). The project proponents will then identify all trees to be removed and those to be retained/protected, in compliance with Municipal Code Section 12.36.062. Because more than five protected trees are proposed for review, preparation of a Tree Removal and Replacement Plan or payment of in-lieu fees should occur.

5.5.1 Recommended Measures

The ordinance requires the developer to minimize destruction or damage to protected trees to the extent possible. For those trees that cannot be preserved, a Tree Removal and Replacement Plan should be prepared. The Plan identifies those trees to be removed and any tree preservation areas. When a protected tree is removed from a property to facilitate development allowed by zoning, replacement trees or other mitigation shall be provided to compensate for the loss. Replacement trees shall be provided in accordance with the standards provided in Section 12.36.070. Alternatively, in-lieu fee contributions shall be paid as provided for in Section 12.36.075.

For Commercial projects, the minimum replacement planting standard is: two 15-gallon trees shall be planted for each 1,000 square feet of gross floor area or covered space; or a minimum of two 15-gallon trees shall be planted for every one protected tree removed. There is a credit of three replacement trees for the preservation of each native heritage tree (such as mature valley oaks). Alternative mitigation for tree replacement including payment of contribution in-lieu of tree planting. Compliance with the City’s tree preservation ordinance, and implementation of the avoidance measures and compensatory mitigation, would reduce impacts to protected trees to a less than significant level.

Section 6 | References

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, and T.J. Rosatti, editors. 2012. The Jepson Manual: Vascular Plants of California, second edition, thoroughly revised and expanded. University of California Press, Berkeley, California. 1,600 pp.

Brenzel, K. N., editor. 2012. Sunset Western Garden Book, 9th edition. Sunset Publishing Corporation, Menlo, California. 768 pp.

Calflora. 2021. Calflora, the on-line gateway to information about native and introduced wild plants in California. Available at: http://calflora.org/.

California Department of Fish and Wildlife. 2023a. California's Wildlife. California Wildlife Habitat Relationships System, Biogeographic Data Branch, California Department of Fish and Game. Available at: http://www.dfg.ca.gov/whdab/html/cawildlife.html.

California Department of Fish and Wildlife. 2023b. List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database. Vegetation Classification and Mapping Program. Available at: https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities.

California Native Plant Society. 2023. Inventory of Rare and Endangered Plants. Rare Plant Scientific Advisory Committee, David P. Tibor, convening editor. California Native Plant Society. Sacramento, California. Available at: http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi. 92 pp.

Natural Resources Conservation Service. 2023. Web Soil Survey. National Cooperative Soil Survey, U.S. Department of Agriculture. NRCS Soils Website (Internet database and digital maps). Available at: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

Sawyer, J. O., and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society, Sacramento, California. Available at: http://davisherb.ucdavis.edu/cnpsActiveServer/index.html.

United States Fish and Wildlife Service. 2023a. National Wetlands Inventory Program, Division of Habitat and Resource Conservation. Available at: http://www.fws.gov/wetlands/.

United States Fish and Wildlife Service. 2023b. Environmental Conservation Online System. Species Accounts. Available at: https://ecos.fws.gov/ecp/species/.

University of California at Berkeley. 2023. Jepson Online Interchange for California Floristics. Jepson Flora Project, University Herbarium and Jepson Herbarium, University of California at Berkeley. Available at: http://ucjeps.berkeley.edu/interchange.html.

Section 7 | Qualifications of Surveyors and Authors

7.1.1 G.O. Graening, Ph.D., M.S.E.

G. O. Graening holds a Doctorate in Biological Sciences and a Master of Science in Biological Engineering, and is a certified arborist (International Society of Arboriculture). Dr. Graening has 26 years of experience in environmental assessment and research, including the performance of numerous wetland delineations and aquatic restoration projects. Dr. Graening also served as an adjunct professor of biology at California State University Sacramento for 10 years and was an active researcher in the area of conservation biology and groundwater ecology.

7.1.2 Kristen Ahrens, M.S.

Kristen Ahrens holds a B.S. and M.S. in Biological Sciences. Ms. Ahrens has experience performing delineations and sensitive plant and animal surveys with expertise in mammalian studies and is currently a part-time instructor at California State University at Sacramento in the Department of Biological Sciences. Ms. Ahrens has over 15 years of experience in environmental assessment, research, and biology teaching with employers that include Brusca Associates, Inc., California Department of Fish and Wildlife, and U.S. Fish and Wildlife.

Attachment A

List of Plants Detected

Common Name	Scientific Name
Spanish clover	*Acmispon americanus*
tree of heaven	*Ailanthus altissima*
mimosa	*Albizia julibrissin*
white alder	*Alnus rhombifolia*
California pipevine	*Aristolochia californica*
giant reed	*Arundo donax*
slender wild oat	*Avena barbata*
wild oat	*Avena sp.*
black mustard	*Brassica nigra*
quaking grass	*Briza sp.*
bromegrass	*Bromus sp.*
Italian thistle	*Carduus pycnocephalus*
yellow star-thistle	*Centaurea solstitialis*
western redbud	*Cercis occidentalis*
wild morning-glory	*Convolvulus arvensis*
Cypress	*Cupressus sp.*
Bermuda grass	*Cynodon dactylon*
snake lily	*Dichelostemma sp.*
stickyweed	*Galium aparine*
gumweed	*Grindelia sp.*
toyon	*Heteromeles arbutifolia*
shortpod mustard	*Hirschfeldia incana*
barley	*Hordeum sp.*
false dandelion	*Hypochaeris glabra*
bearded iris	*Iris germanica*
prickly lettuce	*Lactuca serriola*
sweet pea	*Lathyrus latifolius*
ryegrass	*Lolium sp.*
mulberry	*Morus alba*
olive	*Olea europaea*
childing pink	*Petrorhagia prolifera*
gray pine	*Pinus sabiniana*
Chineses pistache	*Pistacia chinensis*
plantain	*Plantago sp.*
sycamore	*Platanus occidentalis*
western cottonwood	*Populus fremontii*
purple leaf plum	*Prunus cerasifera*
blue oak	*Quercus douglasii*
valley oak	*Quercus lobata*
interior live oak	*Quercus wislizeni*

Common Name	Scientific Name
wild radish	*Raphanus raphanistrum*
Himalayan blackberry	*Rubus armeniacus*
fiddledock	*Rumex pulcher*
milk thistle	*Silybum marianum*
hedge parsley	*Torilis arvensis*
poison oak	*Toxicodendron diversilobum*
yellow salsify	*Tragopogon dubius*
clover	*Trifolium sp.*
California bay laurel	*Umbellularia californica*
white mullein	*Verbascum blattaria*
winter vetch	*Vicia villosa*
greater periwinkle	*Vinca major*
California wild grape	*Vitis californica*
palm lily	*Yucca gloriosa*

Attachment B

Site Photographs

View looking north of non-native annual grassland with woodland in the background.

View looking northeast toward the Moody Creek channel bank.

View looking north of ruderal/developed habitat (the former gas station)

View looking east of ruderal/developed habitat (the former gas station)

View from the interior of the project site of a transient camp in oak woodland

View looking northwest, and offsite, of the concrete channel and headwall of Moody Creek

View looking north of mixed oak-conifer woodland

View looking northeast of riparian vegetation (Himalayan blackberry)

Attachment C

Table of Special-Status Species

Special-status Species Reported by CNDDB and CNPS in the Vicinity of the Study Area

Scientific Name	Common Name	Status*	General Habitat**	Microhabitat**	Potential to Occur in Project Area
Acipenser medirostris pop. 1	green sturgeon - southern DPS	FT	Large rivers		None. No suitable habitat in Project Area.
Agelaius tricolor	tricolored blackbird	CT	Highly colonial species, most numberous in central valley & vicinity. Largely endemic to california.	Requires open water, protected nesting substrate, & foraging area with insect prey within a few km of the colony.	None. No suitable habitat in Project Area.
Ageratina shastensis	Shasta ageratina	1B.2	Chaparral, lower montane coniferous forest.	Rocky, sometimes limestone. 400-1800m.	None. No suitable habitat in Project Area, outside of elevation range.
Agrostis hendersonii	Henderson's bent grass	3.2	Valley and foothill grassland, vernal pools.	Little information exists; moist places in grassland or vernal pool habitat. 70-305 m.	None. No suitable habitat in Project Area.
Anthicus antiochensis	Antioch Dunes anthicid beetle	CSSC	Extirpated from Antioch Dunes but present in several localities along the Sacramento and Feather rivers.		None. No suitable habitat in Project Area.
Anthicus sacramento	Sacramento anthicid beetle	CSSC	Restricted to sand dune areas.	Inhabit sand slipfaces among bamboo and willow but may not depend on presence of these plant species.	None. No suitable habitat in Project Area.
Antrozous pallidus	pallid bat	CSSC	Deserts, grasslands, shrublands, woodlands & forests. Most common in open, dry habitats with rocky areas for roosting.	Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Low potential to occur: Tree habitat present for roosting, but the disturbance level is high (noisy environment, lots of human activity, powerline trimming).
Ardea alba	great egret	CSSC	Colonial nester in large trees.	Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	None. No suitable habitat in Project Area.
Balsamorhiza macrolepis	big-scale balsamroot	1B.2	Valley and foothill grassland, cismontane woodland.	Sometimes on serpentine. 35-1000m.	Low potential to occur: Marginal habitat is present, but disturbed (previous grading / terracing and current weed control)

Scientific Name	Common Name	Status*	General Habitat**	Microhabitat**	Potential to Occur in Project Area
Branchinecta lynchi	vernal pool fairy shrimp	FT	Endemic to the grasslands of the Central Valley, Central Coast Mtns, and South Coast Mtns, in astatic rain-filled pools.	Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	None. No suitable habitat in Project Area.
Brodiaea matsonii	Sulphur Creek brodiaea	1B.1	Cismontane woodland, meadows and seeps.	Streambanks. In cracks and crevices of metamorphic amphibolite schist. 195-215 m.	None. No suitable habitat in Project Area and just outside of known elevation range.
Clarkia borealis ssp. borealis	northern clarkia	4.3	Chaparral, cismontane woodland, lower montane coniferous forest.	400-800m.	Low potential to occur: Marginal habitat is present, but disturbed (previous grading / terracing and current weed control), and outside of known elevation range.
Bombus crotchii	Crotch's bumble bee	SCSC	Open grasslands, shrublands, chaparral, and desert margins	Joshua tree and creosote scrub, and semi-urban settings. Nesting can occur in underground abandoned rodent burrows, tufts of grass, old birds nests, rock piles, or cavities in dead trees.	Low potential to occur. Grassland is sparse with low connectivity. Potential roost sites, but the disturbance level is high (human activity, mowing).
Corynorhinus townsendii	Townsend's big-eared bat	CSSC	Throughout california in a wide variety of habitats. Most common in mesic sites.	Roosts in the open, hanging from walls & ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	Low potential to occur: Tree habitat and abandoned building present for roosting, but the disturbance level is high (noisy environment, lots of human activity activity, powerline trimming).
Cryptantha crinita	silky cryptantha	1B.2	Cismontane woodland, valley foothill grassland, lower montane coniferous forest, riparian forest, riparian woodland.	In gravelly stream beds. 85-220m.	None. No suitable habitat in Project Area, and outside of known elevation range.
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT	Occurs only in the Central Valley of California, in association with blue elderberry (*sambucus mexicana*).	Prefers to lay eggs in elderberrries 2-8 inches in diameter; some	None. No suitable habitat in Project Area.

Scientific Name	Common Name	Status*	General Habitat**	Microhabitat**	Potential to Occur in Project Area
				preference shown for "stressed" elderberries.	
Emys marmorata	western pond turtle	CSSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams & irrigation ditches, usually with aquatic vegetation, be	Need basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-layin	Low potential to occur: Marginal habitat is present; permanent water sources lacking; upland areas are subject to disturbance
Entosphenus tridentatus	Pacific lamprey	CSSC	Found in Pacific Coast streams north of San Luis Obispo, however regular runs in Santa Clara River.	Swift-current gravel bottomed areas for spawning with water temps between 12-18 c. Ammocoetes need soft sand or mud.	None. No suitable habitat in Project Area.
Erythranthe taylorii	Shasta limestone monkeyflower	1B.1	Limestone-based soils		None. No suitable habitat in Project Area.
Erythronium shastense	Shasta fawn lily	1B.2	North-facing, shaded limestone outcrops in forest openings		None. No suitable habitat in Project Area.
Euderma maculatum	spotted bat	CSSC	Occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests.	Feeds over water and along washes. Feeds almost entirely on moths. Needs rock crevices in cliffs or caves for roosting.	None. No suitable habitat in Project Area.
Falco peregrinus anatum	American peregrine falcon	Delisted, CSSC	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures.	Nest consists of a scrape or a depression or ledge in an open site.	None. No suitable habitat in Project Area.
Fritillaria eastwoodiae	Butte County fritillary	3.2	Chaparral, cismontane woodland, lower montane coniferous forest.	Usually on dry slopes but also found in wet places; soils can be serpentine, red clay, or sandy loam. 40-1500m.	None. No suitable habitat in Project Area.
Gratiola heterosepala	Boggs Lake hedge-hyssop	CE	Marshes and swamps (freshwater), vernal pools.	Clay soils; usually in vernal pools, sometimes on lake margins. 5-2400m.	None. No suitable habitat in Project Area.
Haliaeetus leucocephalus	bald eagle	CE	Ocean shore, lake margins, & rivers for both nesting & wintering. Most nests within 1 mi of water.	Nests in large, old-growth, or dominant live tree w/open branches, especially Ponderosa Pine. Roosts communally in winter.	None. No suitable habitat in Project Area.
Helminthoglypta hertleini	Oregon shoulderband	CSSC	Found on basaltic talus slopes; partial riparian associate.	Found wherever permanent ground cover/moisture is available.	None. No suitable habitat in Project Area.

Scientific Name	Common Name	Status*	General Habitat**	Microhabitat**	Potential to Occur in Project Area
				Somewhat adapted to dry conditions during a portion of the	
Hydromantes shastae	Shasta salamander	CT	Cool, wet ravines and valleys; dominant vegetation is oak woodland or chaparral, also pine and fir; 100 to 2550 ft elevation	Seeks cover under surface objects such as logs, rocks, and limestone slabs or talus, near limestone fissures or caves.	None. No suitable habitat in Project Area.
Juncus leiospermus var. leiospermus	Red Bluff dwarf rush	1B.1	Chaparral, valley and foothill grassland, cismontane woodlands, vernal pools.	Vernally mesic sites. Sometimes on edges of vernal pools. 30-1020m.	None. No suitable habitat in Project Area.
Lanx patelloides	kneecap lanx	CSSC	Endemic to upper Sacramento River system. Breath entirely through mantle, & are very sensitive to polluted water.	Prefers fast, cold, well-oxygenated water and cobble-boulder substrate.	None. No suitable habitat in Project Area.
Lasionycteris noctivagans	silver-haired bat	CSSC	Primarily a coastal & montane forest dweller feeding over streams, ponds & open brushy areas.	Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes & rarely under rocks. Needs drinking water.	Low potential to occur: Tree habitat present for roosting, but the disturbance level is high (noisy environment, lots of human activity activity, powerline trimming)
Lathyrus sulphureus argillaceus	dubious pea	3	Cismontane woodland, lower montane coniferous forest, upper montane coniferous forest.	150-305m.	None. No suitable habitat in Project Area.
Legenere limosa	legenere	1B.1	Vernal pools. Many historical occurrences are extirpated.	In beds of vernal pools. 1-880m.	None. No suitable habitat in Project Area.
Lepidurus packardi	vernal pool tadpole shrimp	FE	Inhabits vernal pools and swales in the sacramento valley containing clear to highly turbid water.	Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed & highly turbid.	None. No suitable habitat in Project Area.
Lewisia cantelovii	Cantelow's lewisia	1B.2	Broadfleafed upland forest, lower montane coniferous forest, cismontane woodland, chaparral.	Mesic rock outcrops and wet cliffs, usually in moss or clubmoss; on granitics or sometimes on serpentine. 330-1340m.	None. No suitable habitat in Project Area, outside of known elevation range.
Limnanthes floccosa ssp. bellingeriana	Bellinger's meadowfoam	1B.2	Meadows and seeps, cismontane woodland.	Vernally wet sites including wet edges of meadows, and damp, stony flats. 290-1100 m.	None. No suitable habitat in Project Area, outside of known elevation range.

Scientific Name	Common Name	Status*	General Habitat**	Microhabitat**	Potential to Occur in Project Area
Linderiella occidentalis	California linderiella	CSSC	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions.	Water in the pools has very low alkalinity, conductivity, and total dissolved solids.	None. No suitable habitat in Project Area.
Margaritifera falcata	western pearlshell	CSSC	Aquatic.	Prefers lower velocity waters.	None. No suitable habitat in Project Area.
Monadenia churchi	Klamath sideband	CSSC	Lives mostly in limestone outcrops, caves, talus slides, and lava rockslides, but also occurs under forest debris in hea		None. No suitable habitat in Project Area.
Monadenia troglodytes troglodytes	Shasta sideband	CSSC	Associated with limestone terrain in shasta and siskiyou counties. Associated with pine-oak woodlands.		None. No suitable habitat in Project Area.
Monadenia troglodytes wintu	Wintu sideband	CSSC	Occurs in Shasta County caves.		None. No suitable habitat in Project Area.
Myotis yumanensis	Yuma myotis	CSSC	Optimal habitats are open forests and woodlands with sources of water over which to feed.	Distribution is closely tied to bodies of water. Maternity colonies in caves, mines, buildings or crevices.	Low potential to occur: Tree habitat present for roosting, but the disturbance level is high (noisy environment, lots of human activity activity, powerline trimming).
Neviusia cliftonii	Shasta snow-wreath	Candidate Endangered	Lower montane coniferous forest, riparian woodland.	Shaded, north-facing, or sheltered canyons. Sometimes on limestone. Mesic areas. 300-500m.	None. No suitable habitat in Project Area, outside of known elevation range.
Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	FT	Populations in the Sacramento and San Joaquin Rivers and their tributaries.		None. No suitable habitat in Project Area.
Oncorhynchus tshawytscha pop. 11	chinook salmon - Central Valley spring-run ESU	FT, CT	Streams with gravel		None. No suitable habitat in Project Area.
Oncorhynchus tshawytscha pop. 7	chinook salmon - Sacramento River winter-run ESU	FE, CE	Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams.	Requires clean, cold water over gravel beds with water temperatures between 6 & 14 c for spawning.	None. No suitable habitat in Project Area.

Scientific Name	Common Name	Status*	General Habitat**	Microhabitat**	Potential to Occur in Project Area
Orcuttia tenuis	slender Orcutt grass	FT, CE	Vernal pools.	Often in gravelly pools. 35-1760 m.	None. No suitable habitat in Project Area.
Pandion haliaetus	osprey	CSSC	Ocean shore, bays, fresh-water lakes, and larger streams.	Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	None. No suitable habitat in Project Area.
Paronychia ahartii	Ahart's paronychia	1B.1	Valley and foothill grassland, vernal pools, cismontane woodland.	Stony, nearly barren clay of swales and higher ground around vernal pools. 30-510m.	None. No suitable habitat in Project Area.
Pekania pennanti	Fisher	CSSC	Coniferous forests		None. No suitable habitat in Project Area.
Progne subis	purple martin	CSSC	Inhabits woodlands, low elevation coniferous forest of douglas-fir, ponderosa pine, & monterey pine.	Nests in old woodpecker cavities mostly, also in human-made structures. Nest often located in tall, isolated tree/snag.	Low potential to occur: Some tree habitat present but the disturbance level is high (noisy environment, lots of human activity activity, powerline trimming).
Rana boylii	foothill yellow-legged frog	CE	Partly-shaded, shallow streams & riffles with a rocky substrate in a variety of habitats.	Need at least some cobble-sized substrate for egg-laying. Need at least 15 weeks to attain metamorphosis.	Low potential to occur: Marginal habitat is present; permanent water sources lacking; upland areas are subject to disturbance
Riparia riparia	bank swallow	CT	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	None. No suitable habitat in Project Area.
Sagittaria sanfordii	Sanford's arrowhead	1B.2	Marshes and swamps.	In standing or slow-moving freshwater ponds, marshes, and ditches. 0-610m.	None. No suitable habitat in Project Area.
Sedum paradisum ssp. paradisum	Canyon Creek stonecrop	1B.3	Chaparral, lower montane coniferous forest, subalpine coniferous forest, broadleafed upland forest.	Rock faces, in crevices of exposed granite. 300-1900 m.	None. No suitable habitat in Project Area, outside of known elevation range.
Spea hammondii	western spadefoot	CSSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands.	Vernal pools are essential for breeding and egg-laying.	Low potential to occur: Marginal habitat is present; permanent water sources lacking;

Scientific Name	Common Name	Status*	General Habitat**	Microhabitat**	Potential to Occur in Project Area
					upland areas are subject to disturbance
Trifolium piorkowskii	maverick clover	1B.2	Scattered to locally abundant in vernal pools, stream banks, volcanic flats, open rocky ground, with blue oak, chaparral, or pine		None. No suitable habitat in Project Area.
Trilobopsis roperi	Shasta chaparral	CSSC	Found within 100 meters of limestone outcroppings and talus slopes with some protective shade, or caves with shrubs or o		None. No suitable habitat in Project Area.
Vaccinium shastense ssp. shastense	Shasta huckleberry	1B.3	Acidic soils, stream banks, conifer forest understory, crevices or seeps among rock outcrops, chaparral		None. No suitable habitat in Project Area.
Vespericola shasta	Shasta hesperian	CSSC	Primarily found in the vicinity of Shasta Lake, up to 915 meters elevation.	Moist bottom lands such as riparian areas, springs, seeps, marshes, and in the mouths of caves.	None. No suitable habitat in Project Area.
Viburnum ellipticum	oval-leaved viburnum	2B.3	Chaparral, cismontane woodland, lower montane coniferous forest.	215-1400M.	Low potential to occur: Marginal habitat is present, but disturbed (previous grading / terracing and current weed control)

*Definitions of Status Codes: FE = Federally listed as endangered; FT = Federally listed as threatened; FC = Candidate for Federal listing; CE = California State listed as endangered; CT = California State listed as threatened; CSSC = California species of special concern; CRPR (California Rare Plant Rank) List 1A = Plants presumed extinct in California by; CRPR List 1B = Plants designated rare, threatened or endangered in California and elsewhere; CRPR List 2A = Plants presumed extirpated in California but common elsewhere; CRPR 2B = Plants rare threatened or endangered in California, but more common elsewhere; CRPR 3 Review List: Plants about which more information is needed and CRPR 4 = Watch List: Plants of limited distribution. CRPR Threat Ranks: 0.1 = seriously threatened in California; S2 = moderately threatened in California; S3 = not very threatened in California.

**Copied verbatim from CNDDB, unless otherwise noted.

The following describes the criteria used for the probability of a special status species' occurrence:

- **No Potential.** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- **Low Potential.** Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

- **Moderate Potential.** Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- **High Potential.** All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

Attachment D

USFWS Species List (iPaC Report)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: 03/12/2025 18:11:40 UTC
Project Code: 2025-0068033
Project Name: City of Shasta Lake 7-Eleven

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2025-0068033
Project Name: City of Shasta Lake 7-Eleven
Project Type: Commercial Development
Project Description: Fueling station and convivence store.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.680914650000005,-122.34920228634464,14z

Counties: Shasta County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
California Condor *Gymnogyps californianus* Population: Pacific Northwest NEP No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8193	Experimental Population, Non-Essential
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened

REPTILES

NAME	STATUS
Northwestern Pond Turtle *Actinemys marmorata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

AMPHIBIANS

NAME	STATUS
Western Spadefoot *Spea hammondii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Suckley's Cuckoo Bumble Bee *Bombus suckleyi* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10885	Proposed Endangered
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

CRUSTACEANS

NAME	STATUS
Shasta Crayfish *Pacifastacus fortis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8284	Endangered

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Kimberlina Gomez
Address: 5170 Golden Foothill Pkwy
City: El Dorado Hills
State: CA
Zip: 95762
Email kgomez@acorn-env.com
Phone: 9162358224

Appendix F

Air Quality Model Output

7-Eleven Shasta Lake Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	7-Eleven Shasta Lake
Construction Start Date	9/2/2024
Operational Year	2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	58.6
Location	40.68107624192544, -122.34968995104849
County	Shasta
City	Shasta Lake
Air District	Shasta County AQMD
Air Basin	Sacramento Valley
TAZ	150
EDFZ	15
Electric Utility	City of Shasta Lake
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.29

1.2. Land Use Types

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

Convenience Market with Gas Pumps	4.76	1000sqft	3.05	4,761	72,457	—	—	—
Parking Lot	55.6	1000sqft	0.00	55,640	—	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-9	Use Dust Suppressants
Construction	C-10-A	Water Exposed Surfaces
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.79	6.77	31.7	31.2	0.05	1.37	19.8	21.2	1.26	10.1	11.4	—	5,451	5,451	0.22	0.06	1.42	5,472
Mit.	6.79	6.77	31.7	31.2	0.05	1.37	7.80	9.17	1.26	3.97	5.23	—	5,451	5,451	0.22	0.06	1.42	5,472
% Reduced	—	—	—	—	—	—	61%	57%	—	61%	54%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.47	1.24	10.9	14.2	0.03	0.43	0.25	0.69	0.40	0.06	0.46	—	2,813	2,813	0.11	0.06	0.04	2,834
Mit.	1.47	1.24	10.9	14.2	0.03	0.43	0.25	0.69	0.40	0.06	0.46	—	2,813	2,813	0.11	0.06	0.04	2,834

% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.69	0.59	5.18	6.39	0.01	0.21	0.53	0.74	0.19	0.24	0.43	—	1,238	1,238	0.05	0.02	0.24	1,247
Mit.	0.69	0.59	5.18	6.39	0.01	0.21	0.27	0.48	0.19	0.11	0.30	—	1,238	1,238	0.05	0.02	0.24	1,247
% Reduced	—	—	—	—	—	—	49%	35%	—	55%	30%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.13	0.11	0.94	1.17	< 0.005	0.04	0.10	0.13	0.04	0.04	0.08	—	205	205	0.01	< 0.005	0.04	206
Mit.	0.13	0.11	0.94	1.17	< 0.005	0.04	0.05	0.09	0.04	0.02	0.05	—	205	205	0.01	< 0.005	0.04	206
% Reduced	—	—	—	—	—	—	49%	35%	—	55%	30%	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.04	3.40	31.7	31.2	0.05	1.37	19.8	21.2	1.26	10.1	11.4	—	5,451	5,451	0.22	0.06	1.42	5,472
2026	6.79	6.77	10.2	14.4	0.02	0.38	0.25	0.64	0.35	0.06	0.41	—	2,831	2,831	0.11	0.06	1.32	2,853
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.47	1.24	10.9	14.2	0.03	0.43	0.25	0.69	0.40	0.06	0.46	—	2,813	2,813	0.11	0.06	0.04	2,834
2026	1.40	1.18	10.3	14.1	0.02	0.38	0.25	0.64	0.35	0.06	0.41	—	2,805	2,805	0.11	0.06	0.03	2,825
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.69	0.59	5.18	6.39	0.01	0.21	0.53	0.74	0.19	0.24	0.43	—	1,238	1,238	0.05	0.02	0.24	1,247

2026	0.58	0.53	2.24	3.13	0.01	0.08	0.05	0.14	0.08	0.01	0.09	—	603	603	0.02	0.01	0.12	607
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.13	0.11	0.94	1.17	< 0.005	0.04	0.10	0.13	0.04	0.04	0.08	—	205	205	0.01	< 0.005	0.04	206
2026	0.11	0.10	0.41	0.57	< 0.005	0.02	0.01	0.03	0.01	< 0.005	0.02	—	99.8	99.8	< 0.005	< 0.005	0.02	100

2.3. Construction Emissions by Year, Mitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	4.04	3.40	31.7	31.2	0.05	1.37	7.80	9.17	1.26	3.97	5.23	—	5,451	5,451	0.22	0.06	1.42	5,472
2026	6.79	6.77	10.2	14.4	0.02	0.38	0.25	0.64	0.35	0.06	0.41	—	2,831	2,831	0.11	0.06	1.32	2,853
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	1.47	1.24	10.9	14.2	0.03	0.43	0.25	0.69	0.40	0.06	0.46	—	2,813	2,813	0.11	0.06	0.04	2,834
2026	1.40	1.18	10.3	14.1	0.02	0.38	0.25	0.64	0.35	0.06	0.41	—	2,805	2,805	0.11	0.06	0.03	2,825
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.69	0.59	5.18	6.39	0.01	0.21	0.27	0.48	0.19	0.11	0.30	—	1,238	1,238	0.05	0.02	0.24	1,247
2026	0.58	0.53	2.24	3.13	0.01	0.08	0.05	0.14	0.08	0.01	0.09	—	603	603	0.02	0.01	0.12	607
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.13	0.11	0.94	1.17	< 0.005	0.04	0.05	0.09	0.04	0.02	0.05	—	205	205	0.01	< 0.005	0.04	206
2026	0.11	0.10	0.41	0.57	< 0.005	0.02	0.01	0.03	0.01	< 0.005	0.02	—	99.8	99.8	< 0.005	< 0.005	0.02	100

2.4. Operations Emissions Compared Against Thresholds

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

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	10.0	9.48	7.36	55.4	0.10	0.12	7.50	7.62	0.12	1.91	2.02	8.39	10,296	10,304	1.34	0.54	1,024	11,524
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	8.06	7.51	8.42	46.8	0.09	0.12	7.50	7.62	0.11	1.91	2.02	8.39	9,454	9,463	1.43	0.59	988	10,662
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	8.41	7.88	7.94	46.7	0.09	0.12	7.22	7.34	0.11	1.84	1.95	8.39	9,635	9,643	1.39	0.56	1,003	10,849
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.53	1.44	1.45	8.53	0.02	0.02	1.32	1.34	0.02	0.34	0.36	1.39	1,595	1,597	0.23	0.09	166	1,796

2.5. Operations Emissions by Sector, Unmitigated

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

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	9.42	8.92	7.30	52.7	0.10	0.12	7.50	7.61	0.11	1.91	2.02	—	9,959	9,959	0.48	0.54	37.4	10,169
Area	0.60	0.56	0.02	2.63	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.8	10.8	< 0.005	< 0.005	—	10.8
Energy	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	324	324	0.02	< 0.005	—	326
Water	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Waste	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Total	10.0	9.48	7.36	55.4	0.10	0.12	7.50	7.62	0.12	1.91	2.02	8.39	10,296	10,304	1.34	0.54	1,024	11,524
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	7.92	7.38	8.38	46.8	0.09	0.12	7.50	7.61	0.11	1.91	2.02	—	9,129	9,129	0.57	0.58	0.97	9,318
Area	0.13	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	324	324	0.02	< 0.005	—	326
Water	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Waste	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Total	8.06	7.51	8.42	46.8	0.09	0.12	7.50	7.62	0.11	1.91	2.02	8.39	9,454	9,463	1.43	0.59	988	10,662
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	8.05	7.53	7.89	45.4	0.09	0.12	7.22	7.33	0.11	1.84	1.95	—	9,304	9,304	0.52	0.56	16.2	9,500
Area	0.36	0.34	0.01	1.30	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.33	5.33	< 0.005	< 0.005	—	5.35
Energy	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	324	324	0.02	< 0.005	—	326
Water	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Waste	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Total	8.41	7.88	7.94	46.7	0.09	0.12	7.22	7.34	0.11	1.84	1.95	8.39	9,635	9,643	1.39	0.56	1,003	10,849
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.47	1.37	1.44	8.28	0.02	0.02	1.32	1.34	0.02	0.34	0.36	—	1,540	1,540	0.09	0.09	2.68	1,573
Area	0.07	0.06	< 0.005	0.24	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.88	0.88	< 0.005	< 0.005	—	0.89
Energy	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	53.7	53.7	< 0.005	< 0.005	—	53.9
Water	—	—	—	—	—	—	—	—	—	—	—	0.11	0.23	0.34	0.01	< 0.005	—	0.71
Waste	—	—	—	—	—	—	—	—	—	—	—	1.28	0.00	1.28	0.13	0.00	—	4.47
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	163	163
Total	1.53	1.44	1.45	8.53	0.02	0.02	1.32	1.34	0.02	0.34	0.36	1.39	1,595	1,597	0.23	0.09	166	1,796

2.6. Operations Emissions by Sector, Mitigated

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

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	9.42	8.92	7.30	52.7	0.10	0.12	7.50	7.61	0.11	1.91	2.02	—	9,959	9,959	0.48	0.54	37.4	10,169
Area	0.60	0.56	0.02	2.63	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.8	10.8	< 0.005	< 0.005	—	10.8
Energy	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	324	324	0.02	< 0.005	—	326
Water	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Waste	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Total	10.0	9.48	7.36	55.4	0.10	0.12	7.50	7.62	0.12	1.91	2.02	8.39	10,296	10,304	1.34	0.54	1,024	11,524
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	7.92	7.38	8.38	46.8	0.09	0.12	7.50	7.61	0.11	1.91	2.02	—	9,129	9,129	0.57	0.58	0.97	9,318
Area	0.13	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	324	324	0.02	< 0.005	—	326
Water	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Waste	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Total	8.06	7.51	8.42	46.8	0.09	0.12	7.50	7.62	0.11	1.91	2.02	8.39	9,454	9,463	1.43	0.59	988	10,662
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	8.05	7.53	7.89	45.4	0.09	0.12	7.22	7.33	0.11	1.84	1.95	—	9,304	9,304	0.52	0.56	16.2	9,500
Area	0.36	0.34	0.01	1.30	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.33	5.33	< 0.005	< 0.005	—	5.35
Energy	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	324	324	0.02	< 0.005	—	326
Water	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Waste	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Total	8.41	7.88	7.94	46.7	0.09	0.12	7.22	7.34	0.11	1.84	1.95	8.39	9,635	9,643	1.39	0.56	1,003	10,849
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Mobile	1.47	1.37	1.44	8.28	0.02	0.02	1.32	1.34	0.02	0.34	0.36	—	1,540	1,540	0.09	0.09	2.68	1,573
Area	0.07	0.06	< 0.005	0.24	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.88	0.88	< 0.005	< 0.005	—	0.89
Energy	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	53.7	53.7	< 0.005	< 0.005	—	53.9
Water	—	—	—	—	—	—	—	—	—	—	—	0.11	0.23	0.34	0.01	< 0.005	—	0.71
Waste	—	—	—	—	—	—	—	—	—	—	—	1.28	0.00	1.28	0.13	0.00	—	4.47
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	163	163
Total	1.53	1.44	1.45	8.53	0.02	0.02	1.32	1.34	0.02	0.34	0.36	1.39	1,595	1,597	0.23	0.09	166	1,796

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.22	0.22	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.06	0.05	0.49	0.44	< 0.005	0.02	—	0.02	0.02	—	0.02	—	75.1	75.1	< 0.005	< 0.005	—	75.3
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.09	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.4	12.4	< 0.005	< 0.005	—	12.5
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.05	0.88	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	134	134	0.01	0.01	0.50	136
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.22	0.05	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	183	183	< 0.005	0.03	0.41	192
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.65	2.65	< 0.005	< 0.005	< 0.005	2.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.01	4.01	< 0.005	< 0.005	< 0.005	4.20
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.66	0.66	< 0.005	< 0.005	< 0.005	0.70

3.2. Demolition (2025) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.86	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.22	0.22	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.49	0.44	< 0.005	0.02	—	0.02	0.02	—	0.02	—	75.1	75.1	< 0.005	< 0.005	—	75.3
Demolition	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.09	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.4	12.4	< 0.005	< 0.005	—	12.5

Demoliti	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.05	0.88	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	134	134	0.01	0.01	0.50	136
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.22	0.05	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	183	183	< 0.005	0.03	0.41	192
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.65	2.65	< 0.005	< 0.005	< 0.005	2.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.01	4.01	< 0.005	< 0.005	< 0.005	4.20
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.66	0.66	< 0.005	< 0.005	< 0.005	0.70

3.3. Site Preparation (2025) - Unmitigated

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

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

Off-Road	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.05	0.43	0.41	< 0.005	0.02	—	0.02	0.02	—	0.02	—	72.5	72.5	< 0.005	< 0.005	—	72.8
Dust From Material Movement	—	—	—	—	—	—	0.27	0.27	—	0.14	0.14	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.0	12.0	< 0.005	< 0.005	—	12.1
Dust From Material Movement	—	—	—	—	—	—	0.05	0.05	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.06	1.02	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	156	156	0.01	0.01	0.59	159
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.93	1.93	< 0.005	< 0.005	< 0.005	1.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.32
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.4. Site Preparation (2025) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.94	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314

Dust From Material Movement	—	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.05	0.43	0.41	< 0.005	0.02	—	0.02	0.02	—	0.02	—	72.5	72.5	< 0.005	< 0.005	—	72.8
Dust From Material Movement	—	—	—	—	—	—	0.11	0.11	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.0	12.0	< 0.005	< 0.005	—	12.1
Dust From Material Movement	—	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.06	1.02	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	156	156	0.01	0.01	0.59	159

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.93	1.93	< 0.005	< 0.005	< 0.005	1.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.32
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.07	1.74	16.3	17.9	0.03	0.72	—	0.72	0.66	—	0.66	—	2,959	2,959	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.04	0.36	0.39	< 0.005	0.02	—	0.02	0.01	—	0.01	—	64.9	64.9	< 0.005	< 0.005	—	65.1
Dust From Material Movement	—	—	—	—	—	—	0.16	0.16	—	0.08	0.08	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.7	10.7	< 0.005	< 0.005	—	10.8
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.05	0.88	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	134	134	0.01	0.01	0.50	136
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.27	0.05	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	218	218	< 0.005	0.03	0.49	228
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.65	2.65	< 0.005	< 0.005	< 0.005	2.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.77	4.77	< 0.005	< 0.005	< 0.005	5.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.79	0.79	< 0.005	< 0.005	< 0.005	0.83

3.6. Grading (2025) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.07	1.74	16.3	17.9	0.03	0.72	—	0.72	0.66	—	0.66	—	2,959	2,959	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road	0.05	0.04	0.36	0.39	< 0.005	0.02	—	0.02	0.01	—	0.01	—	64.9	64.9	< 0.005	< 0.005	—	65.1
Dust From Material Movement	—	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.07	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.7	10.7	< 0.005	< 0.005	—	10.8
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	0.05	0.88	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	134	134	0.01	0.01	0.50	136
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	< 0.005	0.27	0.05	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	218	218	< 0.005	0.03	0.49	228
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.65	2.65	< 0.005	< 0.005	< 0.005	2.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.77	4.77	< 0.005	< 0.005	< 0.005	5.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.79	0.79	< 0.005	< 0.005	< 0.005	0.83

3.7. Building Construction (2025) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	0.40	3.74	4.67	0.01	0.15	—	0.15	0.14	—	0.14	—	859	859	0.03	0.01	—	862
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.68	0.85	< 0.005	0.03	—	0.03	0.03	—	0.03	—	142	142	0.01	< 0.005	—	143
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.13	0.08	1.45	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	222	222	0.01	0.01	0.84	226
Vendor	0.01	0.01	0.30	0.11	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	221	221	< 0.005	0.03	0.59	231
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.11	0.10	1.08	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	195	195	0.01	0.01	0.02	198
Vendor	0.01	0.01	0.32	0.11	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	221	221	< 0.005	0.03	0.02	231
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.39	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	71.9	71.9	< 0.005	< 0.005	0.13	73.0
Vendor	< 0.005	< 0.005	0.11	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	79.1	79.1	< 0.005	0.01	0.09	82.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.9	11.9	< 0.005	< 0.005	0.02	12.1
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.1	13.1	< 0.005	< 0.005	0.02	13.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Building Construction (2025) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.0	0.02	0.43	—	0.43	0.40	—	0.40	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.48	0.40	3.74	4.67	0.01	0.15	—	0.15	0.14	—	0.14	—	859	859	0.03	0.01	—	862
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.68	0.85	< 0.005	0.03	—	0.03	0.03	—	0.03	—	142	142	0.01	< 0.005	—	143
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.13	0.08	1.45	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	222	222	0.01	0.01	0.84	226
Vendor	0.01	0.01	0.30	0.11	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	221	221	< 0.005	0.03	0.59	231
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.11	0.10	1.08	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	195	195	0.01	0.01	0.02	198
Vendor	0.01	0.01	0.32	0.11	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	221	221	< 0.005	0.03	0.02	231
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.39	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	71.9	71.9	< 0.005	< 0.005	0.13	73.0
Vendor	< 0.005	< 0.005	0.11	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	79.1	79.1	< 0.005	0.01	0.09	82.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.9	11.9	< 0.005	< 0.005	0.02	12.1
Vendor	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.1	13.1	< 0.005	< 0.005	0.02	13.7
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2026) - Unmitigated

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

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

Off-Road	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	0.20	1.87	2.46	< 0.005	0.07	—	0.07	0.07	—	0.07	—	455	455	0.02	< 0.005	—	457
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.34	0.45	< 0.005	0.01	—	0.01	0.01	—	0.01	—	75.3	75.3	< 0.005	< 0.005	—	75.6
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.07	1.35	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	218	218	0.01	0.01	0.77	221
Vendor	0.01	0.01	0.29	0.10	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	217	217	< 0.005	0.03	0.55	226
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.10	1.00	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	191	191	0.01	0.01	0.02	194
Vendor	0.01	0.01	0.31	0.11	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	217	217	< 0.005	0.03	0.01	226
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.19	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	37.4	37.4	< 0.005	< 0.005	0.06	37.9
Vendor	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	41.1	41.1	< 0.005	0.01	0.05	42.9
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.18	6.18	< 0.005	< 0.005	0.01	6.28
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.81	6.81	< 0.005	< 0.005	0.01	7.10
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Building Construction (2026) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.28	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.24	0.20	1.87	2.46	< 0.005	0.07	—	0.07	0.07	—	0.07	—	455	455	0.02	< 0.005	—	457
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.34	0.45	< 0.005	0.01	—	0.01	0.01	—	0.01	—	75.3	75.3	< 0.005	< 0.005	—	75.6
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.12	0.07	1.35	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	218	218	0.01	0.01	0.77	221
Vendor	0.01	0.01	0.29	0.10	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	217	217	< 0.005	0.03	0.55	226
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.10	0.10	1.00	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	191	191	0.01	0.01	0.02	194
Vendor	0.01	0.01	0.31	0.11	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	217	217	< 0.005	0.03	0.01	226
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.02	0.02	0.02	0.19	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	37.4	37.4	< 0.005	< 0.005	0.06	37.9
Vendor	< 0.005	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	41.1	41.1	< 0.005	0.01	0.05	42.9
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.18	6.18	< 0.005	< 0.005	0.01	6.28
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.81	6.81	< 0.005	< 0.005	0.01	7.10
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2026) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.81	0.68	6.23	8.81	0.01	0.26	—	0.26	0.24	—	0.24	—	1,350	1,350	0.05	0.01	—	1,355
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.26	0.36	< 0.005	0.01	—	0.01	0.01	—	0.01	—	55.5	55.5	< 0.005	< 0.005	—	55.7
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.19	9.19	< 0.005	< 0.005	—	9.22
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.06	1.09	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	175	175	0.01	0.01	0.62	178
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.50	6.50	< 0.005	< 0.005	0.01	6.60
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.08	1.08	< 0.005	< 0.005	< 0.005	1.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.12. Paving (2026) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.81	0.68	6.23	8.81	0.01	0.26	—	0.26	0.24	—	0.24	—	1,350	1,350	0.05	0.01	—	1,355
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.26	0.36	< 0.005	0.01	—	0.01	0.01	—	0.01	—	55.5	55.5	< 0.005	< 0.005	—	55.7
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.19	9.19	< 0.005	< 0.005	—	9.22
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.10	0.06	1.09	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	175	175	0.01	0.01	0.62	178
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.50	6.50	< 0.005	< 0.005	0.01	6.60
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.08	1.08	< 0.005	< 0.005	< 0.005	1.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2026) - Unmitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134

Architectural Coating	6.62	6.62	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.49	5.49	< 0.005	< 0.005	—	5.51
Architectural Coatings	0.27	0.27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.91	0.91	< 0.005	< 0.005	—	0.91
Architectural Coatings	0.05	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.01	0.27	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	43.5	43.5	< 0.005	< 0.005	0.15	44.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.62	1.62	< 0.005	< 0.005	< 0.005	1.64
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.27	0.27	< 0.005	< 0.005	< 0.005	0.27
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.14. Architectural Coating (2026) - Mitigated

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

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	6.62	6.62	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.49	5.49	< 0.005	< 0.005	—	5.51
Architectural Coatings	0.27	0.27	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.91	0.91	< 0.005	< 0.005	—	0.91
Architectural Coatings	0.05	0.05	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.01	0.27	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	43.5	43.5	< 0.005	< 0.005	0.15	44.2
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.62	1.62	< 0.005	< 0.005	< 0.005	1.64
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.27	0.27	< 0.005	< 0.005	< 0.005	0.27
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	9.42	8.92	7.30	52.7	0.10	0.12	7.50	7.61	0.11	1.91	2.02	—	9,959	9,959	0.48	0.54	37.4	10,169
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	9.42	8.92	7.30	52.7	0.10	0.12	7.50	7.61	0.11	1.91	2.02	—	9,959	9,959	0.48	0.54	37.4	10,169
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Conveni Market with Gas Pumps	7.92	7.38	8.38	46.8	0.09	0.12	7.50	7.61	0.11	1.91	2.02	—	9,129	9,129	0.57	0.58	0.97	9,318
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.92	7.38	8.38	46.8	0.09	0.12	7.50	7.61	0.11	1.91	2.02	—	9,129	9,129	0.57	0.58	0.97	9,318
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	1.47	1.37	1.44	8.28	0.02	0.02	1.32	1.34	0.02	0.34	0.36	—	1,540	1,540	0.09	0.09	2.68	1,573
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.47	1.37	1.44	8.28	0.02	0.02	1.32	1.34	0.02	0.34	0.36	—	1,540	1,540	0.09	0.09	2.68	1,573

4.1.2. Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	9.42	8.92	7.30	52.7	0.10	0.12	7.50	7.61	0.11	1.91	2.02	—	9,959	9,959	0.48	0.54	37.4	10,169
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	9.42	8.92	7.30	52.7	0.10	0.12	7.50	7.61	0.11	1.91	2.02	—	9,959	9,959	0.48	0.54	37.4	10,169
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Conveni Market with Gas Pumps	7.92	7.38	8.38	46.8	0.09	0.12	7.50	7.61	0.11	1.91	2.02	—	9,129	9,129	0.57	0.58	0.97	9,318
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.92	7.38	8.38	46.8	0.09	0.12	7.50	7.61	0.11	1.91	2.02	—	9,129	9,129	0.57	0.58	0.97	9,318
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	1.47	1.37	1.44	8.28	0.02	0.02	1.32	1.34	0.02	0.34	0.36	—	1,540	1,540	0.09	0.09	2.68	1,573
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.47	1.37	1.44	8.28	0.02	0.02	1.32	1.34	0.02	0.34	0.36	—	1,540	1,540	0.09	0.09	2.68	1,573

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	282	282	0.02	< 0.005	—	283
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	282	282	0.02	< 0.005	—	283

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	282	282	0.02	< 0.005	—	283
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	282	282	0.02	< 0.005	—	283
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	46.7	46.7	< 0.005	< 0.005	—	46.9
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	46.7	46.7	< 0.005	< 0.005	—	46.9

4.2.2. Electricity Emissions By Land Use - Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	282	282	0.02	< 0.005	—	283
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	282	282	0.02	< 0.005	—	283

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	282	282	0.02	< 0.005	—	283
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	282	282	0.02	< 0.005	—	283
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	46.7	46.7	< 0.005	< 0.005	—	46.9
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	46.7	46.7	< 0.005	< 0.005	—	46.9

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	42.6	42.6	< 0.005	< 0.005	—	42.7
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	42.6	42.6	< 0.005	< 0.005	—	42.7

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	42.6	42.6	< 0.005	< 0.005	—	42.7
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	42.6	42.6	< 0.005	< 0.005	—	42.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.05	7.05	< 0.005	< 0.005	—	7.07
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.05	7.05	< 0.005	< 0.005	—	7.07

4.2.4. Natural Gas Emissions By Land Use - Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	42.6	42.6	< 0.005	< 0.005	—	42.7
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	42.6	42.6	< 0.005	< 0.005	—	42.7

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	42.6	42.6	< 0.005	< 0.005	—	42.7
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	42.6	42.6	< 0.005	< 0.005	—	42.7
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.05	7.05	< 0.005	< 0.005	—	7.07
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.05	7.05	< 0.005	< 0.005	—	7.07

4.3. Area Emissions by Source

4.3.1. Unmitigated

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

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.10	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural Coating	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.47	0.43	0.02	2.63	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.8	10.8	< 0.005	< 0.005	—	10.8
Total	0.60	0.56	0.02	2.63	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.8	10.8	< 0.005	< 0.005	—	10.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.10	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.13	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.04	0.04	< 0.005	0.24	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.88	0.88	< 0.005	< 0.005	—	0.89
Total	0.07	0.06	< 0.005	0.24	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.88	0.88	< 0.005	< 0.005	—	0.89

4.3.2. Mitigated

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

Source	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.10	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.47	0.43	0.02	2.63	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.8	10.8	< 0.005	< 0.005	—	10.8
Total	0.60	0.56	0.02	2.63	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.8	10.8	< 0.005	< 0.005	—	10.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.10	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.13	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architectural Coating	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.04	0.04	< 0.005	0.24	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.88	0.88	< 0.005	< 0.005	—	0.89
Total	0.07	0.06	< 0.005	0.24	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.88	0.88	< 0.005	< 0.005	—	0.89

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	0.11	0.23	0.34	0.01	< 0.005	—	0.71
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.11	0.23	0.34	0.01	< 0.005	—	0.71

4.4.2. Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	—	0.68	1.37	2.05	0.07	< 0.005	—	4.28
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	0.11	0.23	0.34	0.01	< 0.005	—	0.71
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.11	0.23	0.34	0.01	< 0.005	—	0.71

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	1.28	0.00	1.28	0.13	0.00	—	4.47
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	1.28	0.00	1.28	0.13	0.00	—	4.47

4.5.2. Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Conveni Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	7.71	0.00	7.71	0.77	0.00	—	27.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	1.28	0.00	1.28	0.13	0.00	—	4.47
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	1.28	0.00	1.28	0.13	0.00	—	4.47

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Conveni Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	163	163
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	163	163

4.6.2. Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	987	987
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Convenience Market with Gas Pumps	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	163	163
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	163	163

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

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

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

4.7.2. Mitigated

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

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

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

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

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

4.8.2. Mitigated

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

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

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

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

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

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

4.9.2. Mitigated

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

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

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

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

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

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

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

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

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

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

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

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

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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

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

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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

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

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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

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

—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	6/3/2025	6/12/2025	5.00	8.00	—
Site Preparation	Site Preparation	6/13/2025	6/19/2025	5.00	5.00	—

Grading	Grading	6/20/2025	7/1/2025	5.00	8.00	—
Building Construction	Building Construction	7/2/2025	4/7/2026	5.00	200	—
Paving	Paving	4/8/2026	4/28/2026	5.00	15.0	—
Architectural Coating	Architectural Coating	4/29/2026	5/19/2026	5.00	15.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42

Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	6.00	36.0	0.38
Paving	Tractors/Loaders/Back hoes	Diesel	Average	1.00	8.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Back hoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Back hoes	Diesel	Average	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Back hoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36

Paving	Rollers	Diesel	Average	2.00	6.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	11.1	LDA,LDT1,LDT2
Demolition	Vendor	—	6.95	HHDT,MHDT
Demolition	Hauling	2.63	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.1	LDA,LDT1,LDT2
Site Preparation	Vendor	—	6.95	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	11.1	LDA,LDT1,LDT2
Grading	Vendor	—	6.95	HHDT,MHDT
Grading	Hauling	3.13	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	24.9	11.1	LDA,LDT1,LDT2
Building Construction	Vendor	9.90	6.95	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT

Paving	—	—	—	—
Paving	Worker	20.0	11.1	LDA,LDT1,LDT2
Paving	Vendor	—	6.95	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	4.98	11.1	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	6.95	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	11.1	LDA,LDT1,LDT2
Demolition	Vendor	—	6.95	HHDT,MHDT
Demolition	Hauling	2.63	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.1	LDA,LDT1,LDT2
Site Preparation	Vendor	—	6.95	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	11.1	LDA,LDT1,LDT2
Grading	Vendor	—	6.95	HHDT,MHDT
Grading	Hauling	3.13	20.0	HHDT
Grading	Onsite truck	—	—	HHDT

Building Construction	—	—	—	—
Building Construction	Worker	24.9	11.1	LDA,LDT1,LDT2
Building Construction	Vendor	9.90	6.95	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	20.0	11.1	LDA,LDT1,LDT2
Paving	Vendor	—	6.95	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	4.98	11.1	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	6.95	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	7,142	2,381	—

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	1,800	—
Site Preparation	—	—	7.50	0.00	—
Grading	—	200	8.00	0.00	—
Paving	0.00	0.00	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Convenience Market with Gas Pumps	0.00	0%
Parking Lot	0.00	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	453	0.03	< 0.005
2026	0.00	453	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Convenience Market with Gas Pumps	1,477	1,477	1,477	539,107	10,502	10,502	10,502	3,833,231
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Convenience Market with Gas Pumps	1,477	1,477	1,477	539,107	10,502	10,502	10,502	3,833,231
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	7,142	2,381	—

5.10.3. Landscape Equipment

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

5.10.4. Landscape Equipment - Mitigated

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

5.11. Operational Energy Consumption

5.11.1. Unmitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Convenience Market with Gas Pumps	227,040	453	0.0330	0.0040	132,783
Parking Lot	0.00	453	0.0330	0.0040	0.00

5.11.2. Mitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Convenience Market with Gas Pumps	227,040	453	0.0330	0.0040	132,783
Parking Lot	0.00	453	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Convenience Market with Gas Pumps	352,659	0.00
Parking Lot	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Convenience Market with Gas Pumps	352,659	0.00
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Convenience Market with Gas Pumps	14.3	—
Parking Lot	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Convenience Market with Gas Pumps	14.3	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Convenience Market with Gas Pumps	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Convenience Market with Gas Pumps	Supermarket refrigeration and condensing units	R-404A	3,922	26.5	16.5	16.5	18.0

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Convenience Market with Gas Pumps	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Convenience Market with Gas Pumps	Supermarket refrigeration and condensing units	R-404A	3,922	26.5	16.5	16.5	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

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

5.15.2. Mitigated

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

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

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

5.16.2. Process Boilers

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

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

5.18.2.2. Mitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	24.9	annual days of extreme heat
Extreme Precipitation	18.8	annual days with precipitation above 20 mm

Sea Level Rise	—	meters of inundation depth
Wildfire	0.99	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	0	0	N/A
Extreme Precipitation	4	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	1	1	3

Extreme Precipitation	4	1	1	4
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	58.2
AQ-PM	16.9
AQ-DPM	45.2
Drinking Water	4.56
Lead Risk Housing	61.5
Pesticides	0.00
Toxic Releases	5.53
Traffic	22.6
Effect Indicators	—

CleanUp Sites	42.6
Groundwater	43.8
Haz Waste Facilities/Generators	22.0
Impaired Water Bodies	0.00
Solid Waste	75.7
Sensitive Population	—
Asthma	71.8
Cardio-vascular	90.5
Low Birth Weights	20.7
Socioeconomic Factor Indicators	—
Education	34.4
Housing	62.4
Linguistic	0.00
Poverty	76.4
Unemployment	57.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	31.06634159
Employed	19.33786732
Median HI	24.00872578
Education	—
Bachelor's or higher	14.23071988
High school enrollment	100
Preschool enrollment	10.59925574
Transportation	—

Auto Access	39.77928911
Active commuting	62.6331323
Social	—
2-parent households	84.88387014
Voting	53.04760683
Neighborhood	—
Alcohol availability	45.25856538
Park access	27.25522905
Retail density	12.57538817
Supermarket access	45.29706147
Tree canopy	96.7406647
Housing	—
Homeownership	61.5167458
Housing habitability	27.51186963
Low-inc homeowner severe housing cost burden	39.89477736
Low-inc renter severe housing cost burden	1.026562299
Uncrowded housing	42.30719877
Health Outcomes	—
Insured adults	15.50109072
Arthritis	0.0
Asthma ER Admissions	24.7
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	8.4

Cognitively Disabled	11.9
Physically Disabled	6.2
Heart Attack ER Admissions	4.1
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	97.5
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	50.6
SLR Inundation Area	0.0
Children	24.2
Elderly	25.1
English Speaking	87.2
Foreign-born	10.8
Outdoor Workers	29.9
Climate Change Adaptive Capacity	—
Impervious Surface Cover	90.6
Traffic Density	12.5
Traffic Access	0.0
Other Indices	—
Hardship	62.7
Other Decision Support	—

2016 Voting	52.8

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	39.0
Healthy Places Index Score for Project Location (b)	34.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Parking lot SF calculated using adobe acrobat measuring tool.
Construction: Construction Phases	Construction less than one year, starting in June 2025.
Operations: Vehicle Data	See Traffic Study.
Operations: Water and Waste Water	See Project Description.

Appendix G

Arborist Assessment

5170 Golden Foothill Parkway
El Dorado Hills, CA 95762
O: 916-235-8224 | w: www.acorn-env.com

Technical Memorandum: Arborist Report (Tree Inventory) for City of Shasta Lake 7-Eleven Project

September 5, 2024

Introduction

An arborist survey / tree inventory was performed at the property at 1661 Cascade Blvd., Shasta Lake, on August 12, 2024, beginning at 10:00 a.m. The property consists of approximately 3.07 acres comprising four parcels, Assessor Parcel Numbers (APNs): 007-390-031, 007-390-036, 007-390-038, and 007-390-039. The purpose of this survey was to inventory all trees within the property, as required by the City of Shasta Lake Tree Ordinance, as part of the environmental review of a commercial development proposal. Tree inventories and arborist reports submitted to the City are used to evaluate project impacts and create Tree Removal and Replacement Plans. These survey results should not be construed as a technical analysis, such as for tree hazard assessment, plant appraisal, tree health diagnosis, or tree care prescription.

Regulatory Setting

The City of Shasta Lake Code of Ordinance's Chapter 12.36—Tree Conservation defines trees, protected trees, and heritage trees as follows:

> "Tree" means a perennial plant having a self-supporting woody main stem or trunk usually characterized by the ability to grow to considerable height and size and to develop woody branches at some distance above the ground. It is usually distinguished from a bush or shrub by its size, manner of growth, and usual botanical nomenclature. Perennial shrubs are not classified as trees in this chapter.
>
> "Protected tree" means:
>
> 1. Any living tree, except gray pine (*Pinus sabiniana*), having at least one trunk of ten inches or more DBH; or
> 2. A tree that is required to be preserved under discretionary project approval or under a tree removal permit granted by either the director or the planning commission; or
> 3. A "heritage" tree. Removal of a heritage tree shall require approval of a tree removal permit.

"Heritage trees" are trees which are unique because they are an outstanding specimen of a desirable species or are one of the largest or oldest trees in the city, or are of historical interest, or are of distinctive form and will add positively to the environment of the city. A heritage tree is any tree exceeding thirty-six (36) inches or larger DBH; or any native oak including but not limited to: Blue oak (Quercus douglasii), black oak (Quercus kelloggii), valley oak (Quercus lobata), interior live oak (Quercus wislizeni), and canyon live oak (Quercus chrysolepis)—twenty-four (24) inches or larger DBH; and any tree specifically designated as a heritage tree by action of the planning commission.

In addition, subsection 12.36.062 (Pre-development review for major projects) requires the mapping and consideration of 'stands' of trees:

A.(2): A tree delineation map shall be required for the pre-development review meeting with the development services director or his or her designee. This map shall show location and size of groups of similar trees (stands), and any landmark trees. The director may require information on existing grades when determined necessary based on the topography of the site.

Methods

The arborist survey / tree inventory was performed by a certified arborist, Dr. G.O. Graening, International Society of Arboriculture Certification Number WE-6725A. Biologist Kimberlina Gomez, M.S. assisted in the inventory. The inventoried area was the entire property except for the small area containing the Moody Creek channel, which was inaccessible due to both fencing and steep slopes leading down into the channel. Methods followed standards of the City of Shasta Lake Code of Ordinance's Chapter 12.36—Tree Conservation, the International Society of Arboriculture, and American National Standards Institute, Inc.

The survey assessed trees that met the jurisdictional criteria of the City of Shasta Lake Tree Conservation Ordinance (Code of Ordinance Chapter 12.36). Trees were tagged with aluminum tags.

For each tree that met the criteria of the City of Shasta Lake Tree Ordinance, the following was performed:

- It was given a sequential number and georeferenced with a sport-grade handheld GPS receiver;
- It was tagged with an aluminum tag of the same number with an aluminum nail at a height of 6 feet, facing south;
- It was identified to species;
- Diameter at breast height (DBH) was measured, which is 4.5 feet above soil grade using a girth tape (+/- 0.5 inch);
- General plant condition/health was assessed (categories of good, fair, poor, dying/dead);
- Comments were noted, such as if the tree was multi-stemmed

Results / Tree Inventory

Protected Trees

Twenty-two (22) trees were identified that met the definition of a "protected tree." These Protected Trees are shown in the Tree Delineation Map (see Exhibit) and listed in **Table 1** below. No trees met the size criteria of "Heritage Trees." All other trees within the inventory area had stems that were smaller than 10 inches in diameter; these small trees consisted primarily of interior live oak, blue oak, and valley oak.

Stands of Trees

Tree stands were also mapped according to the Ordinance (see Exhibit). A tree stand was defined as a group of at least two trees whose canopies touch; the stand was mapped by digitizing the outer edge (drip line) of the contiguous canopies.

Table 1: Inventory of Protected Trees

Tag #	Common Name	Scientific Name	DBH (inches)	Condition/Health; Comments
1*	Sweetgum	*Liquidambar styraciflua*	10.5	Good; may be offsite
2*	Sweetgum	*Liquidambar styraciflua*	12.0	Good; may be offsite
4	Siberian elm	*Ulmus pumila*	18.0	Good
5	Interior live oak	*Quercus wislizeni*	7.1, 9.7	Fair to poor; multi-stemmed severely trimmed for powerline clearance
6	Siberian elm	*Ulmus pumila*	12.9	Good
7	Blue oak	*Quercus douglasii*	9.7, 6, 5, 4, 2, 2, 2	Fair; multi-stemmed
8	Fremont cottonwood	*Populus fremontii*	9, 8, 7, 4, 14.0	Good; multi-stemmed
9	Valley oak	*Quercus lobata*	11.3, 12.0	Good; multi-stemmed
10	Interior live oak	*Quercus wislizeni*	14.1	Good
11	Interior live oak	*Quercus wislizeni*	15.1, 10.3	Good; multi-stemmed
12	Blue oak	*Quercus douglasii*	16.9	Good
13	Blue oak	*Quercus douglasii*	18.8	Good
14	Blue oak	*Quercus douglasii*	15.2	Good
15	Interior live oak	*Quercus wislizeni*	10.0, 13.0, 14.0, 10.0	Good; multi-stemmed
16	Interior live oak	*Quercus wislizeni*	22.5	Good
17	Interior live oak	*Quercus wislizeni*	18.5, 23.1	Good; multi-stemmed
18	Fremont cottonwood	*Populus fremontii*	19.5	Fair
19	Fremont cottonwood	*Populus fremontii*	10.3, 7.8	Good
20	Blue oak	*Quercus douglasii*	12.1	Fair
22	Fremont cottonwood	*Populus fremontii*	24.9	Fair – poor
23	Valley oak	*Quercus lobata*	12.5	Fair
25	Valley oak	*Quercus lobata*	11.9	Good

Notes:

*Trees #1 and 2 may be outside of the project area.

One interior live oak was inventoried (tag #3) that did not meet the diameter criterion of 10 inches and was removed from Table 1. Tree #3 had two stems, one 8.2 inches and one 9.2 inches.

Six gray pines were inadvertently inventoried, and later removed from Table 1 as they do not fall under the definition of “protected”. These tree tag numbers are: #21, 24, 26, 27, and 28

Prepared by:

G. O. Graening, PhD, MSE

Qualifications of Consulting Arborist

Dr. G. O. Graening is a consulting arborist continuously certified by the International Society of Arboriculture (Certification # WE-6725A) since 2003. Certification may be verified on the Internet at the ISA website (http://www.isa-arbor.com/certification/verifyCredential/index.aspx). Dr. Graening also holds a Ph.D. in Biology and a Master of Science degree in Biological and Agricultural Engineering. Dr. Graening has 13 years of experience in environmental assessment and research, including the performance of numerous arborist surveys, appraisals, and design of tree mitigation plans.

Exhibits

Tree Delineation Map

Tag #	Common Name	Scientific Name	DBH (inches)	Condition/Health; Comments
1*	Sweetgum	Liquidambar styraciflua	10.5	Good; may be offsite
2*	Sweetgum	Liquidambar styraciflua	12	Good; may be offsite
4	Siberian elm	Ulmus pumila	18	Good
5	Interior live oak	Quercus wislizeni	7.1, 9.7	Fair to poor; multi-stemmed severely trimmed for powerline clearance
6	Siberian elm	Ulmus pumila	12.9	Good
7	Blue oak	Quercus douglasii	9.7, 6, 5, 4, 2, 2, 2	Fair; multi-stemmed
8	Fremont cottonwood	Populus fremontii	9, 8, 7, 4, 14.0	Good; multi-stemmed
9	Valley oak	Quercus lobata	11.3, 12.0	Good; multi-stemmed
10	Interior live oak	Quercus wislizeni	14.1	Good
11	Interior live oak	Quercus wislizeni	15.1, 10.3	Good; multi-stemmed
12	Blue oak	Quercus douglasii	16.9	Good
13	Blue oak	Quercus douglasii	18.8	Good
14	Blue oak	Quercus douglasii	15.2	Good
15	Interior live oak	Quercus wislizeni	10.0, 13.0, 14.0, 10.0	Good; multi-stemmed
16	Interior live oak	Quercus wislizeni	22.5	Good
17	Interior live oak	Quercus wislizeni	18.5, 23.1	Good; multi-stemmed
18	Fremont cottonwood	Populus fremontii	19.5	Fair
19	Fremont cottonwood	Populus fremontii	10.3, 7.8	Good
20	Blue oak	Quercus douglasii	12.1	Fair
22	Fremont cottonwood	Populus fremontii	24.9	Fair – poor
23	Valley oak	Quercus lobata	12.5	Fair
25	Valley oak	Quercus lobata	11.9	Good

Airbus,USGS,NGA,NASA,CGIAR,NCEAS,NLS,OS,NMA,Geodatastyrelsen,GSA,GSI and the GIS User Community; Acorn Environmental, 9/5/2024

Tree Delineation Map

Appendix H

General Plan Consistency

General Plan Consistency Matrix

Below please find an assessment of the Proposed 7-Eleven Convenience Store development potential consistency with selected City of Shasta Lake General Plan policies that are most relevant to the project or project site. This is not a comprehensive list of all adopted General Plan policies.

GENERAL PLAN GOALS, POLICIES, & IMPLEMENTING ACTIONS	CONSISTENCY REVIEW
Land Use Element	
Policy LU-1.1: City should encourage the reuse of existing structures and developed properties as opposed to greenfield development, including through incentives or other programs, to promote infill development opportunities where feasible.	**Consistent.** The Proposed Project would redevelop vacant commercial land that was previously developed with a gas station and service station. The Project Site is surrounded by existing commercial development and is thus considered infill development.
Policy LU-1.3: Evaluate zoning proposals to prevent the overconcentration of land uses in any area of the City where land use intensities, commercial or industrial operations, or increased traffic would adversely impact the safety, health, and quality of life of residents.	**Consistent.** The Proposed Project is consistent with the C-2 commercial zoning designation for the Project Site and complies with the applicable density and intensity requirements for commercial land uses, including a floor area ratio (FAR) of 2.0. Impacts related to traffic (see Initial Study **Section 4.17**), noise (see **Section 4.13**), and air quality (see **Section 4.3**) were determined to be less than significant with the implementation of mitigation, and thus would not adversely impact the safety, health, and quality of life of residents within the city.
Policy LU-1.4: Adopt quality zoning development standards to ensure that the characteristics of major entrances to the community are not diminished by commercial uses or site development proposals that do not support high quality visitor-serving commercial development.	**Consistent.** The Proposed Project is located approximately 200 feet from Shasta Dam Boulevard, which is a major entrance to the City. The Proposed Project would be generally consistent with the commercial design guidelines established in the Shasta Lake Municipal Code Chapter 17.84 and 17.86. Further, the Proposed Project would provide essential refueling services and commercial amenities to travelers and residents.
Policy LU-1.8: As the community grows and faces development pressure along Interstate 5 and on its fringes, the City must be both deliberate and resolute in its commitment to preserve the character and economic vitality of downtown. The City shall encourage economic growth and continued improvement in the downtown area on already-developed areas and on underutilized parcels.	**Partially Consistent.** The Proposed Project is adjacent to Interstate 5 (I-5) but is not located within the downtown area of the City of Shasta Lake. However, it would redevelop a previously developed vacant commercial parcel with a gas station and convenience store, supporting economic growth by providing essential refueling services for residents within the City.
Implementation LU-1.5: Establish commercial design guidelines to govern new construction and major exterior alterations and additions in neighborhood and community shopping centers and in highway commercial areas.	**Consistent.** The Proposed Project would be generally consistent with the commercial design guidelines established in the Shasta Lake Municipal Code Chapter 17.84 and 17.86.
Policy LU-2.6: Provide opportunities to meet the need for commercial services and commercial recreation for the City's residents and businesses.	**Consistent.** The Proposed Project is a commercial development that includes a gas station and convenience store. As such, the Proposed Project would provide essential refueling services and

GENERAL PLAN GOALS, POLICIES, & IMPLEMENTING ACTIONS	CONSISTENCY REVIEW
	commercial amenities to meet the needs of the City's residents and businesses.
Goal LU-3: Ensure new development is high-quality, well-integrated, and compatible with existing and surrounding uses, natural features, and environmentally sensitive areas, and allows for a flexible relationship between all land uses to promote creative and beneficial development.	**Consistent:** The Proposed Project is consistent with the commercial zoning designation for the Project Site and would generally comply with the commercial design guidelines set forth in Shasta Lake Municipal Code Chapters 17.84 and 17.86. The Project incorporates open space for tree retention and stormwater management, including landscaping along the northern boundary adjacent to the Moody Creek riparian area that would protect the creek from any development impacts. Perimeter landscaping is also proposed to provide visual interest and enhance integration with surrounding uses.
Policy LU-3.3: Development on slopes in excess of 20 percent should generally be avoided. Development of highly sloped areas over 20 percent may be considered with additional design requirements.	**Consistent.** The Project Site is relatively flat and limited grading would be required to accommodate the Proposed Project. Grading that would occur on-site would work with the natural grade fluctuations on the Project Site where feasible and avoid adding fill into the 100-year floodplain of Moody Creek.
Policy LU-3.5: New development should be consistent with the densities and intensity established in this element to ensure orderly development of the community.	**Consistent.** The Proposed Project is consistent with the City of Shasta Lake General Plan commercial land use FAR of 2.0.
Policy LU-3.10: Work to protect important natural resource areas and the scenic beauty of mountains and rolling hills around the City as the community develops. For new development located along existing creeks and streams, incorporate bank naturalizing approaches for channeled sections as a means of creek and stream restoration where appropriate.	**Consistent.** The Proposed Project includes stormwater management features designed to mimic natural hydrologic processes by capturing, treating, and dispersing runoff into Moody Creek through natural sheetflow and structures that allow for unimpeded flow beneath developed areas. Trees are proposed to be planted along the Moody Creek riparian corridor, and no riparian trees are proposed for removal.
Policy LU-3.11: Require that new buildings and the reconstruction of existing buildings comply with the most current California Green Buildings Standards Code and amendments.	**Consistent.** The Proposed Project would be required to comply with the most recent provisions of the California Building Standards Code (CBSC), including the Green Building Standards Code (CALGreen, CCR Title 24, Part 11).
Policy LU-3.15: Encourage sustainable, resilient development that conserves water and energy resources and incorporates best practices for avoiding and minimizing damage from flood, earthquake, wildfire, and other hazards. Explore incentives and other methods for addressing conservation and resiliency in existing development.	**Partially Consistent**. The Proposed Project would comply with the latest provisions of the CBSC, including the Energy Code (CCR Title 24, Part 6) and current California Fire Code regulations. All on-site structures would be designed and constructed in accordance with the CBC, including applicable earthquake safety standards, as required by State law and City ordinances. A portion of the convenience store would be constructed within the 100-year floodplain; however, the Proposed Project as a whole would be designed with a net reduction in the amount of fill within the floodplain.

GENERAL PLAN GOALS, POLICIES, & IMPLEMENTING ACTIONS	CONSISTENCY REVIEW
Implementation LU-3.5: Evaluate the zoning ordinance for possible updates to the Habitat Protection and Open Space districts to ensure development is consistent with natural resource protection goals in the General Plan.	**Consistent.** The Project Site is zoned commercial (C-2) by the City of Shasta Lake Interim Zoning Ordinance and is not located within a Habitat Protection or Open Space district. However, the site is within a Natural Resource Overlay Zone due to its location within the 100-year flood hazard zone and thus would be required to comply with the City of Shasta Lake Municipal Code Chapter 15.04, which contains provisions designed to reduce flood loss and to protect loss of property and life.
Circulation Element	
Policy CIR-1.3: Encourage practical parking solutions to serve community needs while avoiding excessive amounts of surface parking that disrupt the urban fabric of the city. Explore alternatives that reduce parking footprints, including decreasing or removing parking minimums, adding more public parking, and expansion or modification of on-street parking.	**Consistent.** The Proposed Project includes a combination of parking for passenger vehicles, diesel trucks, and bicycles. The design features clear circulation and access points with separate driveways for passenger vehicles and diesel trucks. Additionally, the site plan incorporates open space for tree retention and stormwater drainage, which helps break up the pavement and reduce the overall parking footprint.
Policy CIR-1.12: Protect natural features, to the degree feasible, when maintaining and expanding the City's circulation system.	**Consistent.** The Proposed Project's circulation plan incorporates a roundabout in the diesel fueling area to retain native trees and facilitate stormwater infiltration within a planned open space area. Specifically, stormwater will sheetflow through the open area, passing through large box culverts or a buttress/slab 'bridge' to allow for unimpeded flow beneath developed areas north towards Moody Creek, protecting the natural hydrologic processes of the site.
Policy CIR-3.1: Coordinate transportation planning and implementation with regional and local plans.	**Consistent.** The Proposed Project would be required to comply with all project-level requirements implemented by a program, plan, ordinance, or policy addressing the circulation system, including the GoShasta Regional Active Transportation Plan. Further, the Proposed Project is required to submit improvement plans, including roadway improvements, for review and approval by the City Engineer to ensure improvements will be consistent with City standards.
Policy CIR-4.2: Development shall mitigate any adverse impacts of a proposed development project on the existing street system.	**Consistent.** The Proposed Project would have a less-than-significant impact on roadways and would be required to submit roadway improvement plans for review and approval by the City Engineer to ensure consistency with City standards (see **Section 4.17**). Further, the Proposed Project would be required to pay transportation system impact fees consistent with Section 13.08.070 of the City of Shasta Lake Municipal Code to support the construction and maintenance of the City's transportation system and public facilities.
Implementation CIR-4.4: The City will require development projects to construct all needed on- and off-site street improvements at the time of property	**Consistent.** The Proposed Project does not require off-site street improvements. Water supply, sewer lines, and electric facilities exist on the Project Site or in the

GENERAL PLAN GOALS, POLICIES, & IMPLEMENTING ACTIONS	CONSISTENCY REVIEW
development. When completion of improvements is determined infeasible, improvements may be deferred upon establishment of a Deferred Improvement Plan or other mechanism which identifies the improvements and costs, funding sources, and the responsible party. The City will also assess impact fees on new development that are sufficient to cover the fair share costs of mitigating growth impacts on the city-wide transportation system. Exceptions may be granted when new development generates significant public benefits (e.g., low-income housing and primary-wage earner employment), and alternative sources of funding for the improvements can be obtained to offset any foregone revenues.	adjacent roadway of Cascade Boulevard. Additionally, the Proposed Project would be subject to all development impact and service fees specified in Chapter 13.08 of the City of Shasta Lake Municipal Code. Specifically, consistent with Section 13.08.070, the Proposed Project would pay transportation system impact fees to support the construction and maintenance of the City's transportation system and public facilities.
Conservation Element	
Policy CON-1.3: Maintain and improve current conveyance capacity for both natural and constructed drainages.	**Consistent.** The Proposed Project includes two detention basins with a total storage capacity of approximately 44,191 cubic feet, which exceeds the required 3,199 cubic feet needed to capture runoff from a 100-year storm event.
Policy CON-1.4: Minimize the alteration of creek courses and bottoms.	**Consistent.** Moody Creek is adjacent to the boundaries of the Project Site but would not be impacted by the Proposed Project.
Policy CON-1.5: Integrate stormwater management techniques and low impact development best practices to minimize runoff. Encourage water conservation efforts by residents, businesses, and industry.	**Consistent.** The Proposed Project includes two detention basins to capture, treat, and disperse stormwater runoff from the Project Site. Additionally, stormwater is directed through vegetated open space areas and designed sheetflow routes that promote infiltration and filtration prior to entering the creek system. Landscaping with native trees and shrubs along the detention pond edges further enhances stormwater filtration and supports water conservation efforts through the use of drought-tolerant species.
Goal CON-3: Conserve and manage significant fish, wildlife, and vegetation resources, enhance the area's natural beauty, and provide residents with a healthy environment.	**Consistent.** This goal is more specifically reviewed in the discussion of the policies below.
Policy CON-3.3: Use riparian and wetland buffers (non-development setbacks) to preserve existing riparian vegetation through the environmental review process and require minimum setbacks. Specific setbacks and widths should be determined on a case-by-case basis with input from resource agencies, including the California Department of Fish and Wildlife.	**Consistent**. Moody Creek flows along, but outside of, the northern and eastern boundaries of the Project Site, and there is a thin band of riparian habitat along the creek. CDFW recommended a 10-foot setback from riparian vegetation, to be protective of direct and indirect impacts. With implementation of mitigation, this setback will be maintained.
Policy CON-3.4: Continue protecting and managing urban forests in the City to enhance beautification and conservation efforts to the greatest extent possible, in particular by: Maintaining existing City trees with regular scheduled service; Planting new trees to replace ones that were removed and extending tree	**Consistent.** Landscaping is proposed throughout the Project Site, including along the outer edges of the proposed pavement and in small islands within the parking areas. An open area in the central portion of the Project Site would remain unpaved for the retention of native trees protected by the City of Shasta

GENERAL PLAN GOALS, POLICIES, & IMPLEMENTING ACTIONS	CONSISTENCY REVIEW
canopies where possible; Requiring tree plantings in new developments on streets and in parking areas; Working with commercial parking lot owners to enhance tree canopies; Using volunteer groups and property owners to enhance tree canopies.	Lake Tree Conservation Ordinance (Code of Ordinance Chapter 12.36) and would be enhanced with additional shrubs. See **Appendix A** for the landscaping plan.
Implementation CON-3.2: Establish standards that provide public access in the floodplain and in stream buffer areas while preserving these sensitive habitats.	**Consistent.** The Project Site is designed for public access while also adhering to the City's regulations for retaining native trees protected by the City of Shasta Lake Tree Conservation Ordinance (Code of Ordinance Chapter 12.36) and preserving the sensitive Moody Creek riparian area.
Policy CON-4.1: Explore alternatives to stormwater collection methods, including the use of detention or retention basins to implement the "no net runoff" concept.	**Consistent**. The Proposed Project includes two detention basins to capture, treat, and disperse stormwater runoff from the development area before discharging into Moody Creek. These basins are sized to accommodate a 100-year storm event and meet Post Construction Standard Plan (MS4) requirements.
Policy CON-4.2: Recognize that conservation goals and development practices may, on occasion, conflict and will need to be resolved according to policies specified in the General Plan.	**Consistent.** The Proposed Project site plan has undergone revisions to balance development with conservation goals.
Policy CON-4.4: Protect resources such as wetlands, hillsides, and native trees and plants by encouraging sustainable development practices, mitigating impacts to such areas through environmentally sensitive project siting and design, and promoting prudent fuel and vegetation management by property owners to reduce the risk of significant wildfire events.	**Consistent.** The Proposed Project includes an open area in the central portion of the site that would remain unpaved to allow for the retention of native trees protected under the City of Shasta Lake Tree Conservation Ordinance (Municipal Code Chapter 12.36). Mitigation Measure BIO-3 requires preparation of a Tree Removal and Replacement Plan to identify trees for removal and preservation and to ensure replacement trees or other mitigation are provided in accordance with Section 12.36.070 of the Municipal Code. The Project Site does not contain hillsides or wetlands. Moody Creek is located adjacent to the northern and eastern boundaries of the site; however, no other water resources are present within the Project Site itself. In addition, Mitigation Measure HAZ-1 requires the implementation of measures to reduce wildfire risk during construction.
Implementation CON-4.6: Define transition zones between development areas and open space or conservation areas to provide for further conservation of habitat and wildlife areas.	**Consistent.** As described in **Section 2.2.2**, a red curb with white "no parking fire lane" markings will demarcate the northern boundary of the Project Site, preventing vehicular encroachment into Moody Creek. With mitigation, a minimum 10-foot setback will be maintained from Moody Creek riparian vegetation in accordance with CDFW recommendations. This setback will provide a 'transition zone' between the pavement and the habitat.
Implementation CON-4.8: Locate new development on sites that minimize the need for grading and removal of native plants. Ensure no significant change in the	**Consistent.** The Project Site is relatively flat and would require limited grading to accommodate the Proposed Project. Grading that would occur would work within

GENERAL PLAN GOALS, POLICIES, & IMPLEMENTING ACTIONS	CONSISTENCY REVIEW
general configuration of topography occurs where grading and earthwork are necessary.	the natural grade fluctuations on the Project Site where feasible and avoid adding fill into the 100-year floodplain.
Open Space Element	
Policy OS-1.1: Seek to protect riparian habitat along significant creek corridors. The following measures are identified to provide the riparian habitat protection: Regulation of vegetation removal; Design of grading and road construction; Establishment of a development setback; Siting of structures, including clustering.	**Consistent.** The Proposed Project includes setbacks from the Moody Creek channel and its riparian habitat, and therefore, no direct impacts to riparian habitat or other sensitive natural communities are expected. Grading that would occur on-site would work within the natural grade fluctuations on the Project Site where feasible and avoid adding fill into the 100-year floodplain.
Goal OS-2: Establish, improve, and maintain sufficient facilities and natural and man-made greenbelt areas along existing creeks, floodplains, natural open space areas, certain roadways, and bicycle and pedestrian trail systems.	**Consistent.** The Proposed Project's landscaping plan includes the planting of five native trees along the northern boundary of the site adjacent to the Moody Creek riparian area. These plantings would enhance the natural greenbelt along the creek corridor. See **Appendix A**.
Goal OS-3: Ensure that open space planning and development practices are consistent with hazard and flood mitigation efforts.	**Partially Consistent**. The Proposed Project incorporates open space planning and includes detention basins to support hazard and flood mitigation efforts. The two detention basins are proposed to manage stormwater runoff and reduce flood risk, consistent with low impact development practices identified by the City's General Plan and Hazard Mitigation Plan. A portion of the convenience store would be constructed within the 100-year floodplain; however, the Proposed Project as a whole would be designed with a net reduction in the amount of fill within the floodplain.
Implementation OS-3.1: Implement the Hazard Mitigation Plan as it pertains to development and open space ratios integrated into land use districts. Require a minimum of 100-year flood protection for new construction projects.	**Partially Consistent**. The Proposed Project includes two detention basins that are sized to accommodate greater than the 100-year storm flow volume. The total storage capacity is approximately 44,191 cubic feet, which exceeds the required 3,199 cubic feet needed to capture runoff from a 100-year storm event. A portion of the convenience store would be constructed within the 100-year floodplain; however, the Proposed Project as a whole would be designed with a net reduction in the amount of fill within the floodplain.
Public Safety and Emergency Response Element	
Policy HS-4.1: Protect public health and safety from flooding through floodplain management which regulates the types of land uses which may locate in the floodplain, prescribes construction designs for floodplain development, and requires mitigation measures for development which would impact the floodplain by increasing runoff quantities.	**Consistent.** The Proposed Project is consistent with the commercial land use and zoning designation for the Project Site. Although the Project Site is located partially within a 100-year floodplain, it would not add any fill into the floodplain. Further, Mitigation Measure HYD-1 would be implemented to reduce impacts to water quality from runoff. See **Section 4.10**.

GENERAL PLAN GOALS, POLICIES, & IMPLEMENTING ACTIONS	CONSISTENCY REVIEW
Policy HS-4.2: Regulate new development in floodplains through zoning regulations addressing land use type, density, and siting of structures.	**Partially Consistent.** The Proposed Project is consistent with the C-2 commercial zoning designation for the Project Site and complies with the applicable density and intensity requirements for commercial land uses, including a FAR of 2.0. Although the Project Site is located partially within a 100-year floodplain, it would not add any fill into the floodplain.
Policy HS-4.3: Support project level flood control measures that also further the goals of recreation, resource conservation (including streamside vegetation and habitat modification when necessary), and the preservation of the scenic values of water resources.	**Consistent.** The Proposed Project does not add any fill into the 100-year floodplain and includes two detention basins with a total storage capacity of approximately 44,191 cubic feet, which exceeds the required 3,199 cubic feet needed to capture runoff from a 100-year storm event. Further, native trees are proposed along the northern boundary of the Project Site adjacent to the Moody Creek riparian area to preserve the scenic value of the area.
Policy HS-4.4: Design or approve flood control measures which avoid, to the extent feasible, the alteration of creeks, wetlands, and riparian buffer areas.	**Consistent.** The Proposed Project would have no impact on Moody Creek or its riparian vegetation.
Implementation HS-4.1: As part of project review, ensure that structures subject to the 100-year flood provide adequate protection from flood hazards.	**Consistent.** The proposed convenience store is located partially within the 100-year floodplain and the base floor elevation would be at or above the flood elevation. The largest proposed detention basin is sited between Moody Creek and the convenience store building which could provide a partial impoundment of floodwaters.
Policy HS-4.10: Require mitigation for impacts of new development on the floodplain or other downstream areas due to increased runoff, potentially through low impact design best practices.	**Consistent.** The Proposed Project does not add any fill into the 100-year floodplain and includes two detention basins with a total storage capacity of approximately 44,191 cubic feet, which exceeds the required 3,199 cubic feet needed to capture runoff from a 100-year storm event. These basins will also improve water quality though the capture, treatment, and dispersion runoff from the development area. Further, Mitigation Measure HYD-1 would be implemented to reduce impacts to water quality from runoff. See **Section 4.10**.
Goal HS-5: Minimize the risk to life and property from climate change.	**Consistent.** This goal is more specifically reviewed in the discussion of the policies below.
Implementation HS-5.1: When reviewing new development, consider impacts that may be exacerbated by climate change projections, and identify potential mitigations for consideration by the project proponents and the approving authority.	**Consistent.** The Initial Study prepared for the Proposed Project includes a comprehensive evaluation of potential impacts that could be exacerbated by climate change, including flooding (**Section 4.10**), wildfire (**Section 4.20**), and greenhouse gas (GHG) emissions (**Section 4.8**). In addition, Mitigation Measure GHG-1 has been incorporated to directly address and reduce the Project's contribution to climate change impacts.
Implementation HS-5.4: Identify important green infrastructure in the city that may be used in climate	**Partially Consistent.** The Proposed Project is not a climate adaptation project; however, it is located

GENERAL PLAN GOALS, POLICIES, & IMPLEMENTING ACTIONS	CONSISTENCY REVIEW
adaptation projects. Where feasible, use existing natural features and ecosystem processes, or the restoration of natural features and ecosystem processes, when developing climate mitigation and adaptation projects (e.g., floodplain and wetlands restoration or preservation, combining levees with restored natural systems to reduce flood risk, and urban tree planting to mitigate high heat days).	within the 100-year floodplain of Moody Creek. The Proposed Project has been designed to avoid placing fill within the floodplain and as such, would not impede natural floodplain processes. As discussed in **Section 4.10**, the base flood elevations under existing and proposed conditions are nearly identical, with slight decreases in water surface elevation following project development and no increases in any modeled river cross-sections. As such, the Proposed Project would maintain existing floodplain functions and avoid actions that would increase flood risk.

Appendix I

Traffic Impact Study

Technical Memorandum

June 02, 2024

To	Robert C. Vermeltfoort	**Contact No.**	+1 916 918 0622
Copy to	Russ Wenham, GHD	**Email**	Kamesh.vedula@ghd.com
From	Kamesh Vedula	**Project No.**	12642532
Project Name	7 - Eleven in Shasta Lake		
Subject	Shasta Lake 7-Eleven on Cascade Boulevard Traffic Impact Study (TIS)		

1. Introduction

GHD was contracted to complete a Traffic Impact Study for the development of a 7-Eleven on Cascade Boulevard in Shasta Lake. This study analyzed the Existing (2024), Cumulative (2045), Existing Plus Project, and Cumulative Plus Project conditions and operations of the following intersections. Figure 2 depicts these two intersections are located in relation to the project site driveways.

1. Cascade Boulevard & Shasta Dam Boulevard (Route 151)
2. Cascade Boulevard & Wonderland Boulevard [future intersection – Stop Controlled on Minor Streets *Wonderland Boulevard and Northern Project Driveway]. The road improvements currently under design include Complete Streets enhancements along Cascade Boulevard, Shasta Dam Boulevard (Route 151), Shasta Way, and Grand Avenueand adjacent to Grand Oaks Elementary School (GOES). Additionally, a short section of Wonderland Boulevard would be constructed from Cascade Boulevard to Grand Avenue.

This memorandum analyzes the Level of Service (LOS) and queuing operations for each of these scenarios.

2. Project Background

The applicant has proposed a 7-Eleven Development Project (the project) at 1661 Cascade Boulevard in the City of Shasta Lake. This development would include the construction of a 4,650 square foot convenience store with 12 fueling stations – eight for passenger cars and four for heavy trucks.

Based on a review of the project site plan, the site is expected to be served by three project driveways – one approximately 275’ north of the Cascade Blvd and Shasta Dam Blvd intersection for entering and exiting passenger cars, one inbound only driveway approximately 90’ north of that for heavy trucks, and one outbound only driveway approximately 110’ north of the inbound driveway that acts as a leg of the Cascade Blvd and Wonderland Blvd intersection. The proposed site plan can be found in Attachment 1.

3. Existing Conditions

Cascade Blvd is a two-lane undivided roadway with a double yellow centerline and edgelines and is classified as a collector. There is no posted speed limit for the studied segment of Cascade Blvd. At the study intersection of Cascade Blvd and Shasta Dam Blvd, the following turning movements have limited queuing lengths based on the present geometry:

– Eastbound left – 180-foot available storage length; determined by 55-foot striped turn pocket plus approximately 125 feet of shared two-way left turn lane median with the Shasta Dam Blvd/Shasta St intersection.
– Westbound left – 170-foot available storage length.
– Northbound left – 120-foot available storage length; determined by 50-foot striped turn pocket plus approximately 70 feet of shared two-way left turn lane median with adjacent driveways.
– Northbound right – 100-foot available storage length.
– Southbound left – 150-foot available storage length. Determined by 55-foot striped turn pocket plus approximately 95 feet of unstriped taper.
– Southbound right – 110-foot available storage length.

3.1 Multimodal Facilities

The existing roadway and study intersection were evaluated to capture any multimodal facilities for bicycles, pedestrians, and transit. On Cascade Blvd, there are no marked bike lanes, but bike route signs are posted along the roadway to indicate that bicycles may share the road with vehicles. There are small sections of sidewalk on Cascade Blvd that span from Shasta Dam Blvd to approximately 325 feet north of the intersection. There are no existing bus stops near the proposed project location, but there is a bus stop south of the Cascade Blvd and Shasta Dam Blvd intersection adjacent to the Rite Aid.

At the intersection of Cascade Blvd and Shasta Dam Blvd, there are pedestrian crossings on the north, south, and west legs with 3-second leading pedestrian intervals. There are connecting sidewalks on these legs that lead westward into Shasta Lake. The sidewalk facilities end on the east leg as this leg leads only to the I-5 ramps.

Future projects within this area (as noted previously in the introduction section 1.0) are expected to add sidewalks along the entire west side of Cascade Blvd as well as Class II bike lanes with striped buffers between Shasta Dam Blvd and the proposed Wonderland Blvd.

3.2 Data Collection

Weekday peak period traffic volume counts at the Cascade Boulevard & Shasta Dam Boulevard (Route 151) intersection were collected under clear weather on Tuesday, February 6, 2024. Majority of the project trips are accessed via this intersection and based on the input from the City staff, this intersection was chosen for analyzing project impacts. Counts were collected from 6:30 to 9:00 AM and 2:30 to 6:00 PM. The AM Peak Hour was found to be from 7:30 AM to 8:30 AM and the PM Peak Hour was found to be from 3:30 PM to 4:30 PM. These peak hour volumes are presented in Figure 1. The traffic counts are included as Attachment 2. The existing signal timing at the Cascade Blvd and Shasta Dam Blvd intersection was provided by Caltrans and used for Existing and Existing Plus Project scenarios. This can also be found in Attachment 2.

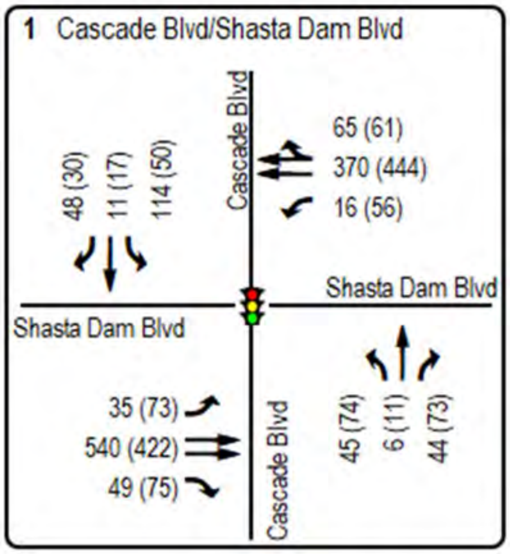


Figure 1 Existing (2024) Volumes

3.3 Intersection LOS and Queues

Existing weekday AM and PM peak hour intersection delay, LOS, and 95th percentile queues were calculated using the existing traffic volumes and existing intersection lane geometrics and controls. The Synchro reports are included as Attachment 3. Table 1 presents intersection operations for Existing conditions.

Table 1: Existing Conditions Intersection Operations

			Target		Weekday AM Peak Hour				Weekday PM Peak Hour			
#	Intersection	Control Type	Delay	LOS	Delay	LOS	95th Percentile Queue (ft)	Available Storage	Delay	LOS	95th Percentile Queue (ft)	Available Storage
1	Cascade Blvd & Shasta Dam Blvd (Rte	Signal	35	C	17.7	B	-	-	21.2	C	-	-
	EB Left						58	180			108	180
	WB Left						34	170			89	170
	NB Left						70	120			110	120
	NB Right						0	100			0	100
	SB Left						139	150			82	150
	SB Right						0	110			0	110

As shown, the intersection currently operates within the target LOS. In the existing conditions, none of the queues currently exceed their available storage. The City has established LOS C as the minimum standard for intersections and roadways within the City of Shasta Lake. LOS D, E, or F operations are considered deficient for intersections/roadways within the City's jurisdiction (*Shasta Lake GP EIR*).

4. Project and Cumulative Volumes

4.1 Trip Generation and Distribution

Trip generation was completed using the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*. As the proposed project site is separated into passenger vehicle fueling stations and truck fueling stations, land use codes 945 – Convenience Store/Gas Station and 950 – Truck Stop were used to develop the overall number of project trips. The peak hour trips and rates were calculated using the peak hour of the generator.

As gas stations and convenience stores typically do not generate a high number of new trips to their location, a 50% Pass-By Trip rate was used. This rate assumes that 50% of the trips visiting the project site are trips that are already traveling through this area and add the gas station/convenience store as a stop before reaching their final destination. Table 2 below shows the number of project trips generated.

Table 2: Trip Generation

Land Use Category (ITE Code)	Unit[1]	Daily Trip Rate/Unit[2]	AM Peak Hour Trip Rate/Unit			PM Peak Hour Trip Rate/Unit		
			Total	In %	Out %	Total	In %	Out %
945 - Convenience Store/Gas Station	KSF	442.37	46.45	50%	50%	41.08	50%	50%
950 - Truck Stop	VFP	224.00	14.75	51%	49%	15.25	50%	50%
Project Name	**Quantity (Units)**	**Daily Trips**	**AM Peak Hour Trips**			**PM Peak Hour Trips**		
			Total	**In**	**Out**	**Total**	**In**	**Out**
7-11 on Cascade Blvd	4.65	2,057	216	108	108	191	96	96
	4	896	59	30	29	61	31	31
Pass By Trips %	*50%*	*-1,477*	*-138*	*-69*	*-68*	*-126*	*-63*	*-63*
Net New Project Trips		**1,477**	**138**	**69**	**68**	**126**	**63**	**63**

Notes:
1. 1 ksf = 1,000 square feet   VPF = Vehicle Fueling Postions
2. Trip rates based on ITE Trip Generation Manual 11th edition average rates

Trip Distribution was completed based on the SRTA travel demand model and previously completed traffic studies around this location. Figure 2 shows the trip distribution percentages for the surrounding roadways as well as the estimated percentage of trips using the southern passenger vehicle only driveway versus the northern truck driveways. Additionally, as the pass-by trips are expected to all generate from I-5 and SR 151, volumes have been redistributed through the Cascade Blvd and Shasta Dam Blvd intersection as distributed link trips.

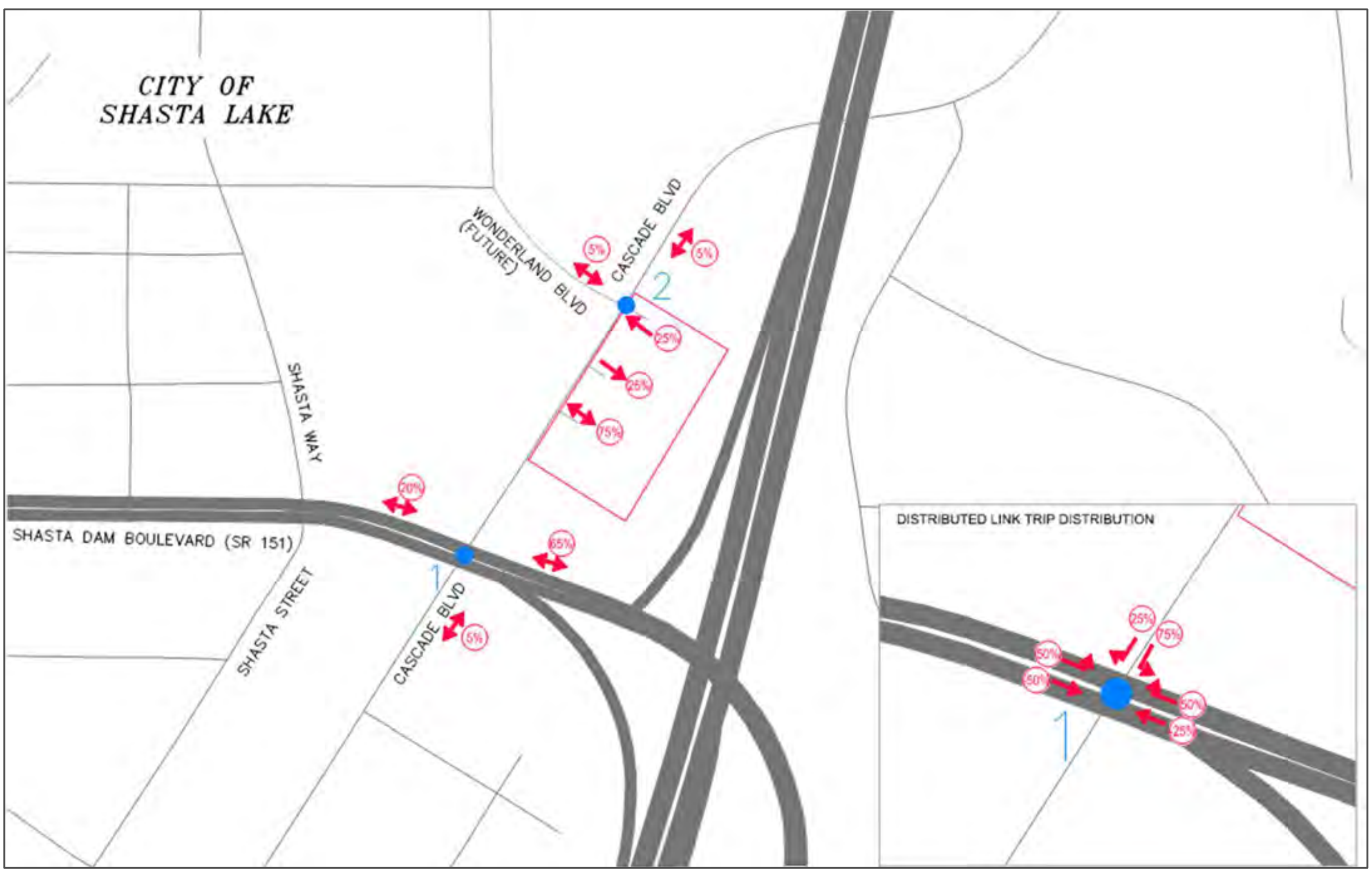


Figure 2 ***Trip Distribution***

Using the volumes from the trip generation and the percentages from the trip distribution, the following project trips were determined.

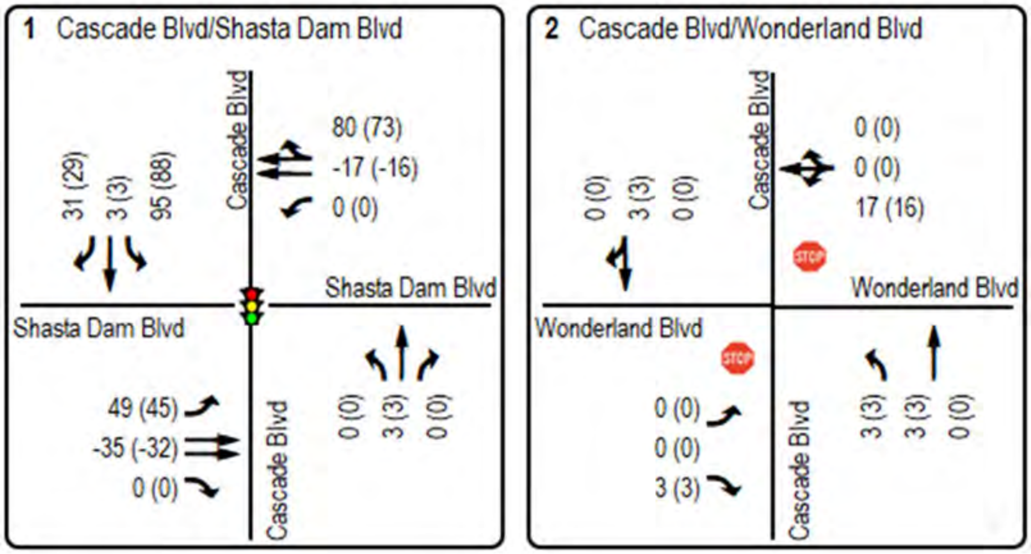


Figure 3 *Project Trips*

4.2 Existing (2024) Plus Project Volumes

At the present time, the intersection of Wonderland Blvd and Cascade Blvd does not exist. Therefore, only the volumes for the Cascade Blvd and Shasta Dam Blvd intersection were developed. These are shown in Figure 4 below.

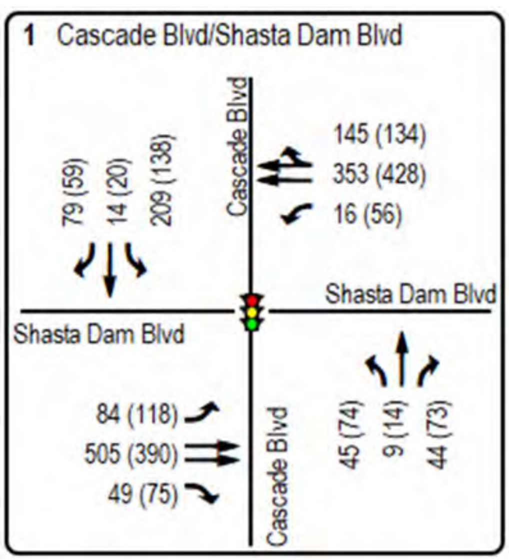


Figure 4 *Existing (2024) Conditions Plus Project Volumes*

4.3 Cumulative (2045) Volumes

The Cumulative (2045) volumes were developed using previously approved 2040 cumulative volumes – as calculated in the Shasta Lake City Commercial Center TIAM completed in April 2020 – and growing these volumes to 2045 per the SRTA travel demand model. An annual growth rate of 0.42% was used to calculate the volumes shown in Figure 5 below.

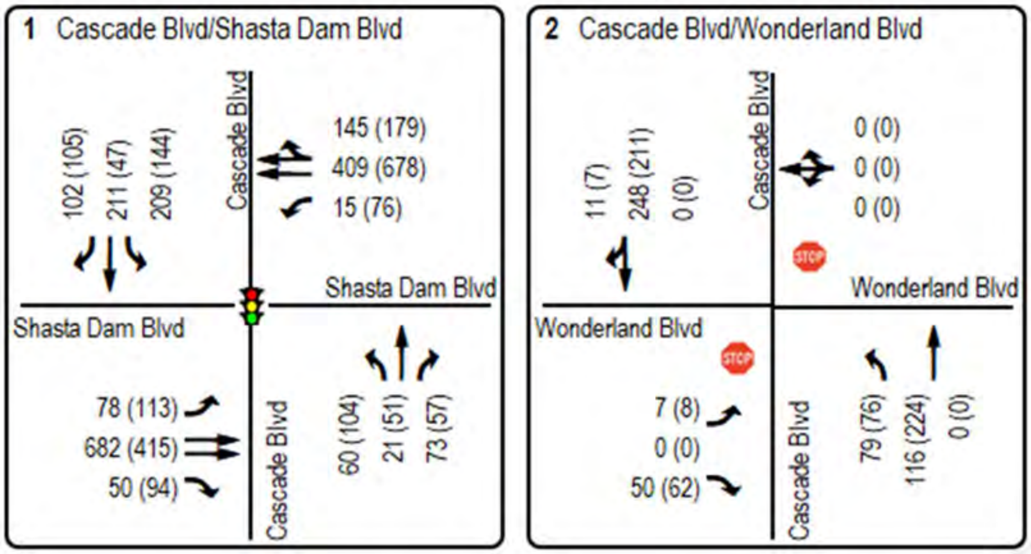


Figure 5 *Cumulative (2045) Volumes*

The Cumulative Plus Project volumes were determined using the calculated 2045 volumes plus the calculated project trips. These volumes are shown in Figure 6.

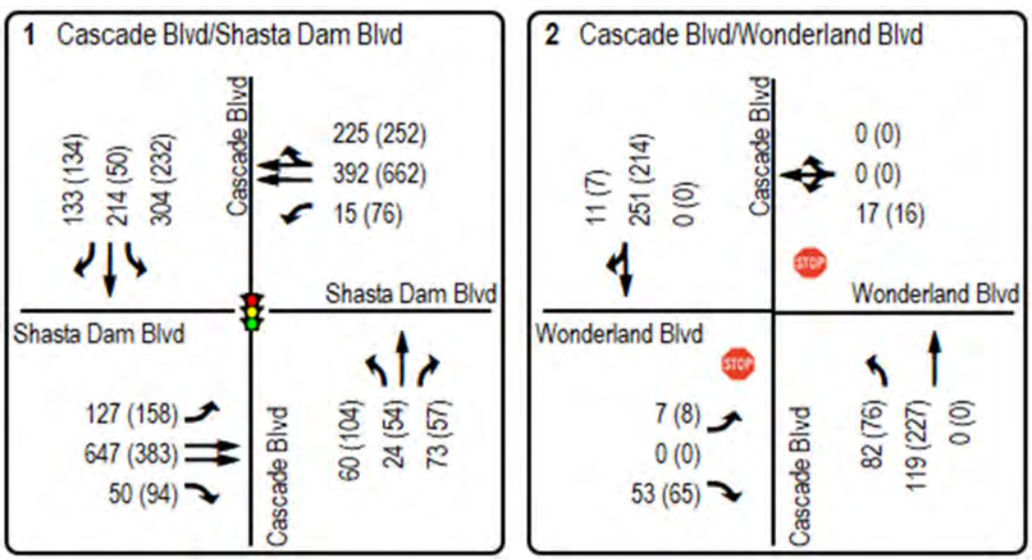


Figure 6 *Cumulative (2045) Conditions Plus Project Volumes*

5. Cumulative Conditions

The Cumulative Conditions assume the following changes to the existing roadway geometry due to other project development in the surrounding area.

– The increase of the southbound left turn pocket length at Cascade Blvd and Shasta Dam Blvd from 50’ to 180’.

– The addition of a two-way left turn lane median along Cascade Blvd between Shasta Dam Blvd and Wonderland Blvd.

These striping changes increase the available storage length of the southbound left turn lane to approximately 400 feet as the queuing vehicles can use the two-way left turn lane as shared queuing space with the

Wonderland Blvd intersection. 400 feet was determined to be the maximum length for storage as to not overlap with the Wonderland Blvd northbound left turn pocket and taper.

Additionally, as Caltrans typically reevaluates signal timing on a regular basis, the Cumulative Conditions scenarios were analyzed using optimized signal timing. The cycle length was optimized to 110 seconds for both the AM and PM Peak Hours.

5.1 Cumulative (2045) No Project Conditions

Cumulative (2045) No Project Conditions weekday AM and PM peak hour intersection delay, LOS, and 95th percentile queues were calculated using the cumulative traffic volumes and intersection lane geometrics and controls. The Synchro reports are included as Attachment 3. Table 3 presents intersection operations for the Cascade Blvd & Shasta Dam Blvd and the Cascade Blvd and Wonderland Blvd intersections. The Cascade Blvd and Wonderland Blvd intersection will be built by 2045 and therefore has predicted volumes per the SRTA travel demand model and Shasta Lake General Plan.

Table 3: No Build 2045 Conditions Intersection Operations

#	Intersection	Control Type	Target		Weekday AM Peak Hour				Weekday PM Peak Hour			
			Delay	LOS	Delay	LOS	95th Percentile Queue (ft)	Available Storage	Delay	LOS	95th Percentile Queue (ft)	Available Storage
1	Cascade Blvd & Shasta Dam Blvd (Rte 151)	Signal	35	C	23.4	C	-	-	28.4	C	-	-
	EB Left						109	180			170	180
	WB Left						33	170			107	170
	NB Left						89	120			164	120
	NB Right						0	100			0	100
	SB Left						228	400			172	400
	SB Right						36	110			38	110
2	Cascade Blvd & Wonderland Blvd	TWSC	25	C	10.5	B	-	-	10.3	B	-	-
	EB Left						5	50			8	50
	NB Left						5	50			5	50

Notes:
1. TWSC = Two Way Stop Control
2. LOS = Delay based on worst movement for TWSC intersections, average of all approaches for Signal

As shown, the delays at Cascade Blvd and Shasta Dam Blvd do increase by 5.7 seconds in the AM peak and 7.2 seconds in the PM peak between the Existing Year and Cumulative Year but remain within the target LOS conditions. The proposed Cascade Blvd and Wonderland Blvd will operate at a LOS B in both the AM and PM Peak hours.

The following queues at Cascade Blvd and Shasta Dam Blvd currently exceed their available storage:

– Northbound Left: The PM peak hour queue exceeds the available storage by one to two vehicle lengths.

None of the queues exceed the available storage length at the Cascade Blvd and Wonderland Blvd intersection.

6. Build Conditions

6.1 Existing (2024) Plus Project

Existing (2024) Plus Project Conditions weekday AM and PM peak hour intersection delay, LOS, and 95th percentile queues were calculated using the existing plus project traffic volumes and proposed intersection lane geometrics and controls. The Synchro reports are included as Attachment 3. Table 4 presents intersection operations for the Existing (2024) Plus Project conditions at Cascade Blvd and Shasta Dam Blvd only. As previously mentioned, the intersection of Cascade Blvd and Wonderland Blvd does not presently exist and therefore, does not have existing movements to analyze.

Table 4: Existing (2024) Plus Project Conditions Intersection Operations

#	Intersection	Control Type	Target		Weekday AM Peak Hour				Weekday PM Peak Hour			
			Delay	LOS	Delay	LOS	95th Percentile Queue (ft)	Available Storage	Delay	LOS	95th Percentile Queue (ft)	Available Storage
1	Cascade Blvd & Shasta Dam Blvd (Rte 151)	Signal	35	C	21.4	C	-	-	24.3	C	-	-
	EB Left						114	180			167	180
	WB Left						36	170			91	170
	NB Left						72	120			112	120
	NB Right						0	100			0	100
	SB Left						233	400			180	400
	SB Right						15	110			0	110

As shown, the delays increase by 3.7 seconds in the AM Peak and 3.1 seconds in the PM Peak in comparison to the Existing Conditions. Despite this, the intersection will still operate within the target LOS with the project trips. None of the queues will exceed their available storage length.

6.2 Cumulative (2045) Plus Project

Cumulative (2045) Plus Project Conditions weekday AM and PM peak hour intersection delay, LOS, and 95th percentile queues were calculated using the calculated cumulative plus project traffic volumes and proposed intersection lane geometrics and controls. The Synchro reports are included as Attachment 3. Table 5 presents intersection operations for the Cascade Blvd & Shasta Dam Blvd and the Cascade Blvd and Wonderland Blvd intersections. The Cascade Blvd and Wonderland Blvd intersection will be built by 2045 and therefore has predicted volumes per the SRTA travel demand model and Shasta Lake General Plan.

Table 5: Cumulative (2045) Plus Project Conditions Intersection Operations

#	Intersection	Control Type	Target		Weekday AM Peak Hour				Weekday PM Peak Hour			
			Delay	LOS	Delay	LOS	95th Percentile Queue (ft)	Available Storage	Delay	LOS	95th Percentile Queue (ft)	Available Storage
1	Cascade Blvd & Shasta Dam Blvd (Rte 151)	Signal	35	C	27.9	C	-	-	32.7	C	-	-
	EB Left						170	180			252	180
	WB Left						33	170			107	170
	NB Left						89	120			167	120
	NB Right						0	100			0	100
	SB Left						302	400			246	400
	SB Right						44	110			45	110
2	Cascade Blvd & Wonderland Blvd	TWSC	25	C	15.8	C	-	-	17.1	C	-	-
	EB Left						5	50			8	50
	NB Left						5	50			5	50

Notes:
1. TWSC = Two Way Stop Control
2. LOS = Delay based on worst movement for TWSC intersections, average of all approaches for Signal

As shown, the delays at Cascade Blvd and Shasta Dam Blvd increase by 4.5 seconds in the AM Peak and 4.3 seconds in the PM Peak in comparison to the Cumulative No Build Conditions. Despite this, the intersection will still operate within the target LOS with the project trips. Additionally, the future Cascade Blvd and Wonderland Blvd delays increase by 5.3 seconds in the AM and 6.8 seconds in the PM with the addition of the project driveway and project trips. This intersection will still operate within the target LOS despite this.

The following queues at Cascade Blvd and Shasta Dam Blvd currently exceed their available storage:

– Eastbound Left: The PM peak hour queue exceeds the available storage by two to three vehicle lengths.
– Northbound Left: The PM peak hour queue exceeds the available storage by one to two vehicle lengths.

None of the queues will exceed the available storage length at the Cascade Blvd and Wonderland Blvd intersection.

7. Conclusions

- The project generates 276 AM peak hour trips and 252 PM peak hour trips.
- From a LOS perspective, the study intersections are expected to operate acceptably under both Existing and future conditions. With the addition of the project trips, the study intersections would continue to operate at acceptable service levels.
- From a 95% queue perspective, none of the queues are currently exceeding or will exceed their available storage length for Existing and Existing Plus Project conditions.
- From a 95% queue perspective
    - Under Cumulative No Build conditions, the northbound left turn queue is projected to exceed the available storage by one to two vehicle lengths at the Cascade Boulevard and Shasta Dam Boulevard intersection.
    - Under Cumulative Plus Project conditions, the northbound left turn queue is projected to exceed the available storage by one to two vehicle lengths at the Cascade Boulevard and Shasta Dam Boulevard intersection. Additionally, the eastbound left turn queue is also expected to exceed the available storage by two to three vehicles.
- The analysis did not identify any significant impacts to pedestrian or bicycle operations with the addition of the project. The project will provide sidewalks along its frontages on Cascade Boulevard. These facilities will enhance the safety and convenience of non-motorized users in the area and connect to the existing and/or proposed network of sidewalks and bike lanes. Therefore, the pedestrian and bike facilities are adequate for the project and no further improvements are needed.

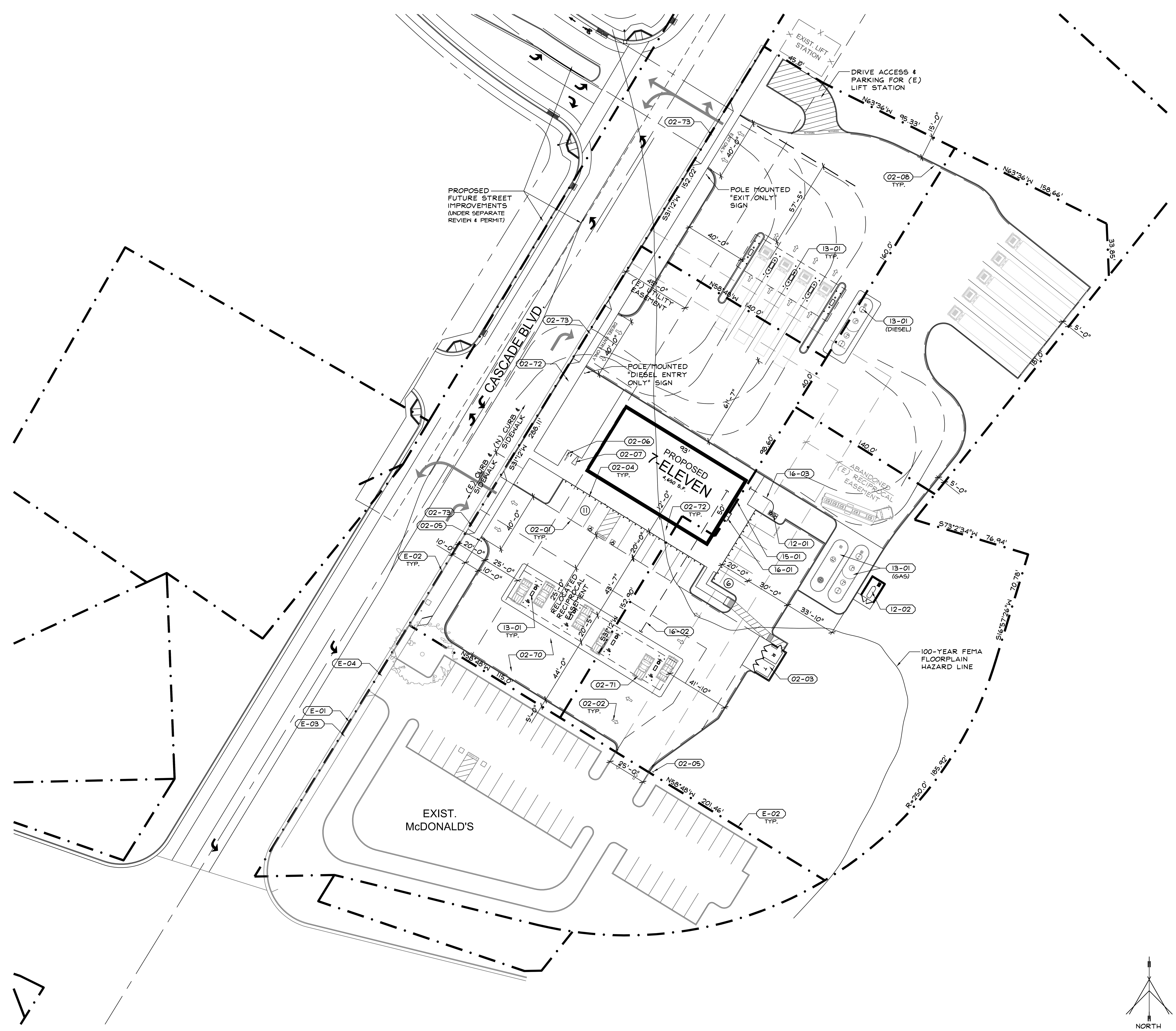
8. Recommendations

- It should be noted that in the Cumulative (2045) Plus Project conditions that the queuing of the southbound left turn at Cascade Blvd and Shasta Dam Blvd will spillback into the proposed two-way left turn lane in the AM Peak. This spillback will, as a result, block access for vehicles attempting to turn left into or out of the southernmost project driveway. This southernmost driveway is the only access for the passenger car fueling pumps and main 7-Eleven parking lot. To mitigate the potential spillback, it is recommended that a “Keep Clear” marking can be added to the roadway across the southern driveway to avoid limiting driveway access.
- The northbound left turn queue is projected to exceed the available storage by one to two vehicle lengths at the Cascade Boulevard and Shasta Dam Boulevard in both Cumulative conditions. A review of the conditions indicates that there is room to extend the two-way left turn lane bay an additional 50 to 75 feet. It is recommended that the City monitor these conditions over time and implement this improvement as appropriate.
- Under Cumulative Plus Project conditions, the eastbound left turn queue is also expected to exceed the available storage by two to three vehicles. The queue spillback can be minimized by implementing either of the following two options:
    - Convert the segment between Cascade Boulevard and Shasta Way to a two way left turn lane segment. The westbound volume and resulting queues from SR 151 to Shasta Way is minimal. As such, repurposing the back-to-back left turns to a two way left turn lane eliminates the queue spillback.

- Restrict the westbound left turns from SR 151 to Shasta Way. This movement can be accommodated at the Cascade Boulevard and SR 151 intersection. There is adequate storage available to accommodate the forecasted westbound left turns and the additional left turns that will occur as a result of access restrictions as Shasta Way and SR 151.

Attachment 1

Project Site Plan



PROPOSED SITE PLAN — SCALE: 1"=30'-0" — 8

E-01	EXIST. CONC. CURB TO REMAIN.
E-02	EXIST. PROPERTY LINE TO REMAIN.
E-03	EXIST. CONC. SIDEWALK TO REMAIN.
E-04	EXIST. CONC. DRIVE APPRACH TO REMAIN.
02-01	(N) PARKING LOT STRIPING, PER CITY STANDARDS.
02-02	(N) DIRECTIONAL ARROWS, PER CITY STANDARDS.
02-03	(N) TRASH ENCLOSURE, PER CITY STANDARDS.
02-04	(N) 6" DIA. CONC. FILLED PIPE BOLLARD.
02-05	(N) "UNAUTHORIZED VEHICLE" SIGN.
02-06	(N) 1-LOOP BIKE RACK, "ULINE #H-2892", TYP. OF 2.
02-07	(N) BIKE LOCKER - AMERICAN BICYCLE SECURITY COMPANY "BIKE-SHELL MODEL 301P".
02-08	PAINT CURB RED w/ WHITE "NO PARKING FIRE LANE" LETTERS @ MAX. 25' APART (SHOWN DASHED).
02-09	(N) 30" STATE STANDARD "STOP" SIGN, SIGN SHALL BE MOUNTED ON 2" GALV. POST W/ THE BOTTOM OF SIGN 7'-0" ABOVE FINISH GROUND.
02-70	(N) AC PAVING.
02-71	(N) CONC. PAVING.
02-72	(N) CONC. SIDEWALK, SEE CIVIL DRAWINGS.
02-73	(N) 40'-0" WIDE CONC. DRIVE APPROACH, SEE CIVIL DRAWINGS.
02-90	(N) LANDSCAPING, SEE LANDSCAPE DRAWINGS.
12-01	(N) AIR & WATER UNIT.
12-02	(N) AIR SEPARATOR TANK & VENT (HORIZ. ASSEMBLY).
13-01	UNDERGROUND FUEL TANKS, UNDER SEPARATE REVIEW & PERMIT.
13-02	FUEL ISLAND, UNDER SEPARATE REVIEW & PERMIT.
15-01	(N) GAS METER, SEE PLUMBING DRAWINGS.
16-01	(N) ELECTRICAL MAIN PANEL BUILDING, SEE ELECTRICAL DRAWINGS.
16-02	ELECTRICAL CONDUIT STUBS TO FUEL CANOPY, SEE ELECTRICAL DRAWINGS.
16-03	WATER/ELECTRICAL CONDUIT STUBS TO AIR & WATER UNIT, SEE PLUMBING & ELECTRICAL DRAWINGS.

KEYNOTES — 2

ADDRESS:
N.E.C. OF OLIVE AVE. & HIGHWAY 59
MERCED, CALIFORNIA 95348

SITE:

APN #:	007-390-031, 007-390-036, 007-390-038, 007-390-039
AREA:	3.07 ACRES (133,923 S.F.)
ZONING:	C-2 (COMMUNITY COMMERCIAL)
EXIST. LAND USE:	V - VACANT PARCEL

PROPOSED BUILDING:
4,650 S.F.

PARKING:

PROVIDED:	17 PARKING STALLS **(1 VAN ACCESSIBLE & 1 STANDARD ACCESSIBLE STALL)
REQUIRED:	14 PARKING STALLS (1 SPACE PER 350 S.F. OF GROSS FLOOR AREA)

SITE INFORMATION — 3

VICINITY MAP — SCALE: N.T.S. — 4

DATE | REVISION

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Vermeltfoort Architects, Inc.
Architecture and Planning
8525 North Cedar Avenue
Suite 106
Fresno, California 93720
Office: 559.432.6744
Email: rev@vaifresno.com

(STAMP INVALID UNLESS SIGNED)

PROPOSED BUILDING
7-ELEVEN, INC.
1661 CASCADE BLVD.
SHASTA LAKE, CALIFORNIA 96019
PROPOSED SITE PLAN

ISSUE DATE:	1-19-24
REV. DATE:	
PROJECT NO.:	23002.03
DRAWN BY:	NL
SHEET:	A100

Attachment 2

Traffic Counts and Signal Timings

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Boulevard (CA-151)
Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024

Groups Printed- Passenger Vehicles - Light Trucks - Medium Trucks - Heavy Trucks - Buses

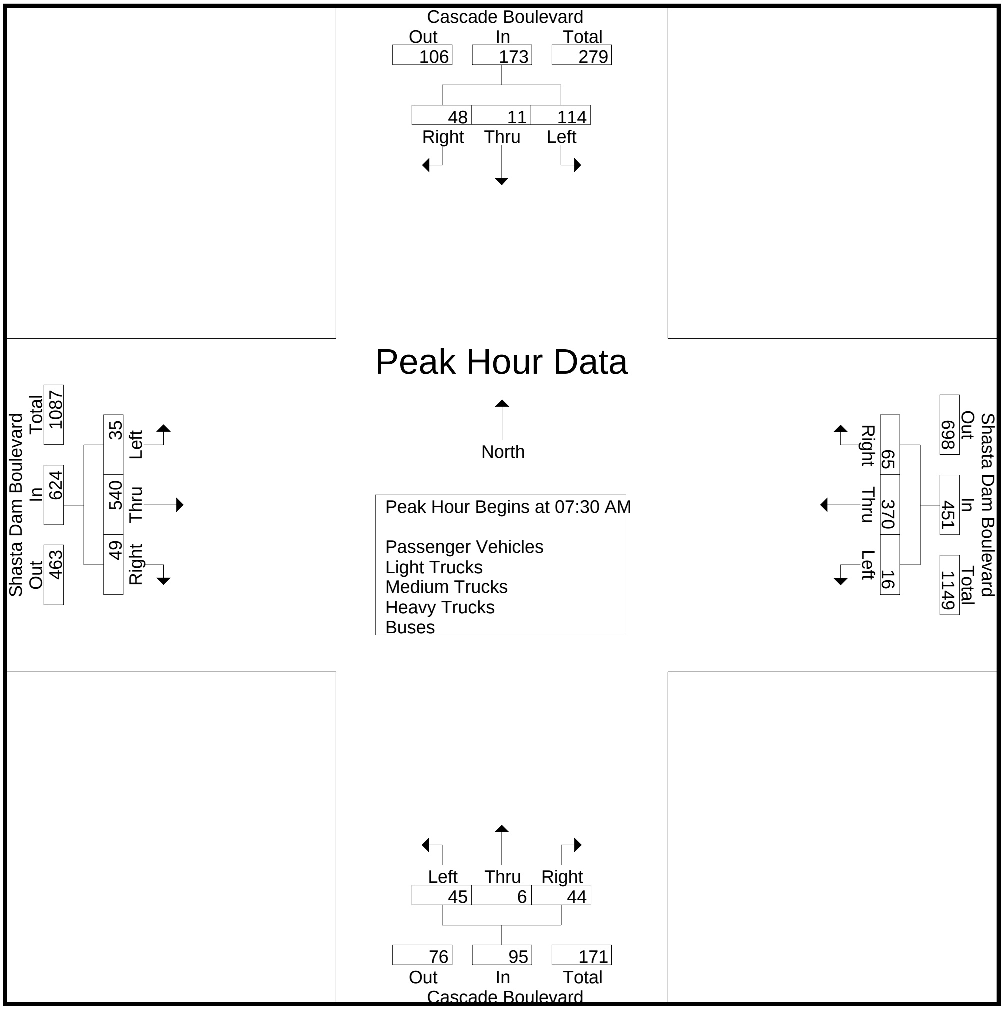
	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
06:30 AM	11	1	5	17	0	28	1	29	0	1	7	8	5	86	5	96	150
06:45 AM	15	1	4	20	2	30	6	38	2	1	10	13	5	78	3	86	157
Total	26	2	9	37	2	58	7	67	2	2	17	21	10	164	8	182	307
07:00 AM	8	0	4	12	0	42	1	43	3	0	5	8	10	76	5	91	154
07:15 AM	19	1	8	28	5	51	11	67	6	6	11	23	5	115	6	126	244
07:30 AM	38	0	9	47	2	81	6	89	7	0	9	16	8	153	9	170	322
07:45 AM	33	4	9	46	5	102	28	135	12	1	17	30	8	134	15	157	368
Total	98	5	30	133	12	276	46	334	28	7	42	77	31	478	35	544	1088
08:00 AM	18	2	16	36	5	103	11	119	15	3	10	28	10	122	13	145	328
08:15 AM	25	5	14	44	4	84	20	108	11	2	8	21	9	131	12	152	325
08:30 AM	21	3	9	33	2	59	28	89	6	3	4	13	6	96	9	111	246
08:45 AM	14	2	7	23	7	61	14	82	11	6	8	25	3	82	7	92	222
Total	78	12	46	136	18	307	73	398	43	14	30	87	28	431	41	500	1121
Grand Total	202	19	85	306	32	641	126	799	73	23	89	185	69	1073	84	1226	2516
Apprch %	66	6.2	27.8		4	80.2	15.8		39.5	12.4	48.1		5.6	87.5	6.9		
Total %	8	0.8	3.4	12.2	1.3	25.5	5	31.8	2.9	0.9	3.5	7.4	2.7	42.6	3.3	48.7	
Passenger Vehicles	194	18	82	294	27	605	118	750	69	21	84	174	68	1033	79	1180	2398
% Passenger Vehicles	96	94.7	96.5	96.1	84.4	94.4	93.7	93.9	94.5	91.3	94.4	94.1	98.6	96.3	94	96.2	95.3
Light Trucks	2	1	1	4	2	10	5	17	2	1	4	7	1	20	1	22	50
% Light Trucks	1	5.3	1.2	1.3	6.2	1.6	4	2.1	2.7	4.3	4.5	3.8	1.4	1.9	1.2	1.8	2
Medium Trucks	0	0	0	0	1	1	0	2	0	1	1	2	0	4	1	5	9
% Medium Trucks	0	0	0	0	3.1	0.2	0	0.3	0	4.3	1.1	1.1	0	0.4	1.2	0.4	0.4
Heavy Trucks	5	0	1	6	0	19	2	21	0	0	0	0	0	8	0	8	35
% Heavy Trucks	2.5	0	1.2	2	0	3	1.6	2.6	0	0	0	0	0	0.7	0	0.7	1.4
Buses	1	0	1	2	2	6	1	9	2	0	0	2	0	8	3	11	24
% Buses	0.5	0	1.2	0.7	6.2	0.9	0.8	1.1	2.7	0	0	1.1	0	0.7	3.6	0.9	1

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**38**	0	9	**47**	2	81	6	89	7	0	9	16	8	**153**	9	**170**	322
07:45 AM	33	4	9	46	**5**	102	**28**	**135**	12	1	**17**	**30**	8	134	**15**	157	**368**
08:00 AM	18	2	**16**	36	5	**103**	11	119	**15**	**3**	10	28	**10**	122	13	145	328
08:15 AM	25	**5**	14	44	4	84	20	108	11	2	8	21	9	131	12	152	325
Total Volume	114	11	48	173	16	370	65	451	45	6	44	95	35	540	49	624	1343
% App. Total	65.9	6.4	27.7		3.5	82	14.4		47.4	6.3	46.3		5.6	86.5	7.9		
PHF	.750	.550	.750	.920	.800	.898	.580	.835	.750	.500	.647	.792	.875	.882	.817	.918	.912

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Boulevard (CA-151)
Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 2



Peak Hour Analysis From 06:30 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:15 AM				07:30 AM			
+0 mins.	**38**	0	9	**47**	2	81	6	89	6	**6**	11	23	8	**153**	9	**170**
+15 mins.	33	4	9	46	**5**	102	**28**	**135**	7	0	9	16	8	134	**15**	157
+30 mins.	18	2	**16**	36	5	**103**	11	119	12	1	**17**	**30**	**10**	122	13	145
+45 mins.	25	**5**	14	44	4	84	20	108	**15**	3	10	28	9	131	12	152
Total Volume	114	11	48	173	16	370	65	451	40	10	47	97	35	540	49	624
% App. Total	65.9	6.4	27.7		3.5	82	14.4		41.2	10.3	48.5		5.6	86.5	7.9	
PHF	.750	.550	.750	.920	.800	.898	.580	.835	.667	.417	.691	.808	.875	.882	.817	.918

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City of Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Boulevard (CA-151)
Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 1

Groups Printed- Passenger Vehicles

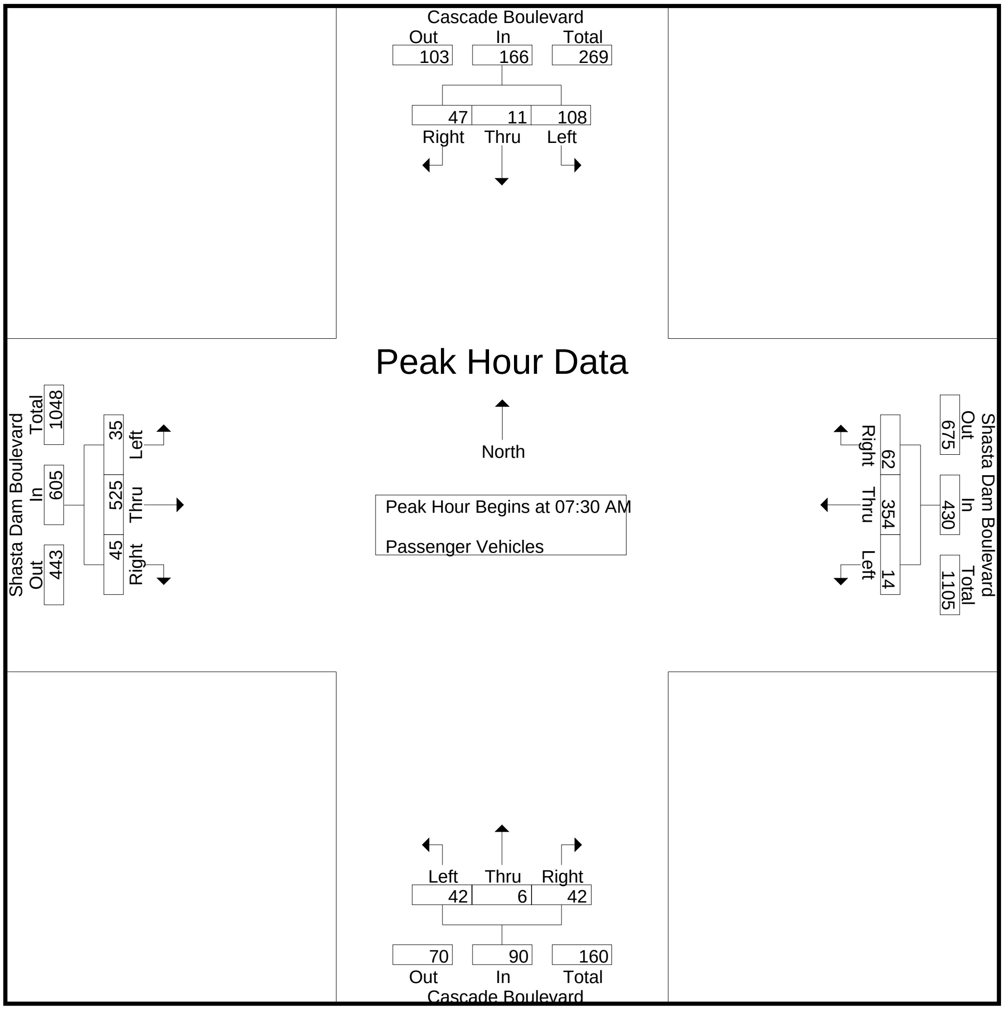
	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
06:30 AM	11	1	5	17	0	25	1	26	0	1	6	7	5	80	5	90	140
06:45 AM	15	1	4	20	1	26	4	31	2	1	9	12	5	72	3	80	143
Total	26	2	9	37	1	51	5	57	2	2	15	19	10	152	8	170	283
07:00 AM	8	0	3	11	0	38	1	39	3	0	5	8	9	74	4	87	145
07:15 AM	19	0	7	26	4	48	11	63	5	5	11	21	5	110	6	121	231
07:30 AM	38	0	8	46	2	79	5	86	7	0	9	16	8	150	8	166	314
07:45 AM	30	4	9	43	5	98	26	129	10	1	16	27	8	132	14	154	353
Total	95	4	27	126	11	263	43	317	25	6	41	72	30	466	32	528	1043
08:00 AM	16	2	16	34	5	96	11	112	15	3	10	28	10	121	12	143	317
08:15 AM	24	5	14	43	2	81	20	103	10	2	7	19	9	122	11	142	307
08:30 AM	20	3	9	32	1	57	27	85	6	2	4	12	6	95	9	110	239
08:45 AM	13	2	7	22	7	57	12	76	11	6	7	24	3	77	7	87	209
Total	73	12	46	131	15	291	70	376	42	13	28	83	28	415	39	482	1072
Grand Total	194	18	82	294	27	605	118	750	69	21	84	174	68	1033	79	1180	2398
Apprch %	66	6.1	27.9		3.6	80.7	15.7		39.7	12.1	48.3		5.8	87.5	6.7		
Total %	8.1	0.8	3.4	12.3	1.1	25.2	4.9	31.3	2.9	0.9	3.5	7.3	2.8	43.1	3.3	49.2	

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**38**	0	8	**46**	2	79	5	86	7	0	9	16	8	**150**	8	**166**	314
07:45 AM	30	4	9	43	**5**	**98**	**26**	**129**	10	1	**16**	27	8	132	**14**	154	**353**
08:00 AM	16	2	**16**	34	5	96	11	112	**15**	**3**	10	**28**	**10**	121	12	143	317
08:15 AM	24	**5**	14	43	2	81	20	103	10	2	7	19	9	122	11	142	307
Total Volume	108	11	47	166	14	354	62	430	42	6	42	90	35	525	45	605	1291
% App. Total	65.1	6.6	28.3		3.3	82.3	14.4		46.7	6.7	46.7		5.8	86.8	7.4		
PHF	.711	.550	.734	.902	.700	.903	.596	.833	.700	.500	.656	.804	.875	.875	.804	.911	.914

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Boulevard (CA-151)
Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**38**	0	8	**46**	2	79	5	86	7	0	9	16	8	**150**	8	**166**
+15 mins.	30	4	9	43	**5**	**98**	**26**	**129**	10	1	**16**	27	8	132	**14**	154
+30 mins.	16	2	**16**	34	5	96	11	112	**15**	**3**	10	**28**	**10**	121	12	143
+45 mins.	24	**5**	14	43	2	81	20	103	10	2	7	19	9	122	11	142
Total Volume	108	11	47	166	14	354	62	430	42	6	42	90	35	525	45	605
% App. Total	65.1	6.6	28.3		3.3	82.3	14.4		46.7	6.7	46.7		5.8	86.8	7.4	
PHF	.711	.550	.734	.902	.700	.903	.596	.833	.700	.500	.656	.804	.875	.875	.804	.911

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Boulevard (CA-151)
Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024

Groups Printed- Light Trucks

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
06:30 AM	0	0	0	0	0	1	0	1	0	0	1	1	0	4	0	4	6
06:45 AM	0	0	0	0	0	4	0	4	0	0	1	1	0	4	0	4	9
Total	0	0	0	0	0	5	0	5	0	0	2	2	0	8	0	8	15
07:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	2	0	3	4
07:15 AM	0	1	1	2	1	0	0	1	1	1	0	2	0	3	0	3	8
07:30 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0	2	3
07:45 AM	1	0	0	1	0	0	2	2	1	0	0	1	0	0	0	0	4
Total	1	1	1	3	1	1	3	5	2	1	0	3	1	7	0	8	19
08:00 AM	1	0	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	3	4
08:30 AM	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	2
08:45 AM	0	0	0	0	0	2	1	3	0	0	1	1	0	3	0	3	7
Total	1	0	0	1	1	4	2	7	0	0	2	2	0	5	1	6	16
Grand Total	2	1	1	4	2	10	5	17	2	1	4	7	1	20	1	22	50
Apprch %	50	25	25		11.8	58.8	29.4		28.6	14.3	57.1		4.5	90.9	4.5		
Total %	4	2	2	8	4	20	10	34	4	2	8	14	2	40	2	44	

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	**2**	0	2	3
07:45 AM	**1**	0	0	**1**	0	0	**2**	**2**	**1**	0	0	**1**	0	0	0	0	**4**
08:00 AM	1	0	0	1	0	**2**	0	2	0	0	0	0	0	0	0	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	**1**	1	0	2	**1**	**3**	4
Total Volume	2	0	0	2	0	2	3	5	1	0	1	2	0	4	1	5	14
% App. Total	100	0	0		0	40	60		50	0	50		0	80	20		
PHF	.500	.000	.000	.500	.000	.250	.375	.625	.250	.000	.250	.500	.000	.500	.250	.417	.875

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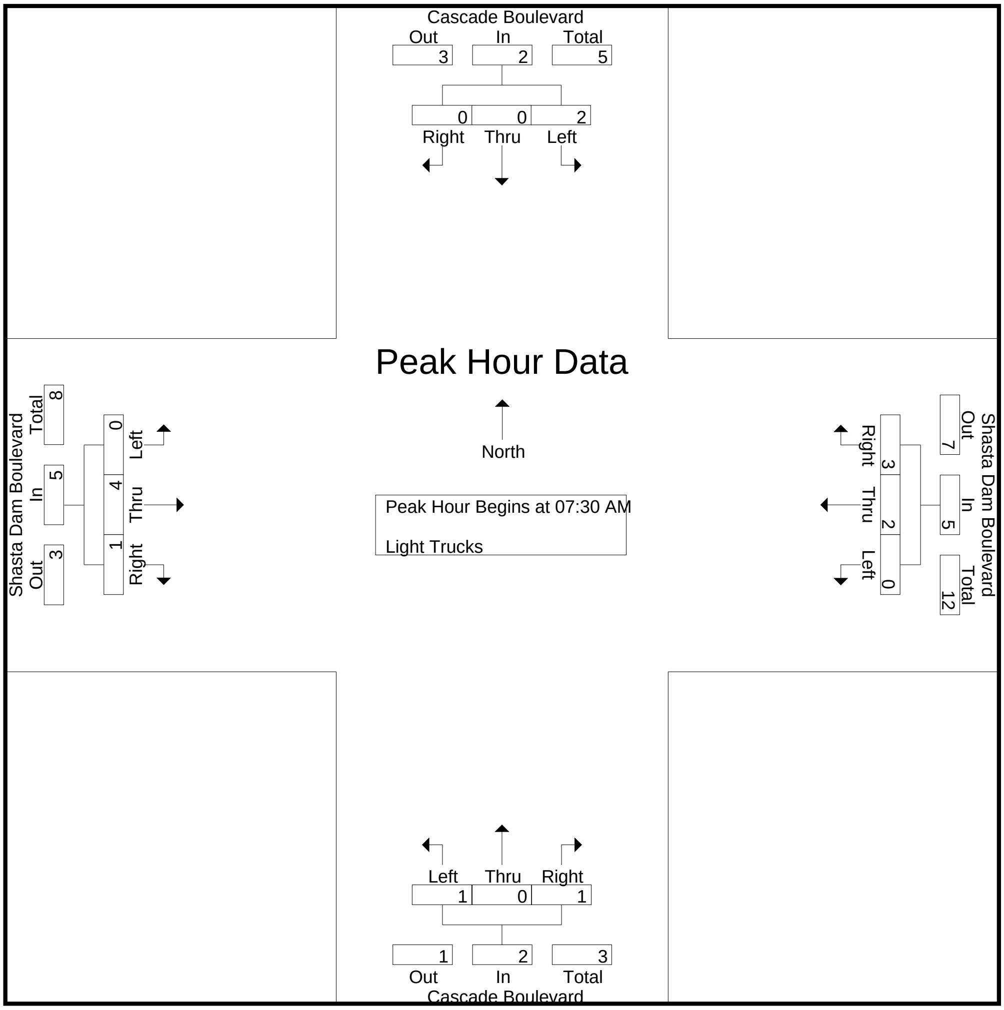
City of Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Boulevard (CA-151)
Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	1	1	0	0	0	0	0	**2**	0	2
+15 mins.	**1**	0	0	**1**	0	0	**2**	**2**	**1**	0	0	**1**	0	0	0	0
+30 mins.	1	0	0	1	0	**2**	0	2	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	**1**	1	0	2	**1**	**3**
Total Volume	2	0	0	2	0	2	3	5	1	0	1	2	0	4	1	5
% App. Total	100	0	0		0	40	60		50	0	50		0	80	20	
PHF	.500	.000	.000	.500	.000	.250	.375	.625	.250	.000	.250	.500	.000	.500	.250	.417

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City of Shasta Lake
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Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 1

Groups Printed- Medium Trucks

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	2
Total	0	0	0	0	0	1	0	1	0	0	1	1	0	0	1	1	3
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	2
08:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	1	0	0	1	0	1	0	1	0	3	0	3	5
Grand Total	0	0	0	0	1	1	0	2	0	1	1	2	0	4	1	5	9
Apprch %	0	0	0		50	50	0		0	50	50		0	80	20		
Total %	0	0	0	0	11.1	11.1	0	22.2	0	11.1	11.1	22.2	0	44.4	11.1	55.6	

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	**1**	**1**	**2**
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	1	1
08:15 AM	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	1	0	0	1	0	0	1	1	0	2	1	3	5
% App. Total	0	0	0		100	0	0		0	0	100		0	66.7	33.3		
PHF	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.250	.250	.000	.500	.250	.750	.625

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City of Shasta Lake
N/S: Cascade Boulevard
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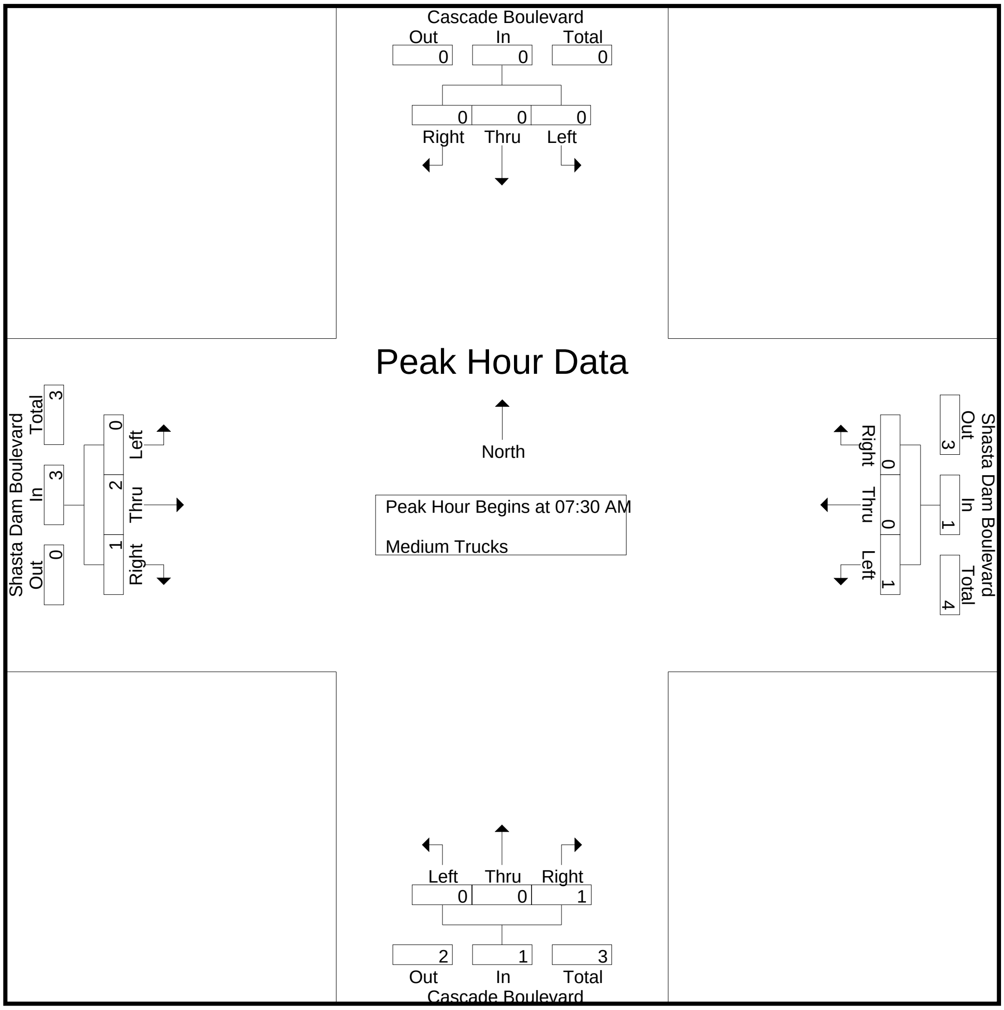
Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	**1**	**1**
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	1
+45 mins.	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	1	0	1
Total Volume	0	0	0	0	1	0	0	1	0	0	1	1	0	2	1	3
% App. Total	0	0	0		100	0	0		0	0	100		0	66.7	33.3	
PHF	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.250	.250	.000	.500	.250	.750

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City of Shasta Lake
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Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 1

Groups Printed- Heavy Trucks

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
06:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
06:45 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
Total	0	0	0	0	0	1	1	2	0	0	0	0	0	2	0	2	4
07:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
07:15 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
07:30 AM	0	0	1	1	0	2	0	2	0	0	0	0	0	1	0	1	4
07:45 AM	1	0	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
Total	1	0	1	2	0	8	0	8	0	0	0	0	0	2	0	2	12
08:00 AM	1	0	0	1	0	4	0	4	0	0	0	0	0	0	0	0	5
08:15 AM	1	0	0	1	0	2	0	2	0	0	0	0	0	2	0	2	5
08:30 AM	1	0	0	1	0	2	0	2	0	0	0	0	0	1	0	1	4
08:45 AM	1	0	0	1	0	2	1	3	0	0	0	0	0	1	0	1	5
Total	4	0	0	4	0	10	1	11	0	0	0	0	0	4	0	4	19
Grand Total	5	0	1	6	0	19	2	21	0	0	0	0	0	8	0	8	35
Apprch %	83.3	0	16.7		0	90.5	9.5		0	0	0		0	100	0		
Total %	14.3	0	2.9	17.1	0	54.3	5.7	60	0	0	0	0	0	22.9	0	22.9	

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	**1**	**1**	0	2	0	2	0	0	0	0	0	1	0	1	4
07:45 AM	**1**	0	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
08:00 AM	1	0	0	1	0	**4**	0	**4**	0	0	0	0	0	0	0	0	**5**
08:15 AM	1	0	0	1	0	2	0	2	0	0	0	0	0	**2**	0	**2**	5
Total Volume	3	0	1	4	0	10	0	10	0	0	0	0	0	3	0	3	17
% App. Total	75	0	25		0	100	0		0	0	0		0	100	0		
PHF	.750	.000	.250	1.00	.000	.625	.000	.625	.000	.000	.000	.000	.000	.375	.000	.375	.850

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City of Shasta Lake
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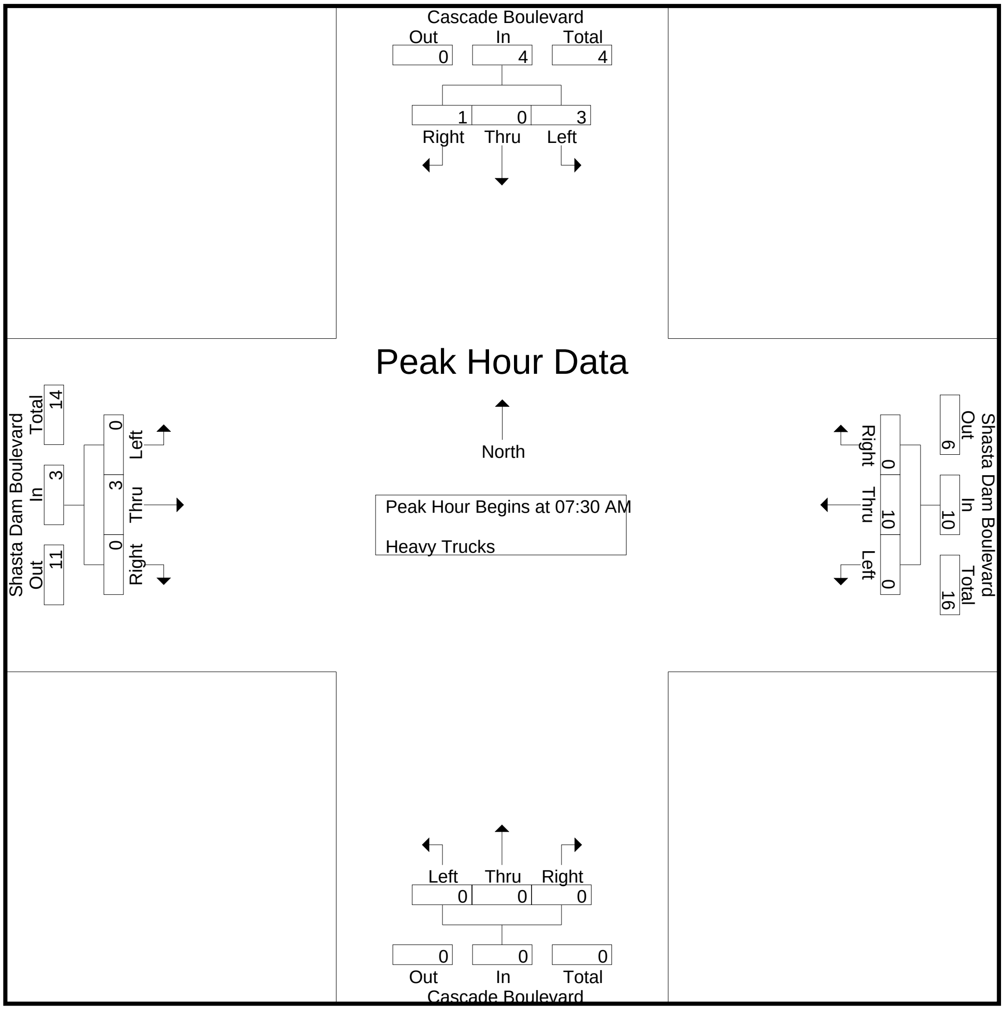
Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	**1**	**1**	0	2	0	2	0	0	0	0	0	1	0	1
+15 mins.	**1**	0	0	1	0	2	0	2	0	0	0	0	0	0	0	0
+30 mins.	1	0	0	1	0	**4**	0	**4**	0	0	0	0	0	0	0	0
+45 mins.	1	0	0	1	0	2	0	2	0	0	0	0	0	**2**	0	**2**
Total Volume	3	0	1	4	0	10	0	10	0	0	0	0	0	3	0	3
% App. Total	75	0	25		0	100	0		0	0	0		0	100	0	
PHF	.750	.000	.250	1.000	.000	.625	.000	.625	.000	.000	.000	.000	.000	.375	.000	.375

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City of Shasta Lake
N/S: Cascade Boulevard
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Weather: Clear

File Name : SHL_Cas_SD AM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 1

Groups Printed- Buses

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
06:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
06:45 AM	0	0	0	0	1	0	1	2	0	0	0	0	0	1	0	1	3
Total	0	0	0	0	1	1	1	3	0	0	0	0	0	1	0	1	4
07:00 AM	0	0	1	1	0	1	0	1	0	0	0	0	0	0	1	1	3
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
07:45 AM	1	0	0	1	0	2	0	2	1	0	0	1	0	2	0	2	6
Total	1	0	1	2	0	3	0	3	1	0	0	1	0	3	2	5	11
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
08:15 AM	0	0	0	0	1	1	0	2	1	0	0	1	0	4	0	4	7
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	2	0	3	1	0	0	1	0	4	1	5	9
Grand Total	1	0	1	2	2	6	1	9	2	0	0	2	0	8	3	11	24
Apprch %	50	0	50		22.2	66.7	11.1		100	0	0		0	72.7	27.3		
Total %	4.2	0	4.2	8.3	8.3	25	4.2	37.5	8.3	0	0	8.3	0	33.3	12.5	45.8	

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	1	1
07:45 AM	**1**	0	0	**1**	0	**2**	0	**2**	**1**	0	0	**1**	0	2	0	2	6
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	2
08:15 AM	0	0	0	0	**1**	1	0	2	1	0	0	1	0	**4**	0	**4**	**7**
Total Volume	1	0	0	1	1	4	0	5	2	0	0	2	0	6	2	8	16
% App. Total	100	0	0		20	80	0		100	0	0		0	75	25		
PHF	.250	.000	.000	.250	.250	.500	.000	.625	.500	.000	.000	.500	.000	.375	.500	.500	.571

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City of Shasta Lake
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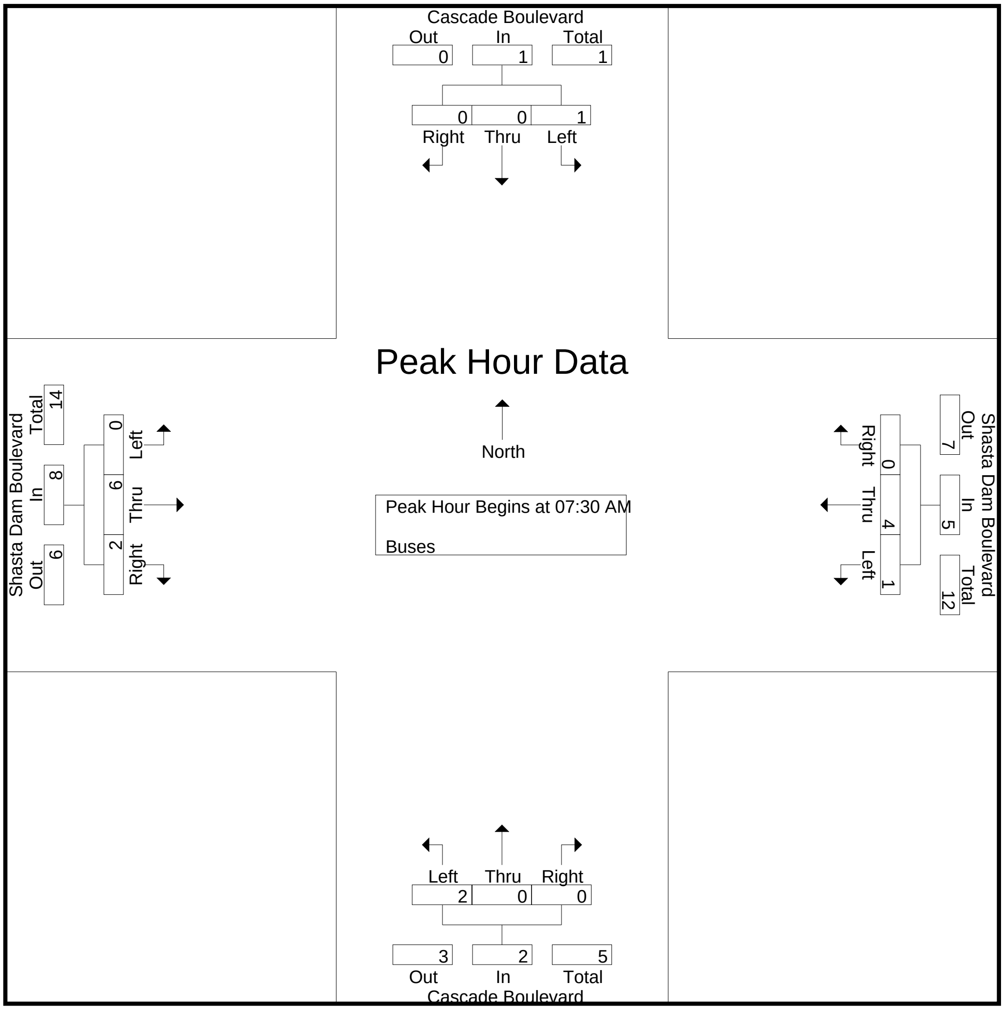
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	1
+15 mins.	**1**	0	0	**1**	0	**2**	0	**2**	**1**	0	0	**1**	0	2	0	2
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1
+45 mins.	0	0	0	0	**1**	1	0	2	1	0	0	1	0	**4**	0	**4**
Total Volume	1	0	0	1	1	4	0	5	2	0	0	2	0	6	2	8
% App. Total	100	0	0		20	80	0		100	0	0		0	75	25	
PHF	.250	.000	.000	.250	.250	.500	.000	.625	.500	.000	.000	.500	.000	.375	.500	.500

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City of Shasta Lake
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Weather: Clear

File Name : SHL_Cas_SD PM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 1

Groups Printed- Passenger Vehicles - Light Trucks - Medium Trucks - Heavy Trucks - Buses

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:30 PM	24	3	6	33	15	113	21	149	9	3	11	23	12	119	21	152	357
02:45 PM	23	6	11	40	26	96	17	139	17	4	16	37	17	102	13	132	348
Total	47	9	17	73	41	209	38	288	26	7	27	60	29	221	34	284	705
03:00 PM	11	2	9	22	11	88	12	111	18	8	17	43	17	97	17	131	307
03:15 PM	17	7	15	39	17	98	17	132	17	3	11	31	19	73	15	107	309
03:30 PM	20	7	10	37	15	99	19	133	25	4	14	43	29	123	16	168	381
03:45 PM	11	2	8	21	13	118	8	139	21	3	12	36	13	102	20	135	331
Total	59	18	42	119	56	403	56	515	81	18	54	153	78	395	68	541	1328
04:00 PM	5	6	6	17	12	112	16	140	16	0	7	23	14	109	20	143	323
04:15 PM	14	2	6	22	16	115	18	149	12	4	10	26	17	88	19	124	321
04:30 PM	17	2	8	27	14	136	9	159	20	7	16	43	22	87	15	124	353
04:45 PM	23	3	7	33	9	146	20	175	15	4	18	37	10	74	17	101	346
Total	59	13	27	99	51	509	63	623	63	15	51	129	63	358	71	492	1343
05:00 PM	15	2	6	23	21	123	21	165	16	6	6	28	10	89	11	110	326
05:15 PM	11	3	11	25	17	131	23	171	14	5	14	33	10	75	10	95	324
05:30 PM	15	3	13	31	11	132	16	159	16	8	11	35	11	68	11	90	315
05:45 PM	15	5	5	25	17	99	21	137	25	3	3	31	11	61	12	84	277
Total	56	13	35	104	66	485	81	632	71	22	34	127	42	293	44	379	1242
Grand Total	221	53	121	395	214	1606	238	2058	241	62	166	469	212	1267	217	1696	4618
Apprch %	55.9	13.4	30.6		10.4	78	11.6		51.4	13.2	35.4		12.5	74.7	12.8		
Total %	4.8	1.1	2.6	8.6	4.6	34.8	5.2	44.6	5.2	1.3	3.6	10.2	4.6	27.4	4.7	36.7	
Passenger Vehicles	206	52	118	376	210	1562	227	1999	230	62	160	452	208	1226	208	1642	4469
% Passenger Vehicles	93.2	98.1	97.5	95.2	98.1	97.3	95.4	97.1	95.4	100	96.4	96.4	98.1	96.8	95.9	96.8	96.8
Light Trucks	9	1	1	11	3	21	7	31	11	0	3	14	2	29	4	35	91
% Light Trucks	4.1	1.9	0.8	2.8	1.4	1.3	2.9	1.5	4.6	0	1.8	3	0.9	2.3	1.8	2.1	2
Medium Trucks	1	0	0	1	0	4	2	6	0	0	0	0	0	3	0	3	10
% Medium Trucks	0.5	0	0	0.3	0	0.2	0.8	0.3	0	0	0	0	0	0.2	0	0.2	0.2
Heavy Trucks	5	0	0	5	0	12	1	13	0	0	0	0	0	5	0	5	23
% Heavy Trucks	2.3	0	0	1.3	0	0.7	0.4	0.6	0	0	0	0	0	0.4	0	0.3	0.5
Buses	0	0	2	2	1	7	1	9	0	0	3	3	2	4	5	11	25
% Buses	0	0	1.7	0.5	0.5	0.4	0.4	0.4	0	0	1.8	0.6	0.9	0.3	2.3	0.6	0.5

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	**20**	**7**	**10**	**37**	15	99	**19**	133	**25**	**4**	**14**	**43**	**29**	**123**	16	**168**	**381**
03:45 PM	11	2	8	21	13	**118**	8	139	21	3	12	36	13	102	**20**	135	331
04:00 PM	5	6	6	17	12	112	16	140	16	0	7	23	14	109	20	143	323
04:15 PM	14	2	6	22	**16**	115	18	**149**	12	4	10	26	17	88	19	124	321
Total Volume	50	17	30	97	56	444	61	561	74	11	43	128	73	422	75	570	1356
% App. Total	51.5	17.5	30.9		10	79.1	10.9		57.8	8.6	33.6		12.8	74	13.2		
PHF	.625	.607	.750	.655	.875	.941	.803	.941	.740	.688	.768	.744	.629	.858	.938	.848	.890

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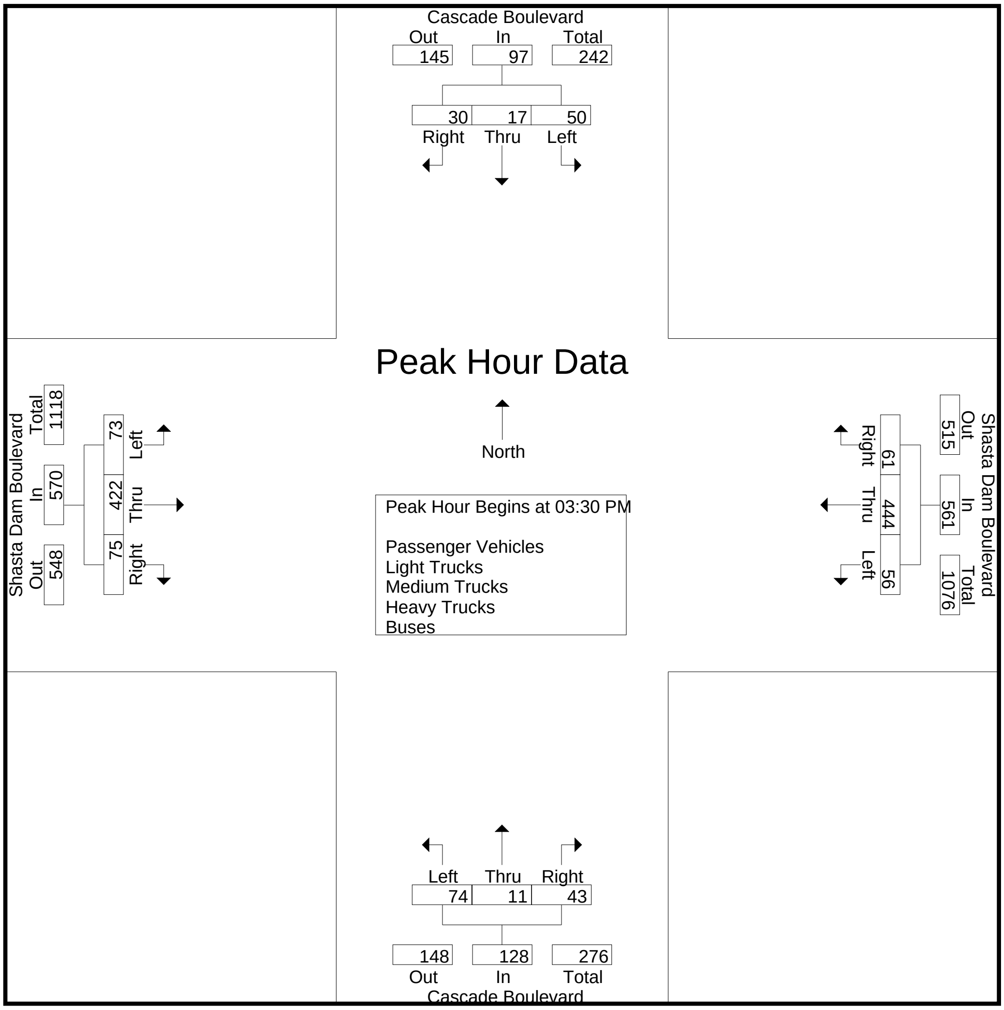
City of Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Boulevard (CA-151)
Weather: Clear

File Name : SHL_Cas_SD PM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 2



Peak Hour Analysis From 02:30 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:45 PM				04:30 PM				02:45 PM				03:30 PM			
+0 mins.	**23**	6	11	**40**	14	136	9	159	17	4	16	37	**29**	**123**	16	**168**
+15 mins.	11	2	9	22	9	**146**	20	**175**	18	**8**	**17**	**43**	13	102	**20**	135
+30 mins.	17	**7**	**15**	39	**21**	123	21	165	17	3	11	31	14	109	20	143
+45 mins.	20	7	10	37	17	131	**23**	171	**25**	4	14	43	17	88	19	124
Total Volume	71	22	45	138	61	536	73	670	77	19	58	154	73	422	75	570
% App. Total	51.4	15.9	32.6		9.1	80	10.9		50	12.3	37.7		12.8	74	13.2	
PHF	.772	.786	.750	.863	.726	.918	.793	.957	.770	.594	.853	.895	.629	.858	.938	.848

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File Name : SHL_Cas_SD PM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 1

Groups Printed- Passenger Vehicles

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:30 PM	19	3	5	27	14	109	19	142	8	3	11	22	12	115	21	148	339
02:45 PM	22	6	11	39	25	89	16	130	16	4	14	34	16	95	11	122	325
Total	41	9	16	66	39	198	35	272	24	7	25	56	28	210	32	270	664
03:00 PM	11	2	8	21	11	85	11	107	17	8	15	40	17	96	17	130	298
03:15 PM	16	7	15	38	17	94	17	128	17	3	11	31	19	67	14	100	297
03:30 PM	18	7	10	35	14	95	18	127	23	4	13	40	28	117	15	160	362
03:45 PM	9	2	7	18	13	115	7	135	19	3	12	34	12	100	19	131	318
Total	54	18	40	112	55	389	53	497	76	18	51	145	76	380	65	521	1275
04:00 PM	5	5	6	16	12	109	15	136	16	0	7	23	14	107	19	140	315
04:15 PM	13	2	6	21	16	110	17	143	12	4	10	26	16	86	18	120	310
04:30 PM	16	2	8	26	14	134	9	157	20	7	15	42	22	84	14	120	345
04:45 PM	22	3	7	32	9	142	18	169	14	4	18	36	10	73	17	100	337
Total	56	12	27	95	51	495	59	605	62	15	50	127	62	350	68	480	1307
05:00 PM	15	2	6	23	20	121	21	162	16	6	6	28	10	86	11	107	320
05:15 PM	11	3	11	25	17	130	23	170	13	5	14	32	10	75	9	94	321
05:30 PM	14	3	13	30	11	131	15	157	15	8	11	34	11	65	11	87	308
05:45 PM	15	5	5	25	17	98	21	136	24	3	3	30	11	60	12	83	274
Total	55	13	35	103	65	480	80	625	68	22	34	124	42	286	43	371	1223
Grand Total	206	52	118	376	210	1562	227	1999	230	62	160	452	208	1226	208	1642	4469
Apprch %	54.8	13.8	31.4		10.5	78.1	11.4		50.9	13.7	35.4		12.7	74.7	12.7		
Total %	4.6	1.2	2.6	8.4	4.7	35	5.1	44.7	5.1	1.4	3.6	10.1	4.7	27.4	4.7	36.7	

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	**18**	**7**	**10**	**35**	14	95	**18**	127	**23**	**4**	**13**	**40**	**28**	**117**	15	**160**	**362**
03:45 PM	9	2	7	18	13	**115**	7	135	19	3	12	34	12	100	**19**	131	318
04:00 PM	5	5	6	16	12	109	15	136	16	0	7	23	14	107	19	140	315
04:15 PM	13	2	6	21	**16**	110	17	**143**	12	4	10	26	16	86	18	120	310
Total Volume	45	16	29	90	55	429	57	541	70	11	42	123	70	410	71	551	1305
% App. Total	50	17.8	32.2		10.2	79.3	10.5		56.9	8.9	34.1		12.7	74.4	12.9		
PHF	.625	.571	.725	.643	.859	.933	.792	.946	.761	.688	.808	.769	.625	.876	.934	.861	.901

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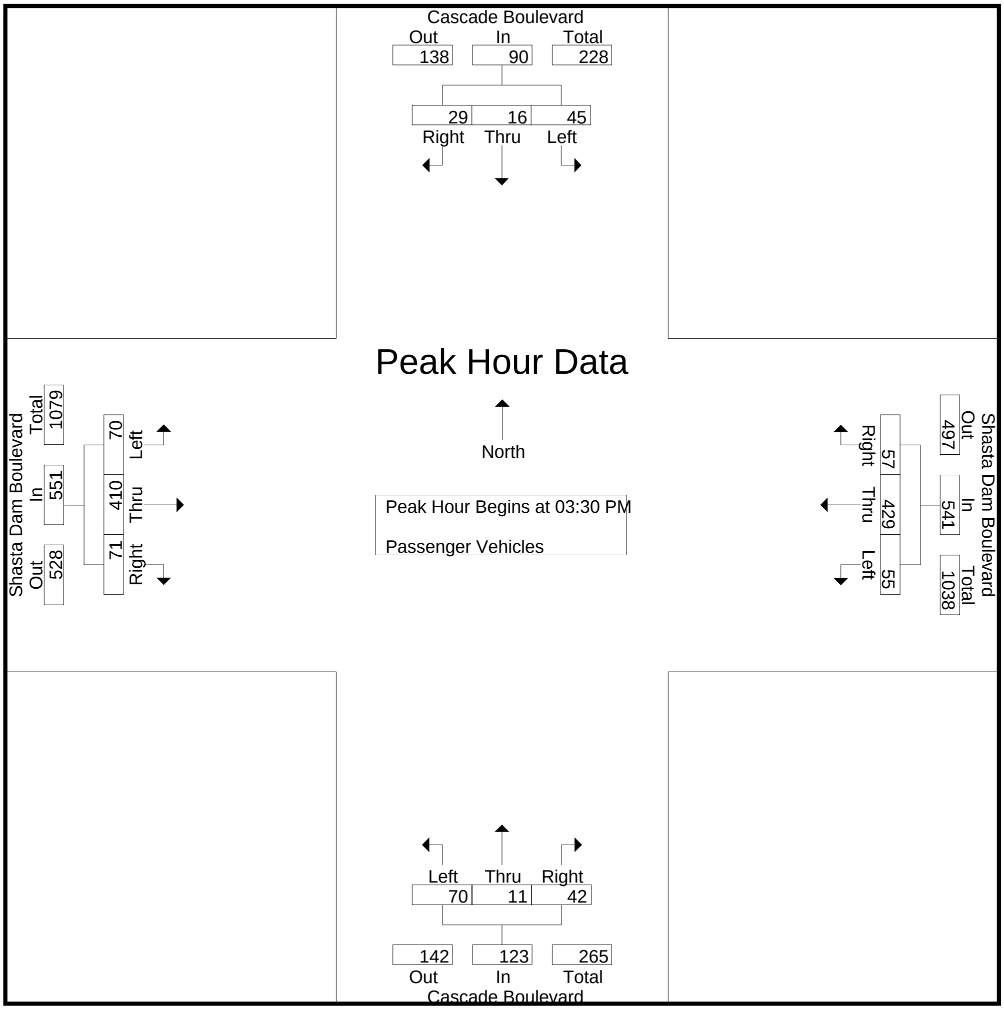
Weather: Clear

File Name : SHL_Cas_SD PM
Site Code : 22324111
Start Date : 2/6/2024



Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:30 PM				03:30 PM				03:30 PM				03:30 PM			
+0 mins.	**18**	**7**	**10**	**35**	14	95	**18**	127	**23**	**4**	**13**	**40**	**28**	**117**	15	**160**
+15 mins.	9	2	7	18	13	**115**	7	135	19	3	12	34	12	100	**19**	131
+30 mins.	5	5	6	16	12	109	15	136	16	0	7	23	14	107	19	140
+45 mins.	13	2	6	21	**16**	110	17	**143**	12	4	10	26	16	86	18	120
Total Volume	45	16	29	90	55	429	57	541	70	11	42	123	70	410	71	551
% App. Total	50	17.8	32.2		10.2	79.3	10.5		56.9	8.9	34.1		12.7	74.4	12.9	
PHF	.625	.571	.725	.643	.859	.933	.792	.946	.761	.688	.808	.769	.625	.876	.934	.861

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Weather: Clear

File Name : SHL_Cas_SD PM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 1

Groups Printed- Light Trucks

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:30 PM	1	0	1	2	1	0	0	1	1	0	0	1	0	4	0	4	8
02:45 PM	1	0	0	1	0	3	1	4	1	0	1	2	0	6	1	7	14
Total	2	0	1	3	1	3	1	5	2	0	1	3	0	10	1	11	22
03:00 PM	0	0	0	0	0	1	1	2	1	0	0	1	0	1	0	1	4
03:15 PM	1	0	0	1	0	1	0	1	0	0	0	0	0	3	0	3	5
03:30 PM	2	0	0	2	1	2	1	4	2	0	1	3	1	4	0	5	14
03:45 PM	1	0	0	1	0	2	1	3	2	0	0	2	0	2	1	3	9
Total	4	0	0	4	1	6	3	10	5	0	1	6	1	10	1	12	32
04:00 PM	0	1	0	1	0	2	0	2	0	0	0	0	0	0	1	1	4
04:15 PM	0	0	0	0	0	4	1	5	0	0	0	0	1	1	0	2	7
04:30 PM	1	0	0	1	0	2	0	2	0	0	1	1	0	3	1	4	8
04:45 PM	1	0	0	1	0	2	1	3	1	0	0	1	0	1	0	1	6
Total	2	1	0	3	0	10	2	12	1	0	1	2	1	5	2	8	25
05:00 PM	0	0	0	0	1	1	0	2	0	0	0	0	0	1	0	1	3
05:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
05:30 PM	1	0	0	1	0	1	1	2	1	0	0	1	0	2	0	2	6
05:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
Total	1	0	0	1	1	2	1	4	3	0	0	3	0	4	0	4	12
Grand Total	9	1	1	11	3	21	7	31	11	0	3	14	2	29	4	35	91
Apprch %	81.8	9.1	9.1		9.7	67.7	22.6		78.6	0	21.4		5.7	82.9	11.4		
Total %	9.9	1.1	1.1	12.1	3.3	23.1	7.7	34.1	12.1	0	3.3	15.4	2.2	31.9	4.4	38.5	

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	**2**	0	0	**2**	**1**	2	**1**	4	**2**	0	**1**	**3**	**1**	**4**	0	**5**	**14**
03:45 PM	1	0	0	1	0	2	1	3	2	0	0	2	0	2	**1**	3	9
04:00 PM	0	**1**	0	1	0	2	0	2	0	0	0	0	0	0	1	1	4
04:15 PM	0	0	0	0	0	**4**	1	**5**	0	0	0	0	1	1	0	2	7
Total Volume	3	1	0	4	1	10	3	14	4	0	1	5	2	7	2	11	34
% App. Total	75	25	0		7.1	71.4	21.4		80	0	20		18.2	63.6	18.2		
PHF	.375	.250	.000	.500	.250	.625	.750	.700	.500	.000	.250	.417	.500	.438	.500	.550	.607

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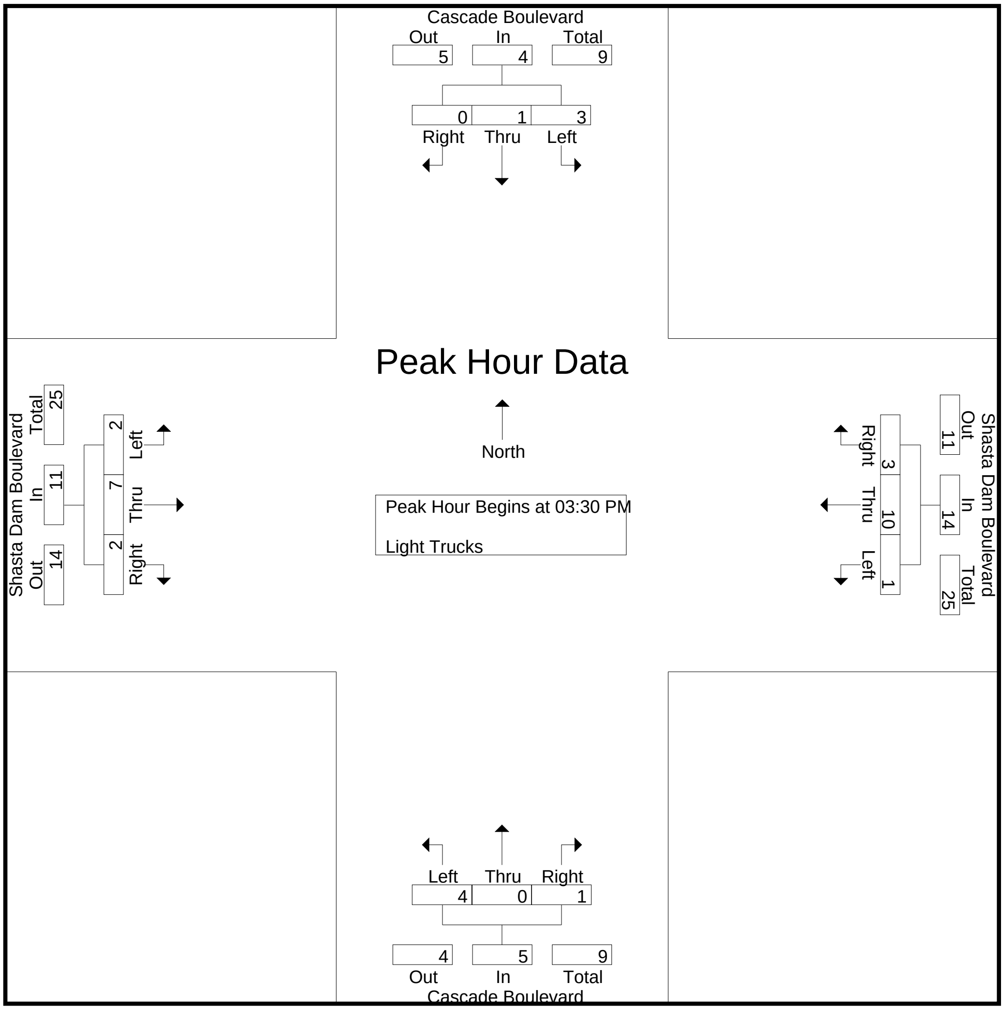
Weather: Clear

File Name : SHL_Cas_SD PM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 2



Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:30 PM				03:30 PM				03:30 PM				03:30 PM			
+0 mins.	**2**	0	0	**2**	**1**	2	**1**	4	**2**	0	**1**	**3**	**1**	**4**	0	**5**
+15 mins.	1	0	0	1	0	2	1	3	2	0	0	2	0	2	**1**	3
+30 mins.	0	**1**	0	1	0	2	0	2	0	0	0	0	0	0	1	1
+45 mins.	0	0	0	0	0	**4**	1	**5**	0	0	0	0	1	1	0	2
Total Volume	3	1	0	4	1	10	3	14	4	0	1	5	2	7	2	11
% App. Total	75	25	0		7.1	71.4	21.4		80	0	20		18.2	63.6	18.2	
PHF	.375	.250	.000	.500	.250	.625	.750	.700	.500	.000	.250	.417	.500	.438	.500	.550

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Page No : 1

Groups Printed- Medium Trucks

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:30 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	2
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	1	1	2	0	0	0	0	0	1	0	1	3
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:00 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
04:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	1	0	0	1	0	1	1	2	0	0	0	0	0	1	0	1	4
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Grand Total	1	0	0	1	0	4	2	6	0	0	0	0	0	3	0	3	10
Apprch %	100	0	0		0	66.7	33.3		0	0	0		0	100	0		
Total %	10	0	0	10	0	40	20	60	0	0	0	0	0	30	0	30	

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	**1**	**1**	0	0	0	0	0	0	0	0	1
04:15 PM	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**2**
Total Volume	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	3
% App. Total	100	0	0		0	0	100		0	0	0		0	100	0		
PHF	.250	.000	.000	.250	.000	.000	.250	.250	.000	.000	.000	.000	.000	.250	.000	.250	.375

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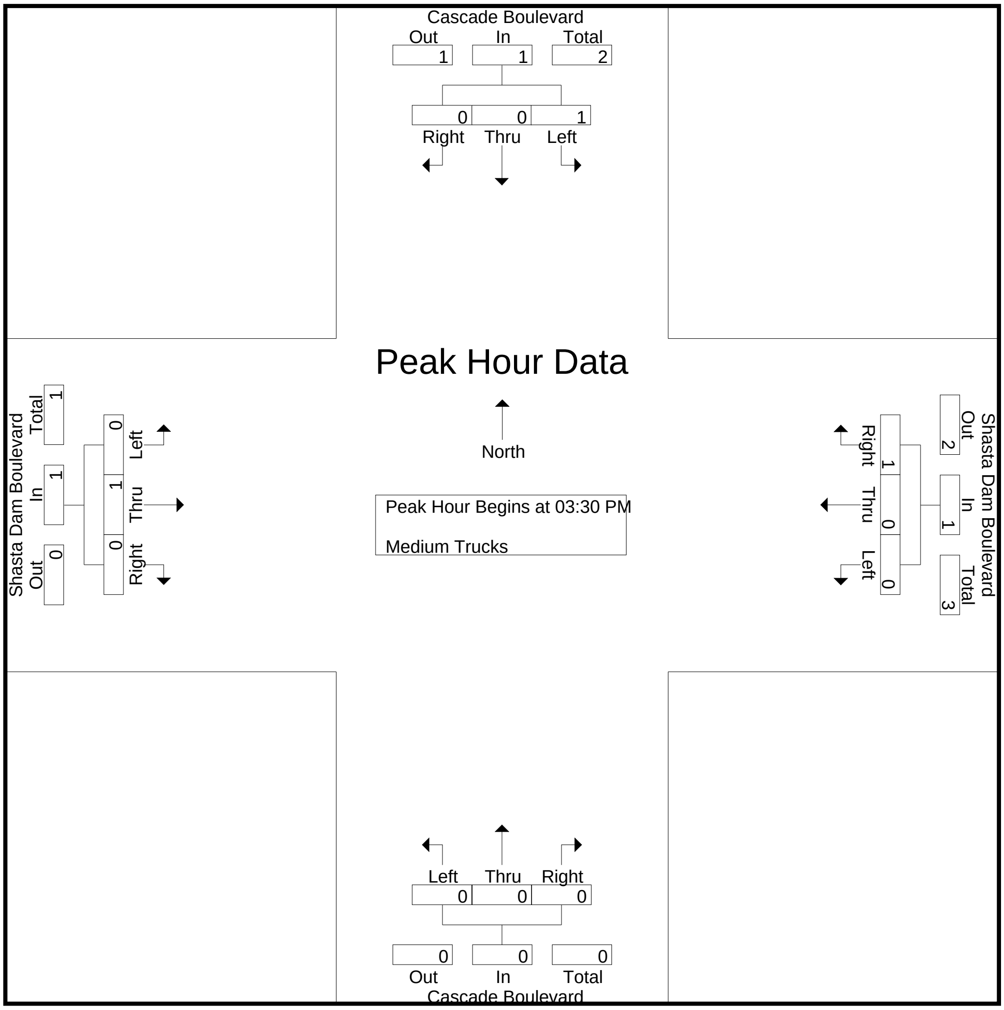
Page No : 2



Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:30 PM				03:30 PM				03:30 PM				03:30 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	**1**	**1**	0	0	0	0	0	0	0	0
+45 mins.	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	**1**	0	**1**
Total Volume	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1
% App. Total	100	0	0		0	0	100		0	0	0		0	100	0	
PHF	.250	.000	.000	.250	.000	.000	.250	.250	.000	.000	.000	.000	.000	.250	.000	.250

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File Name : SHL_Cas_SD PM
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Start Date : 2/6/2024
Page No : 1

Groups Printed- Heavy Trucks

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:30 PM	4	0	0	4	0	2	1	3	0	0	0	0	0	0	0	0	7
02:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
Total	4	0	0	4	0	5	1	6	0	0	0	0	0	0	0	0	10
03:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
03:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
03:45 PM	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
Total	1	0	0	1	0	3	0	3	0	0	0	0	0	1	0	1	5
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
Grand Total	5	0	0	5	0	12	1	13	0	0	0	0	0	5	0	5	23
Apprch %	100	0	0		0	92.3	7.7		0	0	0		0	100	0		
Total %	21.7	0	0	21.7	0	52.2	4.3	56.5	0	0	0	0	0	21.7	0	21.7	

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1
03:45 PM	**1**	0	0	**1**	0	1	0	1	0	0	0	0	0	0	0	0	**2**
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	**2**	2
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	1	0	0	1	0	3	0	3	0	0	0	0	0	2	0	2	6
% App. Total	100	0	0		0	100	0		0	0	0		0	100	0		
PHF	.250	.000	.000	.250	.000	.750	.000	.750	.000	.000	.000	.000	.000	.250	.000	.250	.750

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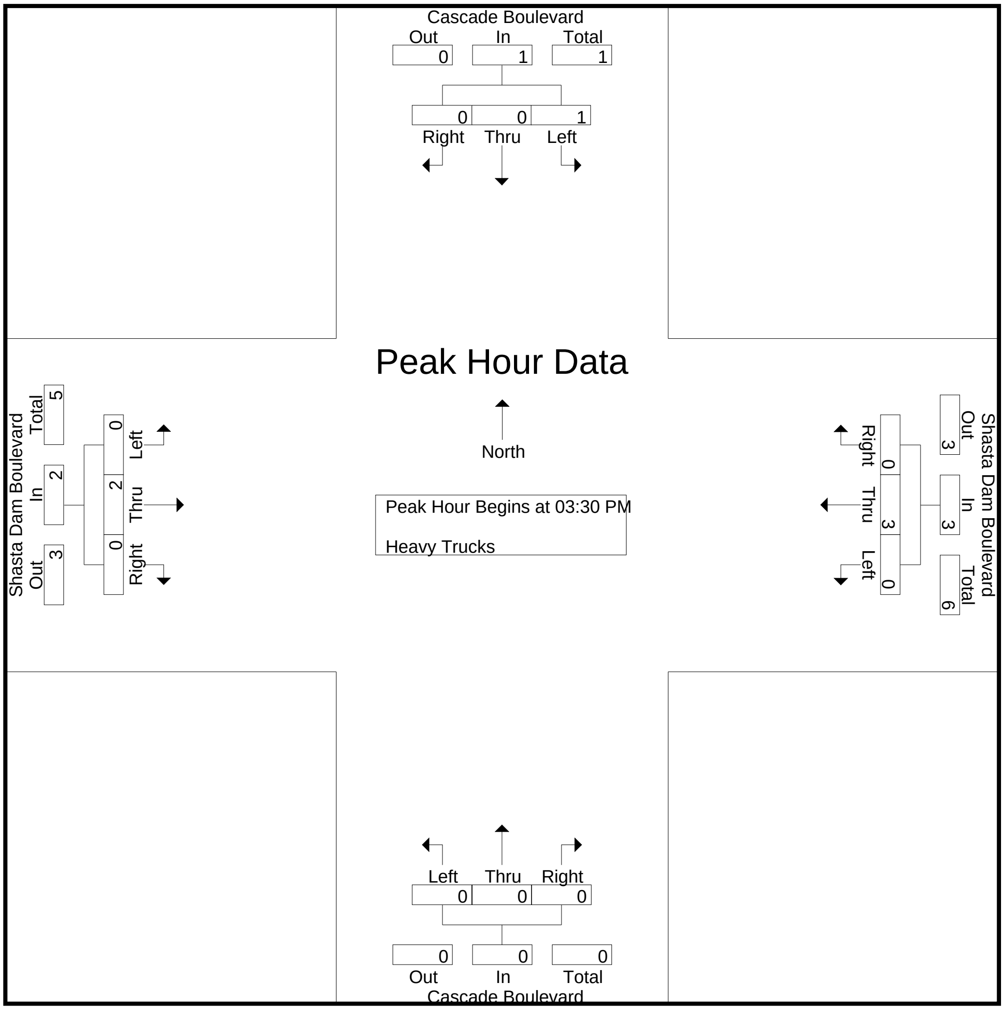
Corona, CA 92878
(951) 268-6268

City of Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Boulevard (CA-151)
Weather: Clear

File Name : SHL_Cas_SD PM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 2



Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:30 PM				03:30 PM				03:30 PM				03:30 PM			
+0 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+15 mins.	**1**	0	0	**1**	0	1	0	1	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	**2**
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
Total Volume	1	0	0	1	0	3	0	3	0	0	0	0	0	2	0	2
% App. Total	100	0	0		0	100	0		0	0	0		0	100	0	
PHF	.250	.000	.000	.250	.000	.750	.000	.750	.000	.000	.000	.000	.000	.250	.000	.250

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City of Shasta Lake
N/S: Cascade Boulevard
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Weather: Clear

File Name : SHL_Cas_SD PM
Site Code : 22324111
Start Date : 2/6/2024
Page No : 1

Groups Printed- Buses

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	1	1	0	2	0	0	1	1	1	0	1	2	5
Total	0	0	0	0	1	2	0	3	0	0	1	1	1	0	1	2	6
03:00 PM	0	0	1	1	0	1	0	1	0	0	2	2	0	0	0	0	4
03:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	1	3	5
03:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	1	3	4
03:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	2
Total	0	0	2	2	0	4	0	4	0	0	2	2	1	4	2	7	15
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	1	2	0	0	0	0	0	0	1	1	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Grand Total	0	0	2	2	1	7	1	9	0	0	3	3	2	4	5	11	25
Apprch %	0	0	100		11.1	77.8	11.1		0	0	100		18.2	36.4	45.5		
Total %	0	0	8	8	4	28	4	36	0	0	12	12	8	16	20	44	

	Cascade Boulevard Southbound				Shasta Dam Boulevard Westbound				Cascade Boulevard Northbound				Shasta Dam Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	**2**	**1**	**3**	**4**
03:45 PM	0	0	**1**	**1**	0	0	0	0	0	0	0	0	**1**	0	0	1	2
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total Volume	0	0	1	1	0	2	0	2	0	0	0	0	1	2	2	5	8
% App. Total	0	0	100		0	100	0		0	0	0		20	40	40		
PHF	.000	.000	.250	.250	.000	.500	.000	.500	.000	.000	.000	.000	.250	.250	.500	.417	.500

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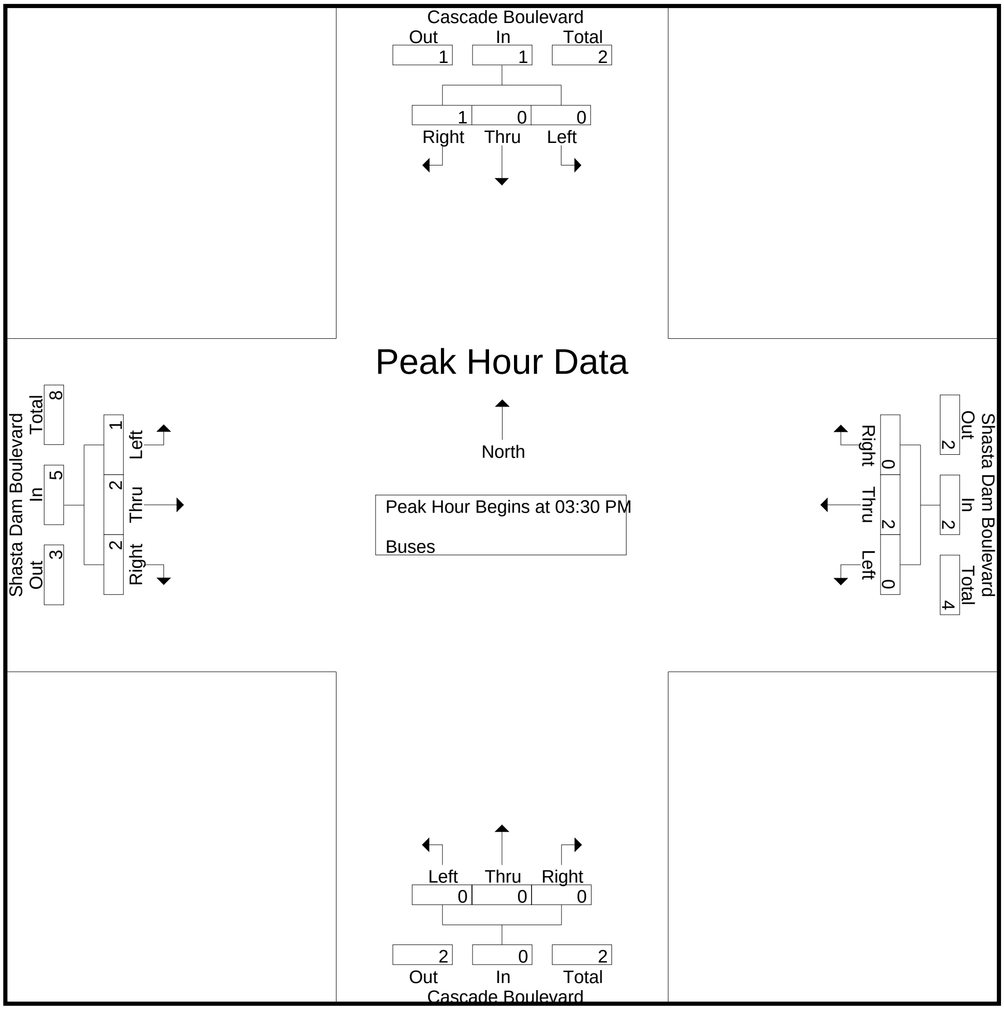
City of Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Boulevard (CA-151)
Weather: Clear

File Name : SHL_Cas_SD PM
Site Code : 22324111
Start Date : 2/6/2024



Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:30 PM				03:30 PM				03:30 PM				03:30 PM			
+0 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	**2**	**1**	**3**
+15 mins.	0	0	**1**	**1**	0	0	0	0	0	0	0	0	**1**	0	0	1
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Total Volume	0	0	1	1	0	2	0	2	0	0	0	0	1	2	2	5
% App. Total	0	0	100		0	100	0		0	0	0		20	40	40	
PHF	.000	.000	.250	.250	.000	.500	.000	.500	.000	.000	.000	.000	.250	.250	.500	.417

Location: Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Blvd

Date: 2/6/2024
Day: Tuesday

PEDESTRIANS

	North Leg Cascade Boulevard	East Leg Shasta Dam Blvd	South Leg Cascade Boulevard	West Leg Shasta Dam Blvd	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
6:30 AM	0	0	0	1	1
6:45 AM	1	0	0	1	2
7:00 AM	1	0	0	1	2
7:15 AM	1	0	0	3	4
7:30 AM	1	0	0	2	3
7:45 AM	0	0	0	2	2
8:00 AM	0	0	0	1	1
8:15 AM	0	0	0	2	2
8:30 AM	0	0	0	3	3
8:45 AM	1	0	0	2	3
TOTAL VOLUMES:	5	0	0	18	23

	North Leg Cascade Boulevard	East Leg Shasta Dam Blvd	South Leg Cascade Boulevard	West Leg Shasta Dam Blvd	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
2:30 PM	0	0	1	0	1
2:45 PM	0	0	0	0	0
3:00 PM	0	0	0	1	1
3:15 PM	1	0	2	1	4
3:30 PM	0	0	1	4	5
3:45 PM	1	0	0	2	3
4:00 PM	0	0	1	0	1
4:15 PM	0	0	1	4	5
4:30 PM	1	0	2	3	6
4:45 PM	0	0	0	1	1
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1
5:30 PM	0	0	0	2	2
5:45 PM	0	0	0	2	2
TOTAL VOLUMES:	3	0	8	21	32

Location: Shasta Lake
N/S: Cascade Boulevard
E/W: Shasta Dam Blvd

Date: 2/6/2024
Day: Tuesday

BICYCLES

	Southbound Cascade Boulevard			Westbound Shasta Dam Blvd			Northbound Cascade Boulevard			Eastbound Shasta Dam Blvd			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Cascade Boulevard			Westbound Shasta Dam Blvd			Northbound Cascade Boulevard			Eastbound Shasta Dam Blvd			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
3:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	1	0	0	0	0	1	0	0	0	0	0	2
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	2	1	0	0	0	2	2	0	0	0	0	7

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2070 Controller TSCP Timing Chart

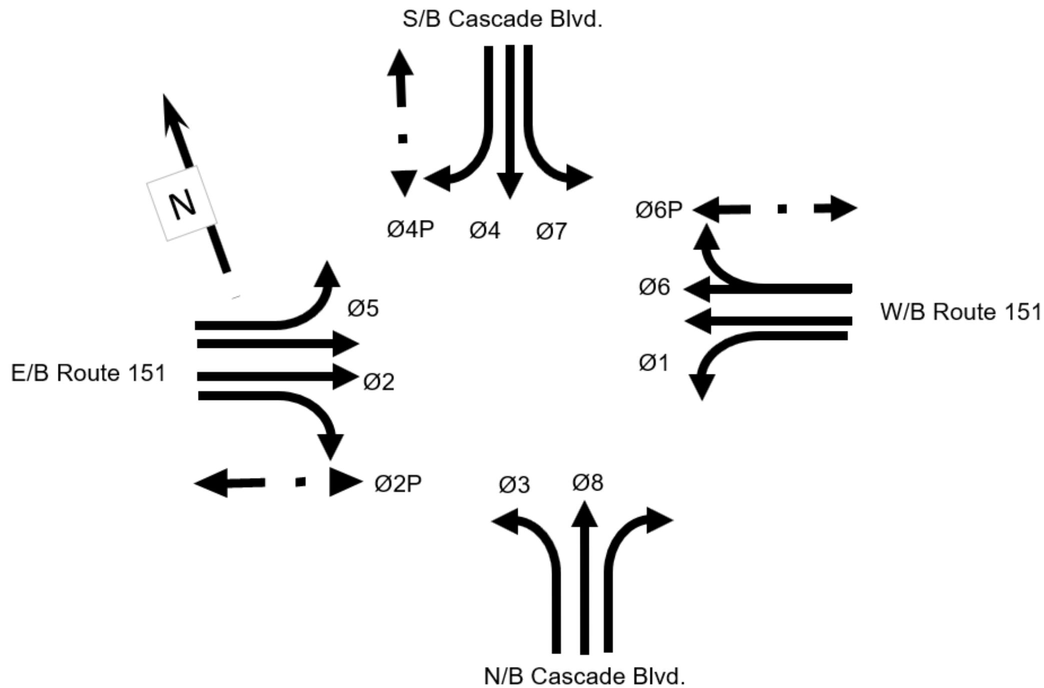
Location: 151 & Cascade
System:
Master At: 151 & Cascade
District: 02
I/C:
Designed By: B. Paull
Installed By: B. Paull
Service Info:

Timing Change:	Date Start:	Date End:	Designed:	Installed:
8/21/2023	4/16/2021			

PHASE		FLASH
1)	WB Left Turn	[ ]
2)	EB Route 151	[ ]
3)	NB Left Turn	[ ]
4)	SB Cascade Blvd	[ ]
5)	EB Left Turn	[ ]
6)	WB Route 151	[ ]
7)	SB Left Turn	[ ]
8)	NB Cascade Blvd	[ ]

OVERLAP	FLASH
A)	[ ]
B)	[ ]
C)	[ ]
D)	[ ]
E)	[ ]
F)	[ ]

Intersection Layout



Comments and Notes:
Updated Ped timing for 3.5 ft/s per MUTCD 8-1-13
Updated min. greens for bicycle timing 8-1-13
Upgraded controller to 2070 5-15-2014
Removed startup yellow 8-8-2017
Activated IP Signal Comms and LPI 8-21-2023

RAM Checksum

Page 2:	B49C	Page 8:	85AF
Page 3:	177F	Page 9:	84FD
Page 4:	F29E	Page 10:	60D3
Page 5:	191A	Page 11:	CFD4
Page 6:	191A	Page 12:	6828
Page 7:	6B90	Page 13:	86F7

Post Mile: SHA-151-6.79 CASCADE BLVD

Printed: 8/21/2023

CONFIGURATION PHASE FLAGS

Cabinet (9-3)
332
Configuration
CALTRANS

Phases (2-1-1-1)	
Permitted	1 2 3 4 5 6 7 8
Restricted	. . . .

Phase Recalls (2-1-1-2)	
Vehicle Min	. 2 . . . 6 . .
Vehicle Max	. . . .
Pedestrian	. . . .
Bicycle	. . . .

Phase Locks (2-1-1-3)	
Red	. . . .
Yellow	. . . .
Force/Max	. . . .

Phase Features (2-1-1-4)	
Double Entry	. . . .
Rest In Walk	. . . .
Rest In Red	. . . .
Walk 2	. . . .
Max Green 2	. . . .
Max Green 3	. . . .

Startup (2-1-1-5)	
First Green Phases	. 2 . . . 6 . .
Yellow Start Phases	. . . .
Vehicle Calls	1 2 3 4 5 6 7 8
Pedestrian Calls	. 2 . 4 . 6 . .
Yellow Start Overlaps	. . . . . .
Startup All-Red	6.0

Call To Phase (2-1-2-1)		Omit On Green	
1	. . . .	1	. . . .
2	. . . .	2	. . . .
3	. . . .	3	. . . .
4	. . . .	4	. . . .
5	. . . .	5	. . . .
6	. . . .	6	. . . .
7	. . . .	7	. . . .
8	. . . .	8	. . . .

Flashing Colors (2-1-2-2)	
Yellow Flash Phases	. . . .
Yellow Flash Overlaps	. . . . . .
Flash In Red Phases	. . . .
Flash In Red Overlaps	. . . . . .

Special Operation (2-1-2-3)	
Single Exit Phase	. . . .
Driveway Signal Phases	. . . .
Driveway Signal Overlaps	. . . . . .
Leading Ped Phases	. 2 . 4 . 6 . .

Protected Permissive (2-1-2-4)	
Protected Permissive	. . . .

Pedestrian (2-1-3)	
P1	. . . .
P2	. 2 . . . . . .
P3	. . . .
P4	. . . 4 . . . .
P5	. . . .
P6	. . . . . 6 . .
P7	. . . .
P8	. . . .

Overlap (2-1-4)

Overlap	Parent	Omit	No Start	Not
A	. . . .	. . . .	. . . .	. . . .
B	. . . .	. . . .	. . . .	. . . .
C	. . . .	. . . .	. . . .	. . . .
D	. . . .	. . . .	. . . .	. . . .
E	. . . .	. . . .	. . . .	. . . .
F	. . . .	. . . .	. . . .	. . . .

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PHASE TIMING

Phase (2-2)	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
--- Walk 1 ---	0	4	0	4	0	4	0	0
Flash Don't Walk	0	25	0	28	0	25	0	0
Minimum Green	11	10	10	11	11	10	5	11
Det Limit	0	25	0	0	0	25	0	0
Max Initial	0	20	0	0	0	20	0	0
Max Green 1	25	40	20	15	15	40	25	20
Max Green 2	5	0	5	5	5	0	10	5
Max Green 3	0	0	0	0	0	0	0	0
Extension	2.5	5.0	2.5	2.5	2.5	6.0	2.5	2.5
Maximum Gap	2.5	5.0	2.5	2.5	2.5	6.0	2.5	2.5
Minimum Gap	2.5	3.0	2.5	2.5	2.5	4.0	2.5	2.5
Add Per Vehicle	0.0	2.2	0.0	0.0	0.0	2.2	0.0	0.0
Reduce Gap By	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
Reduce Every	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
Yellow	3.7	5.0	3.7	3.7	3.7	5.5	3.7	3.7
All-Red	0.5	1.0	0.5	0.5	0.5	1.0	0.5	0.5
Ped/Bike (2-3)	**-1-**	**-2-**	**-3-**	**-4-**	**-5-**	**-6-**	**-7-**	**-8-**
--- Walk 2 ---	0	0	0	0	0	0	0	0
Delay/Early Walk	0	3	0	3	0	3	0	0
Solid Don't Walk	0	0	0	0	0	0	0	0
Bike Green	0	0	0	0	0	0	0	0
Bike All-Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OVERLAP TIMING

Overlap (2-4)	A	B	C	D	E	F
Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	5.0	5.0	5.0	5.0
Red	0.0	0.0	0.0	0.0	0.0	0.0

Red Revert

Red Revert (2-5)	
Time	5.0
All-Red Sec/Min (2-6)	
All-Red Sec/Min:	OFF

Max 2 Extension

Max/Gap Out (2-7)	
Max Cnt	0
Gap Cnt	0

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Local Plan 1...9 (7-1) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 1	Green Factor			....											
Plan 2	Green Factor			....											
Plan 3	Green Factor			....											
Plan 4	Green Factor			....											
Plan 5	Green Factor			....											
Plan 6	Green Factor			....											
Plan 7	Green Factor			....											
Plan 8	Green Factor			....											
Plan 9	Green Factor			....											

Local Plan 1...9 (7-1) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 1	....	....	....	....	....	....	....	....
Plan 2	....	....	....	....	....	....	....	....
Plan 3	....	....	....	....	....	....	....	....
Plan 4	....	....	....	....	....	....	....	....
Plan 5	....	....	....	....	....	....	....	....
Plan 6	....	....	....	....	....	....	....	....
Plan 7	....	....	....	....	....	....	....	....
Plan 8	....	....	....	....	....	....	....	....
Plan 9	....	....	....	....	....	....	....	....

Master Timer Sync (7-A)	
Enable in Plans	
1-9	....
11-19	....
21-29	....

Master Sub Master	
Input	
Output	

FREE PLAN PHASE FLAGS

(7-E) Free	
Lag	Omit
. 2 . 4 . 6 . 8	....
Veh Min	Veh Max
. 2 . . . 6 . .	....
Ped	Bike
....	....
Cond	Cond Grn
....	10

MANUAL COMMANDS

Manual Plan (4-1)	
Plan	OffSet
	A

Plan: 1-29

254 = Flash

255 = Free

Offset A, B, or C

Special Function Override (4-2)			
#	Control	#	Control
1	NORMAL	3	NORMAL
2	NORMAL	4	NORMAL

Detector Reset	(4-3)
Local Manual (4-4)	OFF

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Local Plan 11...19 (7-2) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 11	Green Factor			....											
Plan 12	Green Factor			....											
Plan 13	Green Factor			....											
Plan 14	Green Factor			....											
Plan 15	Green Factor			....											
Plan 16	Green Factor			....											
Plan 17	Green Factor			....											
Plan 18	Green Factor			....											
Plan 19	Green Factor			....											

Local Plan 11...19 (7-2) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 11	....	....	....	....	....	....	....	....
Plan 12	....	....	....	....	....	....	....	....
Plan 13	....	....	....	....	....	....	....	....
Plan 14	....	....	....	....	....	....	....	....
Plan 15	....	....	....	....	....	....	....	....
Plan 16	....	....	....	....	....	....	....	....
Plan 17	....	....	....	....	....	....	....	....
Plan 18	....	....	....	....	....	....	....	....
Plan 19	....	....	....	....	....	....	....	....

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Local Plan 21...29 (7-3) TIMING DATA

COORDINATION

[Offsets] Green Factors or Press [F] to Select Force-Off

		Cycle	Multi	Lag Gap	A	B	C	-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-
Plan 21	Green Factor			....											
Plan 22	Green Factor			....											
Plan 23	Green Factor			....											
Plan 24	Green Factor			....											
Plan 25	Green Factor			....											
Plan 26	Green Factor			....											
Plan 27	Green Factor			....											
Plan 28	Green Factor			....											
Plan 29	Green Factor			....											

Local Plan 21...29 (7-3) PHASE FLAGS

	Lag	Sync	Hold	Omit	Veh Min	Veh Max	Ped	Bike
Plan 21	....	....	....	....	....	....	....	....
Plan 22	....	....	....	....	....	....	....	....
Plan 23	....	....	....	....	....	....	....	....
Plan 24	....	....	....	....	....	....	....	....
Plan 25	....	....	....	....	....	....	....	....
Plan 26	....	....	....	....	....	....	....	....
Plan 27	....	....	....	....	....	....	....	....
Plan 28	....	....	....	....	....	....	....	....
Plan 29	....	....	....	....	....	....	....	....

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DETECTORS

Detector Attributes (5-1)			
Det	**Type**	**Phases**	**Lock**
1	COUNT+CALL+EXTEND	1	NO
2	COUNT+CALL+EXTEND	1	NO
3	COUNT+CALL+EXTEND	. 2	NO
4	COUNT+CALL+EXTEND	. 2	NO
5	COUNT+CALL+EXTEND	. 2	NO
6	CALL+EXTEND	. 2	NO
7	LIMITED	. 2	NO
8	LIMITED	. 2	NO
9	COUNT+CALL+EXTEND	. . 3	NO
10	COUNT+CALL+EXTEND	. . 3	NO
11	COUNT+CALL+EXTEND	. . . 4	NO
12	COUNT+CALL+EXTEND	. . . 4	NO
13	COUNT+CALL+EXTEND	. . . 4	NO
14	CALL+EXTEND	. . . 4	NO
15	COUNT+CALL+EXTEND	. . . 4	NO
16	COUNT+CALL+EXTEND	. . . 4	NO
17	COUNT+CALL+EXTEND	1	NO
18	COUNT+CALL+EXTEND	. . 3	NO
19	COUNT+CALL+EXTEND	. 2	NO
20	COUNT+CALL+EXTEND	. . . 4	NO
21	COUNT+CALL+EXTEND	. . . . 5 . . .	NO
22	COUNT+CALL+EXTEND	. . . . 5 . . .	NO
23	COUNT+CALL+EXTEND	. . . . . 6 . .	NO
24	COUNT+CALL+EXTEND	. . . . . 6 . .	NO
25	COUNT+CALL+EXTEND	. . . . . 6 . .	NO
26	CALL+EXTEND	. . . . . 6 . .	NO
27	LIMITED	. . . . . 6 . .	NO
28	LIMITED	. . . . . 6 . .	NO
29	COUNT+CALL+EXTEND	. . . . . . 7 .	NO
30	COUNT+CALL+EXTEND	. . . . . . 7 .	NO
31	COUNT+CALL+EXTEND	 8	NO
32	COUNT+CALL+EXTEND	 8	NO
33	COUNT+CALL+EXTEND	 8	NO
34	CALL+EXTEND	 8	NO
35	LIMITED	 8	NO
36	COUNT+CALL+EXTEND	 8	NO
37	COUNT+CALL+EXTEND	. . . . 5 . . .	NO
38	COUNT+CALL+EXTEND	. . . . . . 7 .	NO
39	COUNT+CALL+EXTEND	. . . . . 6 . .	NO
40	COUNT+CALL+EXTEND	 8	NO
41	PEDESTRIAN	. 2	NO
42	PEDESTRIAN	. . . 4	NO
43	PEDESTRIAN	. . . . . 6 . .	NO
44	PEDESTRIAN	 8	NO

Slot	Detector Configuration (5-2)				
	Det	**Delay**	**Extend**	**Recall**	**Port**
I1U	1			10	3.2
I1L	2			10	7.2
I2U	3			10	1.1
I2L	4			10	1.5
I3U	5			10	4.5
I3L	6			10	6.2
I4U	7		1.0	10	2.1
I4L	8		1.0	10	7.4
I5U	9	2		10	3.4
I5L	10			10	7.6
I6U	11	2		10	1.3
I6L	12			10	1.7
I7U	13	10		10	4.7
I7L	14			10	6.4
I8U	15			10	2.3
I8L	16			10	7.8
I9U	17			10	3.6
I9L	18			10	3.8
I10U	19			10	4.1
I10L	20			10	4.2
J1U	21	2		10	3.1
J1L	22			10	7.1
J2U	23			10	1.2
J2L	24			10	1.6
J3U	25			10	4.6
J3L	26			10	6.3
J4U	27		1.0	10	2.2
J4L	28		1.0	10	7.3
J5U	29	2		10	3.3
J5L	30			10	7.5
J6U	31	2		10	1.4
J6L	32			10	1.8
J7U	33	10		10	4.8
J7L	34			10	6.5
J8U	35			10	2.4
J8L	36			10	7.7
J9U	37			10	3.5
J9L	38			10	3.7
J10U	39			10	4.3
J10L	40			10	4.4
I12U	41			10	5.1
I12L	42			10	5.3
I13U	43			10	5.2
I13L	44			10	5.4

Failure Times(5-3)	Minutes
Maximum On Time	
Fail Reset Time	

Failure Override (5-4)	
Detectors 1-8	. . . .
Detectors 9-16	. . . .
Detectors17-24	. . . .
Detectors 25-32	. . . .
Detectors 33-40	. . . .
Detectors 41-44	. . . .

System Detector Assignment (5-5)								
Sys Det	1	2	3	4	5	6	7	8
Det Nu								
Sys Det	9	10	11	12	13	14	15	16
Det Nu								

CIC Operation (5-6-1)	
Enable in Plans	. . . .

CIC Values (5-6-2)	Volume	Occupancy	Demand
Smoothing	0.66	0.66	0.66
Multiplier	4.0	0.33	
Exponent	0.50	1.00	

Detector-to-Phase Assignment (5-6-3)								
Sys Det	1	2	3	4	5	6	7	8
Phase								
Sys Det	9	10	11	12	13	14	15	16
Phase								

Input File Port-Bit Assignments

332 Cabinet - For Reference Only

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I-	3.2	1.1	4.5	2.1	3.4	1.3	4.7	2.3	3.6	4.1	6.6	5.1	5.2	6.7
	7.2	1.5	6.2	7.4	7.6	1.7	6.4	7.8	3.8	4.2	2.7	5.3	5.4	6.8
J-	3.1	1.2	4.6	2.2	3.3	1.4	4.8	2.4	3.5	4.3	2.8	5.5	5.6	2.5
	7.1	1.6	6.3	7.3	7.5	1.8	6.5	7.7	3.7	4.4	6.1	5.7	5.8	2.6

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TOD SCHEDULE

Table 1 (8-2-1)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 2 (8-2-2)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 3 (8-2-3)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 4 (8-2-4)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 5 (8-2-5)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

Table 6 (8-2-6)		
Time	Plan	OS
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A
		A

WEEKDAY ASSIGNMENT

Weekday Table Assignments (8-2-7)						
Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	1	1	1	1	2	2

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HOLIDAY TABLES

Floating Holiday Table (8-2-8)

#	Mnth	Week	DOW	Table
1			....	
2			....	
3			....	
4			....	
5			....	
6			....	
7			....	
8			....	
9			....	
10			....	
11			....	
12			....	
13			....	
14			....	
15			....	
16			....	

Fixed Holiday Table (8-2-9)

#	Mnth	Day	DOW	Table
1			....	
2			....	
3			....	
4			....	
5			....	
6			....	
7			....	
8			....	
9			....	
10			....	
11			....	
12			....	
13			....	
14			....	
15			....	
16			....	

Daylight Saving (8-1)

Enabled	YES

	Month	Sunday
Start	MAR	2nd
End	NOV	1st

Solar Clock Data (8-4)

North Latitude	34
West Longitude	118
Local Time Zone	8

Sabbatical Clock (8-5)

Hebrew	Ped Recall
Sabbath	....
Holiday	....

TOD FUNCTIONS

TOD Functions (8-3)

#	Start	End	DOW	Action	Phases
1	2000	0630	M T W T F S S	17	1 . 3 4 5 . 7 8
2			....		....
3			....		....
4			....		....
5			....		....
6			....		....
7			....		....
8			....		....
9			....		....
10			....		....
11			....		....
12			....		....
13			....		....
14			....		....
15			....		....
16			....		....

Action Codes:
0. None
1. Permitted
2. Restricted
4. Veh Min Recall
5. Veh Max Recall
6. Ped Recall
7. Bike Recall
8. Red Lock
9. Yellow Lock
10. Force/Max Lock
11.Double Entry
12. Y-Coord C
13. Y-Coord D
14. Free
15. Flashing
16. Walk 2
17. Max Green 2
18. Max Green 3
19. Rest in Walk
20. Rest in Red
21. Free Lag Phases
22. Special Functions
23. Truck Preempt
24. Conditional Service
25. Conditional Service
26. Leading Ped
27. Traffic Actuated Max 2
41. Protected Permissive
42. Protected Permissive

Action Code = Phases added to normal setting
100+Action Code = Phases removed
200+Action Code = Phases replaced

COMMUNICATIONS

	C2 (6-1-1)	C20 (6-1-2)	C21 (6-1-3)
Address	2		
Baud	9600	1200	1200
Protocol	AB3418	AB3418	AB3418
Data Bits	8	8	8
Parity	NONE	NONE	NONE
Stop Bits	1	1	1
RTS On Time	20	20	20
RTS Off Time	20	20	20
Handshaking	NORMAL	NORMAL	NORMAL
Access Level	0	0	0

CALLBACK NUMBERS

Callback Numbers (6-3...3)

Line Out			
Long Distance			
Local Toll			
Delay	10	10	10
Area Code			
Phone Number			

SOFT LOGIC

Soft Logic (6-2)

#	Data	OP	Data	OP	Data	OP	Data
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

*Refer to User's Manual for Data and OP Codes

NETWORK

Network Parameters (6-4)

Address	
Protocol	AB3418
Port	27000
Type	STATIC
Central Access	
Field Access	
ATSPM	OFF

IP Address	10	20	166	10
Netmask	255	255	255	248
Broadcast	10	20	166	15
Gateway	10	20	166	9

Access Levels:

0-Full Access
1-Status Only
2-Status, Set Pattern, Time
3-Status, Set Pattern, Time, Manual Plan
4-Reserved
5-Full Access with No Set Pattern
6-Full Access with No Set Time
7-Full Access with No Set Pattern, Manual Plan
8-Full Access with No Set Time, Pattern, Manual Plan

SPAT Network (6-5)

SPAT	1	2
Protocol	NONE	NONE
UDP Port	0	0

IP Address 0 . 0 . 0 . 0

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RAILROAD PREEMPTION

RR 1

Timing (3-1-1)	
Clear 1	15
Clear 2	5
Clear 3	
Hold	
Min Gr	
Delay	
Exit	
Ped Clr	

Phase Flags (3-1-2)			Pedestrian Flags (3-1-3)			Overlap Flags (3-1-4)		
Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
. 2 . . 5 . . .	. . . .	. . . .	. . . .	. . . .	. 2 . 4 . 6 . 8	. . . . . .	. . . . . .	. . . . . .
. 2 . . 5 . . .	. . . .	. . . .	. . . .	. . . .	. 2 . 4 . 6 . 8	. . . . . .	. . . . . .	. . . . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
1 . . 4 . . 7 8	. . . .	. . . .	. . . .	. . . 4 . . . 8	. 2 . . . 6 . .	. . . . . .	. . . . . .	. . . . . .

Exit Parameters (3-1-5)			
Phase Green	Ovrlap Green	Veh Permit/Call	Ped Permit/Call
. 2 . . . 6 . .	. . . . . .	1 2 3 4 5 6 7 8	. 2 . 4 . 6 . 8

Configuration (3-1-6)

	PR	XR	Gate	Isld	APP	Sign	Sign	Max On	Latching
1								5	NO
2									

Valid Inputs: 1.x, 2.x, 3.x, 4.x, 5.x, 6.x, 7.x, 8.x x=1 to 8
Valid Outputs: 11.x, 12.x, 13.x, 14.x, 15.x, 16.x, 17.x, 18.x x=1 to 8

RR 2

Timing (3-2-1)	
Clear 1	15
Clear 2	5
Clear 3	
Hold	
Min Gr	
Delay	
Exit	
Ped Clr	

Phase Flags (3-2-2)			Pedestrian Flags (3-2-3)			Overlap Flags (3-2-4)		
Grn Hold	Yel Flash	Red Flash	Walk	Flash DW	Solid DW	Grn Hold	Yel Flash	Red Flash
. . . 4 . . 7 .	. . . .	. . . .	. . . .	. . . .	. 2 . 4 . 6 . 8	. . . . . .	. . . . . .	. . . . . .
. . . 4 . . 7 .	. . . .	. . . .	. . . .	. . . .	. 2 . 4 . 6 . 8	. . . . . .	. . . . . .	. . . . . .
. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . . . .	. . . . . .	. . . . . .
1 2 3 . . 6 . .	. . . .	. . . .	. . . .	. 2 . . . 6 . .	. . . 4 . . . 8	. . . . . .	. . . . . .	. . . . . .

Exit Parameters (3-2-5)			
Phase Green	Ovrlap Green	Veh Permit	Ped Permit
. 2 . . . 6 . .	. . . . . .	1 2 3 4 5 6 7 8	. 2 . 4 . 6 . 8

Configuration (3-2-6)

	PR	XR	Gate	Isld	APP	Sign	Sign	Max On	Latching
1								5	NO
2									

Valid Inputs: 1.x, 2.x, 3.x, 4.x, 5.x, 6.x, 7.x, 8.x x=1 to 8
Valid Outputs: 11.x, 12.x, 13.x, 14.x, 15.x, 16.x, 17.x, 18.x x=1 to 8

EMERGENCY VEHICLE PREEMPTION

	Preempt Timers: Delay	Clear	Max	Phase Green	Overlap Green
EVA (3-A)		30	30	. 2 . . 5 . . .	. . . . . .
EVB (3-B)		30	30	. . . 4 . . 7 .	. . . . . .
EVC (3-C)		30	30	1 . . . . 6 . .	. . . . . .
EVD (3-D)		30	30	. . 3 8	. . . . . .

	Port	Latching	Phase Termination
EVA	5.5	NO	ADVANCE
EVB	5.6	NO	ADVANCE
EVC	5.7	NO	ADVANCE
EVD	5.8	NO	ADVANCE

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INPUTS

Enable	NO
Max ON	
Max OFF	

7 Wire I/C (2-1-5-1)			
Input	Port	Input	Port
RR1		Free	
RR2		D2	
RR3		D3	

Manual Control (2-1-5-2)	
Input	Port
Manual Advance	
Advance Enable	

Cabinet Status (2-1-5-3	
Input	Port
Flash Bus	
Door Ajar	
Flash Sense	6.7
Stop Time	6.8

Special Function (2-1-5-4)	
Input	Port
1	
2	
3	
4	

Battery Backup (2-1-5-5)	
Port	Operation
2.7	FLASHING

Y-Coordination (2-1-5-6	
Port C	Port D

OUTPUTS

Loadswitch Assignments (2-1-6)								
A	1	2	22	3	4	24	9	
B	5	6	26	7	8	28	10	
X	13	14	0	11	12	0	0	

Loadswitch Codes:
- 0 Unused (no output)
- 1-8 Vehicle 1-8
- 9-14 Overlap A-F
- 21-28 Ped 1-8
- 41-47 Special Functions
- 41 Protected Permissive Flashing Phase 1
- 43 Protected Permissive Flashing Phase 3
- 45 Protected Permissive Flashing Phase 5
- 47 Protected Permissive Flashing Phase 7
- 51-57 Special Functions
- 71-72 Seven Wire I/C

+ middle output of loadswitches 3 and 6 Channel 9 and 10

INTERVAL CONTROL

Interval Control (3-3-1)	Time
Step 1	
Step 2	
Step 3	
Step 4	
Step 5	
Step 6	
Step 7	
Step 8	

Phase Control (3-3-2)			Phase Recall (3-3-3)			Phase Permitted (3-3-4)		
Hold	Force	Advance	Veh Call	Ped Call	Int Call	Phs Permit	Ped Permit	Ovrlap Permit
....	....	....	....	....	....	....	....	......
....	....	....	....	....	....	....	....	......
....	....	....	....	....	....	....	....	......
....	....	....	....	....	....	....	....	......
....	....	....	....	....	....	....	....	......
....	....	....	....	....	....	....	....	......
....	....	....	....	....	....	....	....	......
....	....	....	....	....	....	....	....	......

Configuration (3-3-5)			
Input	Port	Delay	HRI Cross
1			
2			

HRI

HRI Configuration (3-4)	
RailRoad	51
Line	
Group	

	WAYSIDE	ATC
Subnode		
Device		

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TRANSIT PRIORITY

Local Plans (3-E) 1...9 11...19		Early Green	Green Extend	Inhibit Cycles	Phase 1 Minimum	Phase 2 Minimum	Phase 3 Minimum	Phase 4 Minimum	Phase 5 Minimum	Phase 6 Minimum	Phase 7 Minimum	Phase 8 Minimum
Plan 1	Green Factor											
Plan 2	Green Factor											
Plan 3	Green Factor											
Plan 4	Green Factor											
Plan 5	Green Factor											
Plan 6	Green Factor											
Plan 7	Green Factor											
Plan 8	Green Factor											
Plan 9	Green Factor											
Plan 11	Green Factor											
Plan 12	Green Factor											
Plan 13	Green Factor											
Plan 14	Green Factor											
Plan 15	Green Factor											
Plan 16	Green Factor											
Plan 17	Green Factor											
Plan 18	Green Factor											
Plan 19	Green Factor											

Enable in Local Plans (3-E-3)	
Plan 1-9	. . . .
Plan 11-19	. . . .

Queue Jump (3-E-4)		Input		Output	
Grn Hold	Hold Phase	Type	Port	Stop	Go
	. . . .	NONE	0.0	0	0
	. . . .	NONE	0.0	0	0

Free Plans (3-E-E)	
Max Grn Hold	Hold Phase
	. . . .

Access Utilities (9-5)	
Password	***
Timeout	30

YELLOW YIELD COORDINATION

Y-Coord Plans (7-C,D)	Long Grn	No Grn	Offset	Perm	Force-Offs -1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	Coord	Lag	Min Recall	Restricted
Plan C													. 2 . . . 6 . .	. 2 . 4 . 6 . 8	. . . .	. . . .
Plan D													. 2 . . . 6 . .	. 2 . 4 . 6 . 8	. . . .	. . . .

TRUCK PRIORITY

Truck Priority (3-F)	Passage	CarryOver	Clearance	Next Priority	Phase Green	Det 2 Port	Det 3 Port	Det 4 Port	Sign Output	Slave Input	Slave Output
					. . . .	0.0	0.0	0.0	0	0.0	0

Attachment 3

Synchro Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	38	593	54	18	478	49	7	48	125	12	53
v/c Ratio	0.10	0.31	0.06	0.05	0.31	0.15	0.02	0.10	0.39	0.02	0.11
Control Delay	35.1	16.0	0.1	35.7	20.5	35.5	28.2	0.4	34.9	25.2	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	16.0	0.1	35.7	20.5	35.5	28.2	0.4	34.9	25.2	0.4
Queue Length 50th (ft)	14	77	0	7	88	19	3	0	50	4	0
Queue Length 95th (ft)	58	240	0	34	187	70	15	0	139	20	0
Internal Link Dist (ft)		288			386		382			620	
Turn Bay Length (ft)	55			145		45		100	50		110
Base Capacity (vph)	501	2417	1125	835	2599	668	1055	964	835	1199	1043
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.25	0.05	0.02	0.18	0.07	0.01	0.05	0.15	0.01	0.05

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	540	49	16	370	65	45	6	44	114	11	48
Future Volume (veh/h)	35	540	49	16	370	65	45	6	44	114	11	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	38	593	54	18	407	71	49	7	48	125	12	53
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	156	1171	522	85	877	152	170	293	249	164	286	240
Arrive On Green	0.09	0.33	0.33	0.05	0.29	0.29	0.10	0.16	0.16	0.09	0.16	0.16
Sat Flow, veh/h	1753	3497	1560	1753	2980	516	1753	1841	1560	1753	1841	1544
Grp Volume(v), veh/h	38	593	54	18	238	240	49	7	48	125	12	53
Grp Sat Flow(s),veh/h/ln	1753	1749	1560	1753	1749	1747	1753	1841	1560	1753	1841	1544
Q Serve(g_s), s	1.1	7.1	1.3	0.5	5.8	5.9	1.4	0.2	1.4	3.7	0.3	1.6
Cycle Q Clear(g_c), s	1.1	7.1	1.3	0.5	5.8	5.9	1.4	0.2	1.4	3.7	0.3	1.6
Prop In Lane	1.00		1.00	1.00		0.30	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	156	1171	522	85	514	514	170	293	249	164	286	240
V/C Ratio(X)	0.24	0.51	0.10	0.21	0.46	0.47	0.29	0.02	0.19	0.76	0.04	0.22
Avail Cap(c_a), veh/h	501	2665	1189	835	1332	1331	668	701	594	835	1227	1030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	14.0	12.0	24.0	15.1	15.2	22.0	18.6	19.1	23.2	18.8	19.4
Incr Delay (d2), s/veh	0.6	0.7	0.2	0.9	2.3	2.4	0.7	0.0	0.3	5.4	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.4	0.4	0.2	2.2	2.3	0.5	0.1	0.5	1.6	0.1	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	14.7	12.2	24.9	17.5	17.6	22.7	18.6	19.4	28.6	18.9	19.7
LnGrp LOS	C	B	B	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		685			496			104			190	
Approach Delay, s/veh		15.0			17.8			20.9			25.5	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	24.1	9.3	12.4	8.9	21.9	9.1	12.6
Change Period (Y+Rc), s	* 4.2	* 6.5	* 4.2	* 4.2	* 4.2	6.5	* 4.2	* 4.2
Max Green Setting (Gmax), s	* 25	* 40	* 20	* 35	* 15	40.0	* 25	* 20
Max Q Clear Time (g_c+I1), s	2.5	9.1	3.4	3.6	3.1	7.9	5.7	3.4
Green Ext Time (p_c), s	0.0	8.3	0.1	0.1	0.0	7.4	0.2	0.1

Intersection Summary	
HCM 6th Ctrl Delay	17.7
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1022	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1022	1084	1622	-	-	-
Mov Cap-2 Maneuver	1022	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	0	0	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	82	474	84	63	568	83	12	48	56	19	34
v/c Ratio	0.25	0.30	0.11	0.20	0.37	0.28	0.03	0.10	0.25	0.05	0.08
Control Delay	36.9	21.6	0.8	37.1	22.7	37.8	26.9	0.4	40.0	28.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	21.6	0.8	37.1	22.7	37.8	26.9	0.4	40.0	28.8	0.3
Queue Length 50th (ft)	32	89	0	25	110	34	4	0	23	7	0
Queue Length 95th (ft)	108	198	4	89	244	110	20	0	82	29	0
Internal Link Dist (ft)		288			386		382			620	
Turn Bay Length (ft)	55			145		45		100	50		110
Base Capacity (vph)	430	2199	1010	717	2507	574	929	868	717	1057	930
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.22	0.08	0.09	0.23	0.14	0.01	0.06	0.08	0.02	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	422	75	56	444	61	74	11	43	50	17	30
Future Volume (veh/h)	73	422	75	56	444	61	74	11	43	50	17	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	82	474	84	63	499	69	83	12	48	56	19	34
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	232	1122	498	203	940	129	212	395	335	86	264	217
Arrive On Green	0.13	0.32	0.32	0.12	0.30	0.30	0.12	0.21	0.21	0.05	0.14	0.14
Sat Flow, veh/h	1753	3497	1553	1753	3087	425	1753	1841	1560	1753	1841	1513
Grp Volume(v), veh/h	82	474	84	63	282	286	83	12	48	56	19	34
Grp Sat Flow(s),veh/h/ln	1753	1749	1553	1753	1749	1763	1753	1841	1560	1753	1841	1513
Q Serve(g_s), s	2.7	6.8	2.5	2.1	8.5	8.6	2.8	0.3	1.6	2.0	0.6	1.3
Cycle Q Clear(g_c), s	2.7	6.8	2.5	2.1	8.5	8.6	2.8	0.3	1.6	2.0	0.6	1.3
Prop In Lane	1.00		1.00	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	232	1122	498	203	533	537	212	395	335	86	264	217
V/C Ratio(X)	0.35	0.42	0.17	0.31	0.53	0.53	0.39	0.03	0.14	0.65	0.07	0.16
Avail Cap(c_a), veh/h	412	2192	973	687	1096	1105	549	577	489	687	1010	830
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	17.0	15.6	25.9	18.4	18.4	25.9	19.8	20.3	29.8	23.7	24.0
Incr Delay (d2), s/veh	0.7	0.5	0.3	0.6	2.9	3.0	0.9	0.0	0.1	5.9	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	2.5	0.8	0.8	3.4	3.5	1.1	0.1	0.5	0.9	0.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.9	17.6	15.9	26.5	21.3	21.4	26.8	19.8	20.4	35.7	23.7	24.2
LnGrp LOS	C	B	B	C	C	C	C	B	C	D	C	C
Approach Vol, veh/h		640			631			143			109	
Approach Delay, s/veh		18.4			21.9			24.1			30.0	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	27.0	11.9	13.3	12.6	25.9	7.3	17.9
Change Period (Y+Rc), s	* 4.2	* 6.5	* 4.2	* 4.2	* 4.2	6.5	* 4.2	* 4.2
Max Green Setting (Gmax), s	* 25	* 40	* 20	* 35	* 15	40.0	* 25	* 20
Max Q Clear Time (g_c+I1), s	4.1	8.8	4.8	3.3	4.7	10.6	4.0	3.6
Green Ext Time (p_c), s	0.1	6.8	0.1	0.1	0.1	8.7	0.1	0.1

Intersection Summary			
HCM 6th Ctrl Delay			21.2
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1022	1084	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1022	1084	1622	-	-	-
Mov Cap-2 Maneuver	1022	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	0	-	0	0	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	741	54	16	603	65	23	79	227	229	111
v/c Ratio	0.29	0.50	0.07	0.06	0.58	0.25	0.07	0.19	0.58	0.49	0.23
Control Delay	40.7	19.7	0.2	39.1	25.8	41.4	34.7	1.0	38.8	32.4	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	19.7	0.2	39.1	25.8	41.4	34.7	1.0	38.8	32.4	6.2
Queue Length 50th (ft)	39	120	0	7	124	30	10	0	106	104	0
Queue Length 95th (ft)	109	303	0	33	232	89	36	0	228	196	36
Internal Link Dist (ft)		288			386		382			620	
Turn Bay Length (ft)	55			145		45		100	50		110
Base Capacity (vph)	317	1925	922	290	1734	264	584	605	634	964	859
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.38	0.06	0.06	0.35	0.25	0.04	0.13	0.36	0.24	0.13

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	682	50	15	409	145	60	21	73	209	211	102
Future Volume (veh/h)	78	682	50	15	409	145	60	21	73	209	211	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	85	741	54	16	445	158	65	23	79	227	229	111
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	225	1349	602	74	759	267	181	252	214	277	352	295
Arrive On Green	0.13	0.39	0.39	0.04	0.30	0.30	0.10	0.14	0.14	0.16	0.19	0.19
Sat Flow, veh/h	1753	3497	1560	1753	2535	892	1753	1841	1560	1753	1841	1543
Grp Volume(v), veh/h	85	741	54	16	306	297	65	23	79	227	229	111
Grp Sat Flow(s),veh/h/ln	1753	1749	1560	1753	1749	1678	1753	1841	1560	1753	1841	1543
Q Serve(g_s), s	3.1	11.4	1.5	0.6	10.2	10.4	2.4	0.8	3.2	8.6	7.9	4.3
Cycle Q Clear(g_c), s	3.1	11.4	1.5	0.6	10.2	10.4	2.4	0.8	3.2	8.6	7.9	4.3
Prop In Lane	1.00		1.00	1.00		0.53	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	225	1349	602	74	524	502	181	252	214	277	352	295
V/C Ratio(X)	0.38	0.55	0.09	0.22	0.58	0.59	0.36	0.09	0.37	0.82	0.65	0.38
Avail Cap(c_a), veh/h	306	1799	802	280	861	827	255	562	476	611	936	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	16.5	13.5	31.9	20.5	20.5	28.7	26.0	27.0	28.0	25.7	24.2
Incr Delay (d2), s/veh	0.8	0.8	0.1	1.1	3.7	4.0	0.9	0.1	0.8	4.5	1.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.1	0.5	0.3	4.3	4.2	1.0	0.3	1.2	3.7	3.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	17.2	13.6	32.9	24.2	24.5	29.6	26.1	27.8	32.6	27.2	24.8
LnGrp LOS	C	B	B	C	C	C	C	C	C	C	C	C
Approach Vol, veh/h		880			619			167			567	
Approach Delay, s/veh		18.1			24.6			28.3			28.9	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	33.0	11.3	17.4	13.0	27.1	15.1	13.6
Change Period (Y+Rc), s	* 4.2	* 6.5	* 4.2	* 4.2	* 4.2	6.5	* 4.2	* 4.2
Max Green Setting (Gmax), s	* 11	* 35	* 10	* 35	* 12	33.9	* 24	* 21
Max Q Clear Time (g_c+I1), s	2.6	13.4	4.4	9.9	5.1	12.4	10.6	5.2
Green Ext Time (p_c), s	0.0	9.1	0.0	1.3	0.1	8.1	0.4	0.2

Intersection Summary	
HCM 6th Ctrl Delay	23.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	50	79	116	248	11
Future Vol, veh/h	7	50	79	116	248	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	54	86	126	270	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	574	276	282	0	-	0
Stage 1	276	-	-	-	-	-
Stage 2	298	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	480	763	1280	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	753	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	448	763	1280	-	-	-
Mov Cap-2 Maneuver	448	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	753	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	3.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1280	-	448	763	-	-
HCM Lane V/C Ratio	0.067	-	0.017	0.071	-	-
HCM Control Delay (s)	8	-	13.2	10.1	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	123	451	102	83	932	113	55	62	157	51	114
v/c Ratio	0.56	0.32	0.15	0.38	0.77	0.57	0.20	0.17	0.48	0.15	0.30
Control Delay	51.2	21.7	2.6	45.2	30.6	53.3	36.0	1.0	42.3	31.1	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	21.7	2.6	45.2	30.6	53.3	36.0	1.0	42.3	31.1	7.4
Queue Length 50th (ft)	66	89	0	43	218	61	28	0	84	25	0
Queue Length 95th (ft)	#170	179	20	107	#426	#164	64	0	172	54	38
Internal Link Dist (ft)		288			386		382			620	
Turn Bay Length (ft)	55			145		45		100	50		110
Base Capacity (vph)	219	1420	700	233	1325	200	558	585	389	723	672
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.32	0.15	0.36	0.70	0.56	0.10	0.11	0.40	0.07	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	415	94	76	678	179	104	51	57	144	47	105
Future Volume (veh/h)	113	415	94	76	678	179	104	51	57	144	47	105
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	123	451	102	83	737	195	113	55	62	157	51	114
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	221	1323	588	199	1001	265	197	303	257	194	300	247
Arrive On Green	0.13	0.38	0.38	0.11	0.37	0.37	0.11	0.16	0.16	0.11	0.16	0.16
Sat Flow, veh/h	1753	3497	1554	1753	2735	723	1753	1841	1560	1753	1841	1511
Grp Volume(v), veh/h	123	451	102	83	471	461	113	55	62	157	51	114
Grp Sat Flow(s),veh/h/ln	1753	1749	1554	1753	1749	1709	1753	1841	1560	1753	1841	1511
Q Serve(g_s), s	5.4	7.6	3.6	3.6	19.2	19.2	5.0	2.1	2.8	7.2	2.0	5.6
Cycle Q Clear(g_c), s	5.4	7.6	3.6	3.6	19.2	19.2	5.0	2.1	2.8	7.2	2.0	5.6
Prop In Lane	1.00		1.00	1.00		0.42	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	1323	588	199	640	626	197	303	257	194	300	247
V/C Ratio(X)	0.56	0.34	0.17	0.42	0.74	0.74	0.57	0.18	0.24	0.81	0.17	0.46
Avail Cap(c_a), veh/h	239	1460	649	254	734	718	218	605	513	388	784	644
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.8	18.2	17.0	33.9	22.6	22.6	34.6	29.5	29.9	35.7	29.6	31.1
Incr Delay (d2), s/veh	1.9	0.3	0.3	1.0	6.3	6.4	2.3	0.2	0.4	5.8	0.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	2.9	1.3	1.5	8.3	8.1	2.2	0.9	1.1	3.3	0.9	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.7	18.6	17.3	34.9	28.9	29.0	36.9	29.8	30.2	41.5	29.8	32.1
LnGrp LOS	D	B	B	C	C	C	D	C	C	D	C	C
Approach Vol, veh/h		676			1015			230			322	
Approach Delay, s/veh		21.5			29.5			33.4			36.3	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.5	37.6	13.4	17.6	14.5	36.6	13.3	17.7
Change Period (Y+Rc), s	* 4.2	* 6.5	* 4.2	* 4.2	* 4.2	6.5	* 4.2	* 4.2
Max Green Setting (Gmax), s	* 12	* 34	* 10	* 35	* 11	34.5	* 18	* 27
Max Q Clear Time (g_c+I1), s	5.6	9.6	7.0	7.6	7.4	21.2	9.2	4.8
Green Ext Time (p_c), s	0.1	6.1	0.1	0.5	0.1	8.8	0.2	0.3

Intersection Summary			
HCM 6th Ctrl Delay			28.4
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	2.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	62	73	224	211	7
Future Vol, veh/h	8	62	73	224	211	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	67	79	243	229	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	634	233	237	0	-	0
Stage 1	233	-	-	-	-	-
Stage 2	401	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	443	806	1330	-	-	-
Stage 1	806	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	417	806	1330	-	-	-
Mov Cap-2 Maneuver	417	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	676	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	1.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1330	-	417	806	-	-
HCM Lane V/C Ratio	0.06	-	0.021	0.084	-	-
HCM Control Delay (s)	7.9	-	13.8	9.9	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0.3	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	92	555	54	18	547	49	10	48	230	15	87
v/c Ratio	0.29	0.38	0.07	0.06	0.51	0.17	0.03	0.11	0.57	0.03	0.17
Control Delay	39.0	20.2	0.2	39.7	24.3	40.0	35.1	0.5	36.9	26.3	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.0	20.2	0.2	39.7	24.3	40.0	35.1	0.5	36.9	26.3	2.6
Queue Length 50th (ft)	42	86	0	8	110	22	4	0	105	6	0
Queue Length 95th (ft)	114	222	0	36	217	72	21	0	233	23	15
Internal Link Dist (ft)		288			386		382			653	
Turn Bay Length (ft)	55			145		45		100	180		110
Base Capacity (vph)	415	2084	989	692	2309	554	875	827	692	1005	895
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.27	0.05	0.03	0.24	0.09	0.01	0.06	0.33	0.01	0.10

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	505	49	16	353	145	45	9	44	209	14	79
Future Volume (veh/h)	84	505	49	16	353	145	45	9	44	209	14	79
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	92	555	54	18	388	159	49	10	48	230	15	87
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	240	1358	606	82	724	293	158	202	171	282	332	278
Arrive On Green	0.14	0.39	0.39	0.05	0.30	0.30	0.09	0.11	0.11	0.16	0.18	0.18
Sat Flow, veh/h	1753	3497	1560	1753	2429	982	1753	1841	1560	1753	1841	1542
Grp Volume(v), veh/h	92	555	54	18	278	269	49	10	48	230	15	87
Grp Sat Flow(s),veh/h/ln	1753	1749	1560	1753	1749	1662	1753	1841	1560	1753	1841	1542
Q Serve(g_s), s	3.1	7.5	1.4	0.6	8.6	8.8	1.7	0.3	1.8	8.2	0.4	3.2
Cycle Q Clear(g_c), s	3.1	7.5	1.4	0.6	8.6	8.8	1.7	0.3	1.8	8.2	0.4	3.2
Prop In Lane	1.00		1.00	1.00		0.59	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	240	1358	606	82	521	495	158	202	171	282	332	278
V/C Ratio(X)	0.38	0.41	0.09	0.22	0.53	0.54	0.31	0.05	0.28	0.81	0.05	0.31
Avail Cap(c_a), veh/h	405	2153	960	674	1076	1023	540	567	480	674	991	830
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.5	14.5	12.6	29.8	19.0	19.1	27.7	25.9	26.6	26.3	22.0	23.1
Incr Delay (d2), s/veh	0.7	0.4	0.1	1.0	3.1	3.3	0.8	0.1	0.7	4.3	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.6	0.5	0.3	3.5	3.5	0.7	0.1	0.7	3.5	0.2	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.3	14.9	12.7	30.8	22.1	22.4	28.5	26.0	27.2	30.6	22.0	23.6
LnGrp LOS	C	B	B	C	C	C	C	C	C	C	C	C
Approach Vol, veh/h		701			565			107			332	
Approach Delay, s/veh		16.2			22.5			27.7			28.4	
Approach LOS		B			C			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	31.7	10.1	15.9	13.1	25.9	14.7	11.3				
Change Period (Y+Rc), s	* 4.2	* 6.5	* 4.2	* 4.2	* 4.2	6.5	* 4.2	* 4.2				
Max Green Setting (Gmax), s	* 25	* 40	* 20	* 35	* 15	40.0	* 25	* 20				
Max Q Clear Time (g_c+I1), s	2.6	9.5	3.7	5.2	5.1	10.8	10.2	3.8				
Green Ext Time (p_c), s	0.0	7.7	0.1	0.2	0.1	8.4	0.4	0.1				

Intersection Summary			
HCM 6th Ctrl Delay			21.4
HCM 6th LOS			C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	0											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	0	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1	-	1	1	1	0	1	0	-	-	-	0
Stage 1	1	-	-	0	0	-	-	-	-	-	-	-
Stage 2	0	-	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	-	6.22	7.12	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	-	3.318	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	1022	0	1084	1022	895	-	1622	-	0	0	-	-
Stage 1	1022	0	-	-	-	-	-	-	0	0	-	-
Stage 2	-	0	-	1022	895	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	-	-	1084	1022	895	-	1622	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	1022	895	-	-	-	-	-	-	-
Stage 1	1022	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1022	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	WBLn1	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	0	0	0	-	-
HCM Lane LOS	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	133	438	84	63	632	83	16	48	155	22	66
v/c Ratio	0.47	0.32	0.12	0.24	0.60	0.33	0.05	0.12	0.56	0.06	0.16
Control Delay	44.2	22.9	0.8	42.0	27.5	43.3	34.6	0.6	44.4	30.6	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	22.9	0.8	42.0	27.5	43.3	34.6	0.6	44.4	30.6	0.8
Queue Length 50th (ft)	62	86	0	29	131	39	7	0	72	9	0
Queue Length 95th (ft)	167	183	3	91	268	112	29	0	180	33	0
Internal Link Dist (ft)		288			386		382			653	
Turn Bay Length (ft)	55			145		45		100	180		110
Base Capacity (vph)	346	1850	872	578	2194	462	730	716	578	852	774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.24	0.10	0.11	0.29	0.18	0.02	0.07	0.27	0.03	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	390	75	56	428	134	74	14	43	138	20	59
Future Volume (veh/h)	118	390	75	56	428	134	74	14	43	138	20	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	133	438	84	63	481	151	83	16	48	155	22	66
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	250	1224	543	192	831	259	198	299	253	197	298	244
Arrive On Green	0.14	0.35	0.35	0.11	0.32	0.32	0.11	0.16	0.16	0.11	0.16	0.16
Sat Flow, veh/h	1753	3497	1553	1753	2623	818	1753	1841	1560	1753	1841	1511
Grp Volume(v), veh/h	133	438	84	63	320	312	83	16	48	155	22	66
Grp Sat Flow(s),veh/h/ln	1753	1749	1553	1753	1749	1692	1753	1841	1560	1753	1841	1511
Q Serve(g_s), s	5.1	6.7	2.7	2.4	11.0	11.1	3.2	0.5	1.9	6.2	0.7	2.7
Cycle Q Clear(g_c), s	5.1	6.7	2.7	2.4	11.0	11.1	3.2	0.5	1.9	6.2	0.7	2.7
Prop In Lane	1.00		1.00	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	250	1224	543	192	554	536	198	299	253	197	298	244
V/C Ratio(X)	0.53	0.36	0.15	0.33	0.58	0.58	0.42	0.05	0.19	0.79	0.07	0.27
Avail Cap(c_a), veh/h	366	1949	866	611	975	943	489	513	435	611	898	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	17.3	16.0	29.5	20.5	20.5	29.7	25.4	26.0	31.0	25.5	26.4
Incr Delay (d2), s/veh	1.3	0.4	0.3	0.7	3.4	3.6	1.1	0.1	0.3	5.2	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	2.5	0.9	1.0	4.5	4.5	1.3	0.2	0.7	2.8	0.3	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	17.7	16.3	30.2	23.9	24.1	30.7	25.5	26.3	36.2	25.6	26.8
LnGrp LOS	C	B	B	C	C	C	C	C	C	D	C	C
Approach Vol, veh/h		655			695			147			243	
Approach Delay, s/veh		20.0			24.6			28.7			32.7	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	31.6	12.3	15.8	14.4	29.2	12.3	15.8
Change Period (Y+Rc), s	* 4.2	* 6.5	* 4.2	* 4.2	* 4.2	6.5	* 4.2	* 4.2
Max Green Setting (Gmax), s	* 25	* 40	* 20	* 35	* 15	40.0	* 25	* 20
Max Q Clear Time (g_c+I1), s	4.4	8.7	5.2	4.7	7.1	13.1	8.2	3.9
Green Ext Time (p_c), s	0.1	6.3	0.1	0.2	0.1	9.6	0.3	0.1

Intersection Summary	
HCM 6th Ctrl Delay	24.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	0	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1	-	1	1	1	0	1	0	-	-	-	0
Stage 1	1	-	-	0	0	-	-	-	-	-	-	-
Stage 2	0	-	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	-	6.22	7.12	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	-	3.318	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	1022	0	1084	1022	895	-	1622	-	0	0	-	-
Stage 1	1022	0	-	-	-	-	-	-	0	0	-	-
Stage 2	-	0	-	1022	895	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	-	-	1084	1022	895	-	1622	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	1022	895	-	-	-	-	-	-	-
Stage 1	1022	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1022	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	WBLn1	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	0	0	0	-	-
HCM Lane LOS	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	138	703	54	16	671	65	26	79	330	233	145
v/c Ratio	0.54	0.46	0.07	0.07	0.66	0.31	0.10	0.23	0.76	0.49	0.29
Control Delay	49.0	23.1	0.2	42.7	27.9	46.7	42.0	1.5	44.5	32.7	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	23.1	0.2	42.7	27.9	46.7	42.0	1.5	44.5	32.7	6.5
Queue Length 50th (ft)	75	134	0	8	151	35	14	0	176	114	0
Queue Length 95th (ft)	#170	285	0	33	250	89	44	0	302	200	44
Internal Link Dist (ft)		288			386		382			653	
Turn Bay Length (ft)	55			145		45		100	180		110
Base Capacity (vph)	293	1585	783	233	1344	212	277	371	693	784	736
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.44	0.07	0.07	0.50	0.31	0.09	0.21	0.48	0.30	0.20

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	647	50	15	392	225	60	24	73	304	214	133
Future Volume (veh/h)	127	647	50	15	392	225	60	24	73	304	214	133
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	138	703	54	16	426	245	65	26	79	330	233	145
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	228	1346	600	72	635	362	166	227	192	376	447	376
Arrive On Green	0.13	0.38	0.38	0.04	0.30	0.30	0.09	0.12	0.12	0.21	0.24	0.24
Sat Flow, veh/h	1753	3497	1560	1753	2145	1222	1753	1841	1560	1753	1841	1546
Grp Volume(v), veh/h	138	703	54	16	347	324	65	26	79	330	233	145
Grp Sat Flow(s),veh/h/ln	1753	1749	1560	1753	1749	1618	1753	1841	1560	1753	1841	1546
Q Serve(g_s), s	6.0	12.5	1.8	0.7	14.1	14.3	2.8	1.0	3.8	14.7	8.9	6.3
Cycle Q Clear(g_c), s	6.0	12.5	1.8	0.7	14.1	14.3	2.8	1.0	3.8	14.7	8.9	6.3
Prop In Lane	1.00		1.00	1.00		0.76	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	1346	600	72	518	479	166	227	192	376	447	376
V/C Ratio(X)	0.61	0.52	0.09	0.22	0.67	0.68	0.39	0.11	0.41	0.88	0.52	0.39
Avail Cap(c_a), veh/h	299	1532	683	239	694	643	217	282	239	707	797	670
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.2	19.1	15.8	37.5	25.0	25.1	34.4	31.5	32.7	30.7	26.5	25.6
Incr Delay (d2), s/veh	1.9	0.7	0.1	1.1	5.3	6.0	1.1	0.2	1.0	5.0	0.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	4.7	0.6	0.3	6.2	5.9	1.2	0.4	1.4	6.4	3.8	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.1	19.8	16.0	38.7	30.3	31.0	35.5	31.7	33.8	35.7	27.2	26.1
LnGrp LOS	D	B	B	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		895			687			170			708	
Approach Delay, s/veh		21.9			30.9			34.1			30.9	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	37.6	11.9	23.8	14.7	30.4	21.5	14.2
Change Period (Y+Rc), s	* 4.2	* 6.5	* 4.2	* 4.2	* 4.2	6.5	* 4.2	* 4.2
Max Green Setting (Gmax), s	* 11	* 35	* 10	* 35	* 14	32.1	* 33	* 12
Max Q Clear Time (g_c+I1), s	2.7	14.5	4.8	10.9	8.0	16.3	16.7	5.8
Green Ext Time (p_c), s	0.0	8.4	0.0	1.4	0.1	7.6	0.6	0.1

Intersection Summary	
HCM 6th Ctrl Delay	27.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	0	53	17	0	0	82	119	0	0	251	11
Future Vol, veh/h	7	0	53	17	0	0	82	119	0	0	251	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	0	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	58	18	0	0	89	129	0	0	273	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	586	-	279	615	592	129	285	0	-	-	-	0
Stage 1	279	-	-	307	307	-	-	-	-	-	-	-
Stage 2	307	-	-	308	285	-	-	-	-	-	-	-
Critical Hdwy	7.12	-	6.22	7.12	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	-	3.318	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	422	0	760	403	419	921	1277	-	0	0	-	-
Stage 1	728	0	-	703	661	-	-	-	0	0	-	-
Stage 2	703	0	-	702	676	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	400	-	760	353	390	921	1277	-	-	-	-	-
Mov Cap-2 Maneuver	400	-	-	353	390	-	-	-	-	-	-	-
Stage 1	677	-	-	654	615	-	-	-	-	-	-	-
Stage 2	654	-	-	649	676	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	15.8	3.3	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	WBLn1	SBT	SBR
Capacity (veh/h)	1277	-	400	760	353	-	-
HCM Lane V/C Ratio	0.07	-	0.019	0.076	0.052	-	-
HCM Control Delay (s)	8	-	14.2	10.1	15.8	-	-
HCM Lane LOS	A	-	B	B	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0.2	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	172	416	102	83	994	113	59	62	252	54	146
v/c Ratio	0.79	0.30	0.15	0.40	0.83	0.61	0.25	0.18	0.64	0.14	0.33
Control Delay	68.1	22.9	2.5	48.1	35.2	58.5	41.8	1.2	43.6	29.9	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	22.9	2.5	48.1	35.2	58.5	41.8	1.2	43.6	29.9	7.1
Queue Length 50th (ft)	101	91	0	47	266	66	33	0	143	27	0
Queue Length 95th (ft)	#252	165	20	107	#478	#167	75	0	246	57	45
Internal Link Dist (ft)		288			386		382			653	
Turn Bay Length (ft)	55			145		45		100	180		110
Base Capacity (vph)	221	1390	688	220	1227	184	363	437	486	681	657
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.30	0.15	0.38	0.81	0.61	0.16	0.14	0.52	0.08	0.22

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	383	94	76	662	252	104	54	57	232	50	134
Future Volume (veh/h)	158	383	94	76	662	252	104	54	57	232	50	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	172	416	102	83	720	274	113	59	62	252	54	146
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	220	1330	591	193	904	344	190	222	188	293	331	272
Arrive On Green	0.13	0.38	0.38	0.11	0.36	0.36	0.11	0.12	0.12	0.17	0.18	0.18
Sat Flow, veh/h	1753	3497	1554	1753	2476	942	1753	1841	1560	1753	1841	1514
Grp Volume(v), veh/h	172	416	102	83	508	486	113	59	62	252	54	146
Grp Sat Flow(s),veh/h/ln	1753	1749	1554	1753	1749	1670	1753	1841	1560	1753	1841	1514
Q Serve(g_s), s	8.2	7.2	3.8	3.8	22.4	22.4	5.3	2.5	3.1	12.0	2.1	7.5
Cycle Q Clear(g_c), s	8.2	7.2	3.8	3.8	22.4	22.4	5.3	2.5	3.1	12.0	2.1	7.5
Prop In Lane	1.00		1.00	1.00		0.56	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	1330	591	193	638	609	190	222	188	293	331	272
V/C Ratio(X)	0.78	0.31	0.17	0.43	0.80	0.80	0.60	0.27	0.33	0.86	0.16	0.54
Avail Cap(c_a), veh/h	244	1400	622	242	688	657	203	399	338	535	747	615
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.5	18.8	17.7	35.8	24.5	24.5	36.6	34.4	34.7	34.9	29.9	32.1
Incr Delay (d2), s/veh	13.0	0.3	0.3	1.1	9.0	9.3	3.5	0.5	0.8	5.5	0.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	2.8	1.3	1.6	10.1	9.7	2.4	1.1	1.2	5.4	0.9	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.6	19.1	18.0	36.9	33.5	33.9	40.1	34.9	35.5	40.4	30.0	33.3
LnGrp LOS	D	B	B	D	C	C	D	C	D	D	C	C
Approach Vol, veh/h		690			1077			234			452	
Approach Delay, s/veh		26.5			33.9			37.6			36.9	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	39.3	13.5	19.7	15.0	38.0	18.6	14.6
Change Period (Y+Rc), s	* 4.2	* 6.5	* 4.2	* 4.2	* 4.2	6.5	* 4.2	* 4.2
Max Green Setting (Gmax), s	* 12	* 35	* 10	* 35	* 12	33.9	* 26	* 19
Max Q Clear Time (g_c+I1), s	5.8	9.2	7.3	9.5	10.2	24.4	14.0	5.1
Green Ext Time (p_c), s	0.1	5.7	0.0	0.6	0.1	7.0	0.4	0.3

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	0	65	16	0	0	76	227	0	0	214	7
Future Vol, veh/h	8	0	65	16	0	0	76	227	0	0	214	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	0	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	71	17	0	0	83	247	0	0	233	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	650	-	237	686	654	247	241	0	-	-	-	0
Stage 1	237	-	-	413	413	-	-	-	-	-	-	-
Stage 2	413	-	-	273	241	-	-	-	-	-	-	-
Critical Hdwy	7.12	-	6.22	7.12	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	-	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	-	3.318	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	382	0	802	362	386	792	1326	-	0	0	-	-
Stage 1	766	0	-	616	594	-	-	-	0	0	-	-
Stage 2	616	0	-	733	706	-	-	-	0	0	-	-
Platoon blocked, %								-			-	-
Mov Cap-1 Maneuver	364	-	802	314	362	792	1326	-	-	-	-	-
Mov Cap-2 Maneuver	364	-	-	314	362	-	-	-	-	-	-	-
Stage 1	718	-	-	577	557	-	-	-	-	-	-	-
Stage 2	577	-	-	668	706	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	17.1	2	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	WBLn1	SBT	SBR
Capacity (veh/h)	1326	-	364	802	314	-	-
HCM Lane V/C Ratio	0.062	-	0.024	0.088	0.055	-	-
HCM Control Delay (s)	7.9	-	15.1	9.9	17.1	-	-
HCM Lane LOS	A	-	C	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	0.3	0.2	-	-

Appendix J

VMT Analysis

Draft Technical Memorandum

July 03, 2024

To	Robert C. Vermeltfoort	**Contact No.**	+1 916 918 0622
Copy to	Russ Wenham, GHD	**Email**	Kamesh.vedula@ghd.com
From	Kamesh Vedula	**Project No.**	12642532
Project Name	7 - Eleven in Shasta Lake		
Subject	Shasta Lake 7-Eleven on Cascade Boulevard Vehicle Miles Traveled (VMT) Analysis		

1. Introduction

GHD was contracted to complete a Traffic Impact Study for the development of a 7-Eleven on Cascade Boulevard in Shasta Lake. The applicant has proposed a 7-Eleven Development Project (the project) at 1661 Cascade Boulevard in the City of Shasta Lake. This development would include the construction of a 4,650 square foot convenience store with 12 fueling stations – eight for passenger cars and four for heavy trucks. This project is located within the proximity of the Interstate 5 interchange and State Route 151 (Shasta Dam Boulevard) and may have an impact on these facilities.

Senate Bill (SB) 743 was signed into law in 2013, with the intent to better align California Environmental Quality Act (CEQA) practices with statewide sustainability goals related to efficient land use, greater multimodal choices, and greenhouse gas reductions. The provisions of SB 743 became effective on July 1, 2020. Under SB 743, automobile delay, traditionally measured as level of service, are no longer considered an environmental impact under CEQA. Instead, impacts are determined by changes to VMT. This technical memorandum outlines the potential impacts on VMT with the construction of the proposed gas station and convenience store.

2. Guidance

The City has the discretion to set or apply their own thresholds of significance, provided the decision to adopt those thresholds is supported by substantial evidence. The City of Shasta Lake does not currently have any adopted guidelines or impact thresholds for VMT.

In December 2018, the Office of Planning and Research (OPR) released its final *Technical Advisory on Evaluating Transportation Impacts in CEQA.* As the name implies, this document is advisory and, "…does not alter lead agency discretion in preparing environmental documents subject to CEQA. This document should not be construed as legal advice." The *Technical Advisory* recommends that for retail projects, a proposed project that results in a net increase in total area VMT may indicate a significant transportation impact. However, the *Technical Advisory* also recommends screening thresholds for locally-serving retail projects.

The OPR Technical Advisory also addresses various types of commercial-retail projects as follows:

– "Because new retail development typically redistributes shopping trips rather than creating new trips, estimating the total change in VMT (i.e., the difference in total VMT in the area affected with and without the project) is the best way to analyze a retail project's transportation impacts. By adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies generally may presume such development creates a less-than-significant transportation impact. Regional-serving retail development, on the other hand, which can lead to substitution of longer trips for shorter ones, may tend to have a significant impact. Where such development decreased VMT, lead agencies should consider the impact to be less-than-significant. Many cities and counties define local-serving and regional-serving retail in their zoning codes. Lead agencies may refer to those local definitions when available, but should also consider any project-specific information, such as market studies or economic impact analyses that might bear on customers' travel behavior. Because lead agencies will best understand their own communities and the likely travel behaviors of future project users, they are likely in the best position to decide when a project will likely be local-serving. Generally, however, retail development including stores larger than 50,000 square feet might be considered regional-serving, and so lead agencies should undertake an analysis to determine whether the project might increase or decrease VMT."

We suggest that survey data from the International Council of Shopping Centers (ICSC) is a preferable source of substantial evidence regarding the service area of retail developments[1]. Additionally, California Air Resources Board (CARB) has set a regional target for Shasta Regional Transportation Authority at -4%[2], which is less stringent than the statewide metric of 15% below baseline.

Additionally, in May 2020, Caltrans published an update for their Transportation Impact Study Guidelines (TISG). The Caltrans TISG is intended for use in preparing a transportation impact analysis of land use projects or plans that may impact or affect the State Highway System and replaces the prior 2002 guidelines. The TISG heavily references OPR's Technical Advisory as a basis for its guidance. The TISG recommends use of OPR's recommended thresholds for land use projects. As each lead agency develops and adopts its own VMT thresholds for land use projects, Caltrans will review them for consistency with OPR's recommendations, and with state greenhouse gas emissions reduction targets and CARB Scoping Plan. Caltrans identifies possible mitigation framework for projects found to have a potentially significant impact on VMT. These include the following programmatic measures:

– Impact fee programs that contain a demonstrated nexus and proportionality between a fee and capital projects that result in VMT reduction;
– VMT mitigation bank programs; and
– VMT mitigation exchange programs.

3. Analysis and Conclusions

The proposed project is a locally-serving commercial-retail development because it does not exceed the 50,000 square foot threshold from OPR, and as a gas-station and convenience store with a <1 mile trade area size (from ICSC) it is located in an infill lot adjacent to the I-5 and State Route 151 interchange and nearby residential and other commercial areas. Trips to and from the proposed gas station and convenience store would largely attract from existing trips on the adjacent roads. Additionally, based on CEQA Guidelines Appendix M, one of two other criteria options must be met to compliment the finding of locally-serving retail to be eligible for streamlining review that include the following:

– **Regional Location.** A commercial project with no single-building floor-plate greater than 50,000 square feet is eligible if it locates a "low vehicle travel area."

[1] https://www.icsc.com/uploads/research/general/US_CENTER_CLASSIFICATION.pdf
[2] https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets

– **Proximity to Households.** A project with no single-building floor-plate greater than 50,000 square feet located within one-half mile of 1,800 households is eligible.

“Low vehicle travel area” means a traffic analysis zone that exhibits a below average existing level of travel as determined using a regional travel demand model. For commercial and retail projects, “low vehicle travel area” refers to non-work attraction trip length; however, where such data is not available, commercial projects reference either home-based or household vehicle miles travelled per capita. The Shasta Regional travel demand model (ShastaSIM) provides household VMT outputs for the region and by traffic analysis zone (TAZ). For Shasta Lake, the existing citywide VMT per capita from the model is 16.6, and for the entire Shasta region is 17.9. The existing VMT per capita for the TAZ where the project is proposed is estimated to be 9.5 (TAZ ID 820), which is significantly lower than both the citywide and regional VMT figures. Therefore, the proposed project is located in a “low vehicle travel area”.

In conclusion, based on the OPR guidance, data from ICSC, and the above criteria for CEQA streamlining for a “low vehicle travel area”, the proposed project is screened out from a VMT analysis, and as such, is presumed to have a less-than significant impact on VMT.