City of Livermore
Community Development Department

LIVERMORE
CALIFORNIA

Parkwest Casino 580 Expansion Project

Initial Study/Mitigated Negative Declaration

November 2024

Prepared by

RANEY
PLANNING & MANAGEMENT, INC.
25 years
1501 Sports Drive, Suite A, Sacramento, CA 95834

TABLE OF CONTENTS

APPENDICES:

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

November 2024

A. BACKGROUND

1. Project Title: Parkwest Casino 580 Expansion Project

2. Lead Agency Name and Address: City of Livermore
Community Development Department
1052 S. Livermore Avenue
Livermore, CA 94550

3. Contact Person and Phone Number: Ashley Vera
Senior Planner
(925) 960-4479

4. Project Location: 950-968 North Canyons Parkway
and unaddressed vacant property to the east of
950-968 North Canyons Parkway
Livermore, CA 94551
APNs: 905-0016-086-00, 905-0016-087-00,
905-0016-088-00, and 905-0009-013-03

5. Project Sponsor's Name and Address: Parkwest Casino 580
968 North Canyons Parkway
Livermore, CA 94551

6. General Plan Designation: Isabel Neighborhood (IN)

7. Zoning Designation: Isabel Neighborhood Specific Plan (INSP),
General Commercial

8. Required Approvals from other Public Agencies: Approval of City of Livermore
Municipal Code amendments by the
California Bureau of Gambling Control and
approval of modified permit by the
California Gambling Control Commission

9. Surrounding Land Uses and Setting:

The approximately 9.5-acre project site (Assessor's Parcel Numbers [APNs] 905-0016-088-00, 905-0016-087-00, 905-0016-086-00, and a portion of APN 905-0009-013-03) is located at 968 North Canyons Parkway in the City of Livermore, California. The three western parcels (APNs 905-0016-088-00, 905-0016-087-00, 905-0016-086-00) are developed with the existing Parkwest Casino 580 and associated parking lot, and the eastern parcel (APN 905-0009-013-03) is undeveloped. Surrounding existing land uses include a business park to the north, across North Canyons Parkway; a gas station, restaurant, and three hotels to the east, across Airway Boulevard; Interstate 580 (I-580) and the Las Positas Golf Course to the south, and undeveloped land and Doolan Canyon to the west, across Doolan Road. The project site is within the Isabel Neighborhood and is zoned Isabel Neighborhood Specific Plan (INSP), General Commercial.

10. Project Description Summary:

The proposed project would add a new surface parking lot with 230 parking spaces, which would be located east of the existing Parkwest Casino 580. The new parking lot would be located on the southern portion of the eastern parcel and would include 178 standard stalls, 26 electric vehicle (EV) capable spaces, 26 EV charging stations, as well as racks for up to 36 bicycles. The additional 230 parking spaces would increase the number of available parking spaces for the casino from 131 to 361. In addition, the proposed project would convert five of the existing standard stalls to one Americans with Disabilities (ADA) compliant EV charging station and four ADA stalls. A total of nine ADA stalls and one ADA compliant EV charging station would be provided on-site.

One tree located in the existing parking lot would be removed as part of the proposed project. Removal of the tree would be required to accommodate a pedestrian connection from the new surface parking lot to the existing sidewalk surrounding the building. In addition, the applicant is proposing operational changes to Parkwest Casino 580, including an increase in the total number of card tables from 10 to 16 tables, an increase in the hours of operation to 24/7 operations, an increase in the maximum bet limit from $200 to $1,000, permittance of up to 10 backline betters per table, and permittance of new card games not prohibited by state law, including Pai Gow with tiles.

Access to the parking lot would be provided by existing driveways on Doolan Road and North Canyons Parkway, as well as a new driveway from North Canyons Parkway, at the northeast corner of the project site. The proposed project would also include off-site improvements along North Canyons Parkway, including the development of a new Class IV bike lane with a landscaped buffer, and restriping of traffic lanes. The existing bus turnout and concrete pad on North Canyons Parkway would be shifted north and space for a bus shelter would be maintained for future installation as determined by the Livermore Amador Valley Transit Authority (LAVTA). With the exception of new bicycle racks, exterior improvements to the existing Parkwest Casino 580 would not occur as part of the proposed project.

The installation of bicycle racks outside of the Parkwest Casino 580 entrances and tree removal in the existing parking lot would require City approval of a Site Plan Design Review Modification. The parking lot expansion and frontage improvements in the vacant parcel to the east of Parkwest Casino 580 would require City approval of a Site Plan and Design Review. As noted above, the applicant is proposing operational changes to Parkwest Casino 580 related to the number of card tables, hours of operation, bet limits, backline betters, and card games. These operational changes require amendments to the City of Livermore Municipal Code, several of which would also be captured in a new Development Agreement and a modified Conditional Use Permit for the property. Additional amendments to the Livermore Municipal Code that would be applied citywide include an increase in the total number of card tables citywide, modifications to tournament noticing requirements, changes to the number of cardroom licenses permitted per person, and miscellaneous amendments made for clarification. In addition, a Development Code Amendment is required to update the Livermore Municipal Code section referenced in the cardroom definition. The Site Plan Design Review Modification, Site Plan Design review, Livermore Municipal Code amendments, new Development Agreement, modified Conditional Use Permit, and Development Code Amendment require City approval.

11. Status of Native American Consultation Pursuant to Public Resources Code Section 21080.3.1:

    In compliance with Assembly Bill (AB) 52 (Public Resources Code [PRC] Section 21080.3.1), a project notification letter was distributed to the Amah Mutsun Tribal Band of Mission San Juan Bautista, the Confederated Villages of Lisjan Nation, Costanoan Rumsen Carmel Tribe, Indian Canyon Mutsun Band of Costanoan, Muwekma Ohlone Tribe of the San Francisco Bay Area, Northern Valley Yokut/Ohlone Tribe, Ohlone Indian Tribe, Wilton Rancheria, and the Wuksachi Indian Tribe/Eshom Valley Band. The letters were distributed on July 24, 2024. A response from the Ohlone Indian Tribe and the Confederated Villages of Lisjan Nation were received, requesting additional information. The Amah Mutsun Tribal Band of San Juan Bautista provided recommendations if positive cultural or historic sensitivity is determined within one-mile of the project area and requested Tribal monitoring, which have been implemented as mitigation measures herein. The Confederated Villages of Lisjan Nation also provided recommended mitigation measures, which have also been implemented herein. The Indian Canyon Band of Costanoan Ohlone People recommended Tribal monitoring and cultural sensitivity training, which have been implemented as mitigation measures herein. Other requests to consult were not received within the required response period.

B. SOURCES

The following documents are referenced information sources used for the purpose of this Initial Study/Mitigated Negative Declaration (IS/MND):

1. Alameda County Community Development Agency. *Livermore Executive Airport Land Use Compatibility Plan* [Figure 3-1]. August 2012.
2. Alameda County Transportation Commission. *2023 Congestion Management Program*. October 2023.
3. Bay Area Air Quality Management District. *2022 California Environmental Quality Act Guidelines.* April 2023.
4. Bay Area Air Quality Management District. *CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans*. April 2022.
5. CalEPA. *Cortese List Data Resources*. Available at: https://calepa.ca.gov/sitecleanup/corteselist/. Accessed August 2024.
6. California Department of Conservation. *California Earthquake Hazards Zone.* February 27, 2009.
7. California Department of Conservation. *California Earthquake Hazards Zone Application.* Available at: https://maps.conservation.ca.gov/cgs/EQZApp/app/. Accessed August 2024.
8. California Department of Conservation. *California Important Farmland Finder.* Available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed May 2024.
9. California Department of Forestry and Fire Protection. *Fire Hazard Severity Zone Viewer*. Available at: https://experience.arcgis.com/experience/03beab8511814e79a0e4eabf0d3e7247/. Accessed August 2024.
10. California Department of Transportation. *California State Scenic Highway System Map.* Available at:

https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed August 2024.

11. California Department of Transportation. *Transportation Related Earthborne Vibrations. TAV-02-01-R9601.* February 20, 2002.
12. City of Livermore Water Resources Division. *2020 Urban Water Management Plan*. June 28, 2021.
13. City of Livermore. *City of Livermore General Plan 2003-2025*. Amended December 2014.
14. City of Livermore. *Design Standards and Guidelines*. Adopted June 28, 2004.
15. City of Livermore. *Emergency Operations Plan*. January 2018.
16. City of Livermore. *Livermore Bicycle and Trails Active Transportation Plan.* June 11, 2018.
17. City of Livermore. *Livermore Municipal Water*. Available at: https://www.livermoreca.gov/departments/public-works/water-resources/livermore-municipal-water. Accessed August 2024.
18. City of Livermore. *Livermore Water Reclamation Plant.* Available at: http://www.cityoflivermore.net/citygov/pw/public_works_divisions/wrd/water_reclamation_plant/lwrp.htm. Accessed May 2021.
19. Department of Resources Recycling and Recovery. *SWIS Facility Detail, Vasco Road Sanitary Landfill (01-AA-0010).* Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/9?siteID=8. Accessed August 2024.
20. Department of Toxic Substances Control. *Hazardous Waste and Substances Site List (Cortese).* Available at: https://www.envirostor.dtsc.ca.gov/public/. Accessed August 2024.
21. Department of Water Resources. *Sustainable Groundwater Management Act 2018 Basin Prioritization* [Table A-1]. January 2019.
22. Federal Emergency Management Agency. *Flood Insurance Rate Map 06001C0329G.* Effective August 3, 2009.
23. Federal Transit Administration. *Transit Noise and Vibration Impact Assessment Guidelines.* May 2006.
24. Governor's Office of Planning and Research. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018.
25. Historic Resource Associates. *Phase 1 Cultural Resources Study Parkwest Casino 580 Expansion Project 968 North Canyons Parkway, Livermore, Alameda County, California 945*50. August 2024.
26. Livermore Amador Valley Transit Authority. *30R Dublin-Livermore via Las Positas College*. August 10, 2024.
27. Native American Heritage Commission. *Parkwest Casino 580 Expansion Project, Alameda County.* July 12, 2024.
28. Natural Resource Conservation Service. *Web Soil Survey.* Available at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed August 2024.
29. State Water Resources Control Board. *GeoTracker.* Available at: https://geotracker.waterboards.ca.gov/map/?myaddress=California&from=header&cqid=8858350455. Accessed August 2024.
30. TJKM. *Traffic Impact Analysis Report – Parkwest Casino 580 Expansion*. November 6, 2024.
31. WRA Environmental Consultants. *Biological Resource Technical Report – Casino Parkwest 580 Parking Lot Expansion*. November 2024.
32. Zone 7 Water Agency. *2015 Urban Water Management Plan* [pg. 6-7]. March 31, 2016.
33. Zone 7 Water Agency. *Groundwater Management Plan for Livermore-Amador Valley Groundwater Basin.* September 2005.

C. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "Potentially Significant" as indicated by the checklist on the following pages.

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

D. DETERMINATION

On the basis of this Initial Study:

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

☒ I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the applicant. 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" 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 pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Ashley Vera	11/15/2024
Signature	Date
Ashley Vera, Senior Planner	City of Livermore
Printed Name	For

E. INTRODUCTION AND BACKGROUND

This IS/MND identifies and analyzes the potential environmental impacts of the Parkwest Casino 580 Expansion Project (proposed project). The information and analysis presented in this document is organized in accordance with the order of the California Environmental Quality Act (CEQA) checklist in Appendix G of the CEQA Guidelines. Where the analysis provided in this document identifies potentially significant environmental effects of the project, mitigation measures are prescribed.

The mitigation measures prescribed for environmental effects described in this IS/MND would be implemented in conjunction with the project, as required by CEQA. The mitigation measures would be incorporated into the project through project conditions of approval. The City would adopt findings and a Mitigation Monitoring/Reporting Program (MMRP) for the project in conjunction with approval of the project.

In 2004, the City of Livermore completed a comprehensive update of the City's General Plan and adopted an Environmental Impact Report (EIR) for the updated General Plan. The General Plan EIR is a program EIR, prepared pursuant to Section 15168 of the CEQA Guidelines (Title 14, California Code of Regulations [CCR], Sections 15000 et seq.). The General Plan EIR analyzed full implementation of the General Plan and identified measures to mitigate the significant adverse impacts associated with the General Plan. In 2009, the City certified a Supplemental EIR analyzing proposed amendments to the General Plan to include policies related to Greenhouse Gas (GHG) emissions. Applicable portions of the General Plan and General Plan EIR are incorporated by reference, as necessary, as part of this IS/MND. Project-specific technical reports have been prepared for the proposed project and form the basis of applicable technical sections of this IS/MND. Technical reports used in the preparation of this IS/MND are included as appendices.

In 2018, the INSP was prepared to guide future development of the area surrounding the proposed San Francisco Bay Area Rapid Transit (BART) station in the I-580 median at Isabel Avenue. On May 14, 2018, the Livermore City Council adopted the INSP and certified the EIR (SCH #2016042039) for the INSP. The resolution accompanying the adoption (Resolution #2018-067) stated, "The INSP is contingent upon the decision by the BART Board of Directors to extend conventional (full) BART service to Isabel Avenue (as opposed to another transit mode) …" At its May 24, 2018 meeting, the BART Board voted not to advance BART to Livermore. The City of Livermore has since allowed INSP to proceed with a Valley Link Station. Similar to the BART to Livermore extension, the proposed Valley Link rail system would include a transit station at Isabel Avenue in the I-580 median. In 2020, the City of Livermore prepared an updated INSP, which included modifications to the INSP policies and maps related to the proposed Valley Link Rail system, as well as minor land use map adjustments to better reflect the existing development. A Supplemental EIR to the 2018 INSP EIR was prepared and certified for the 2020 INSP update.

F. PROJECT DESCRIPTION

The following provides a description of the project site's current location and setting, as well as the proposed project components and the discretionary actions required for the project.

Project Location and Setting

The approximately 9.5-acre project site, identified by APNs 905-0016-086-00, 905-0016-008087-00, 905-0016-088-00, and a portion of 905-0009-013-03, is located at 950-968 North Canyons Parkway and an unaddressed vacant parcel to the east of 950-968 North Canyons Parkway in the City of Livermore, California. The three western parcels (APNs 905-0016-086-00, 905-0016-008087-00, 905-0016-088-00) are developed with the existing Parkwest Casino 580 and associated parking lot, and the eastern parcel (APN 905-0009-013-03) is undeveloped. Surrounding existing land uses include a business park to the north, across North Canyons Parkway; undeveloped land to the east, as well as a gas station, restaurant, and hotels further east, across Airway Boulevard; I-580 and the Las Positas Golf Course to the south; and undeveloped land and Doolan Canyon to the west, across Doolan Road (see Figure 1 and Figure 2). The General Plan designates the project site as Isabel Neighborhood (IN), and the site is zoned Isabel Neighborhood Specific Plan (INSP), General Commercial.

Project Components

The proposed project would include a new surface parking lot with 230 parking spaces, located east of the existing casino, which would serve the casino's customers and employees (see Figure 3). The new parking lot would be located on the southern portion of the eastern parcel and would include 178 standard stalls, 26 EV capable spaces, 26 EV charging stations, as well as racks for up to 36 bicycles. The additional 230 parking spaces would increase the number of available parking spaces for the casino from 131 to 361. The proposed project would also convert five of the existing standard stalls to one ADA compliant EV charging station and four ADA stalls. A total of nine ADA stalls and one ADA compliant EV charging station would be provided on-site.

In addition, the applicant is proposing operational changes, including an increase in the total number of card tables from 10 to 16 tables, an increase in the hours of operation to 24/7 operations, an increase in the maximum bet limit from $200 to $1,000, permittance of up to 10 backline betters per table, and permittance of new card games not prohibited by state law, including Pai Gow with tiles. As discussed below, the aforementioned operational changes would require amendments to the Livermore Municipal Code, which would be applied citywide. The proposed parking lot would alleviate the existing parking deficit and accommodate the anticipated increase in parking demand resulting from the operational changes at the casino.

Poles and lighting would be installed within the parking lot islands. The proposed parking lot would connect to the existing casino parking lot to the west, which is currently accessed from driveways on Doolan Road and North Canyons Parkway. The proposed parking lot would also connect to a new driveway on North Canyons Parkway, at the northeast corner of the project site. On-site improvements would include additional ADA striping and symbols at four designated ADA parking spaces located in front of the casino entrance. The proposed project would also include off-site improvements along North Canyons Parkway, including upgrading the existing Class II bike lane to a Class IV separated bikeway, restriping of traffic lanes, and shifting the existing bus turnout and bus shelter pad north of its existing location for future installation and use by LAVTA. Exterior improvements to the existing Parkwest Casino 580 would be limited to the installation of bicycle racks near the business entrances as part of the proposed project.

A landscape area planted with hydroseed grass would be located north of the proposed parking lot expansion and smaller landscape islands would be located throughout the parking lot. Three bioretention planters would be located along the center and southwest corner of the parking lot. Concrete pavement would be located along the eastern border of the large landscape area and three concrete islands would be located within the parking lot.

The proposed project would include approximately 2.72 gross acres of new impervious surfaces as part of development of the parking lot. The project site would be divided into two drainage management areas (DMAs).

Figure 1
Regional Project Location

Figure 2
Approximate Project Site Boundaries Map

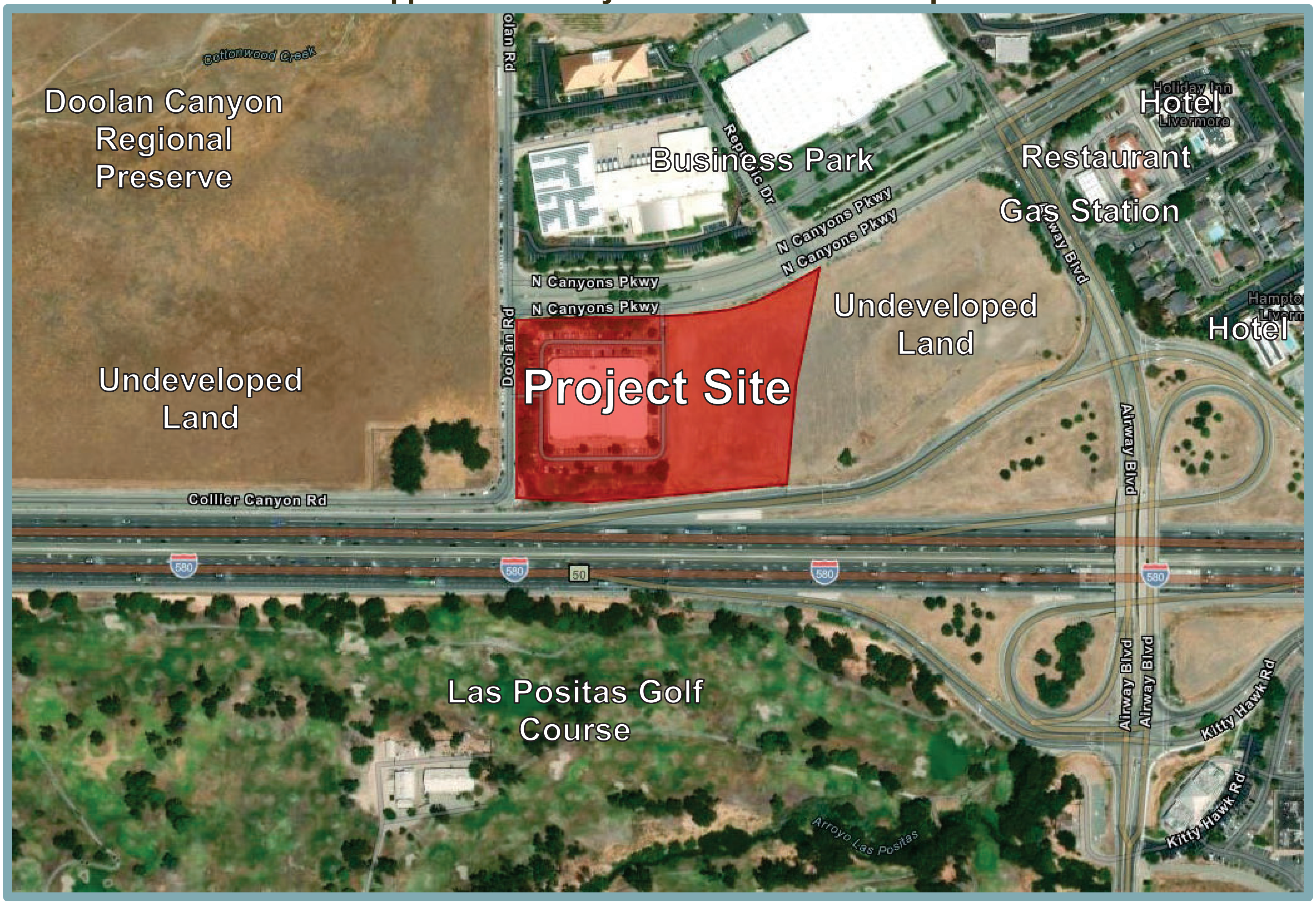
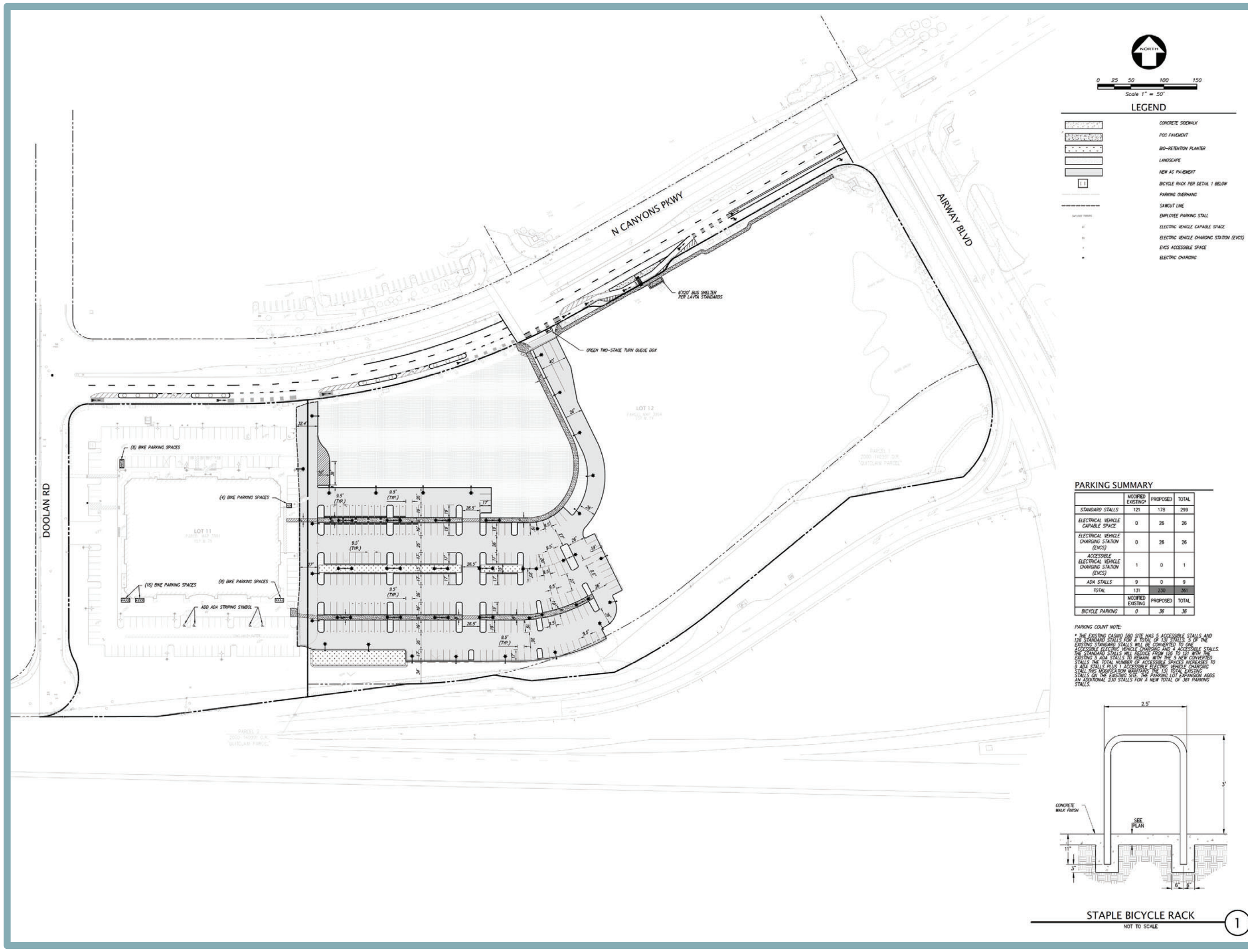


Figure 3
Site Plan



Stormwater runoff from the new impervious surfaces within the DMAs would be directed to the three on-site bioretention planters, with two located within DMA 1 as part of Treatment Control Measure (TCM) 1, and one located within DMA 2 as part of TCM 2. (see Figure 4).

Municipal Code Amendment

The proposed project would include amendments to Chapter 5.20, Cardrooms, of the Livermore Municipal Code. Several of the amendments are cardroom-specific and include additional services that may be permitted to a cardroom requesting “expanded services,” as described in Livermore Municipal Code Section 5.20.160(Q). The remaining amendments are applicable citywide. The proposed amendments include the following:

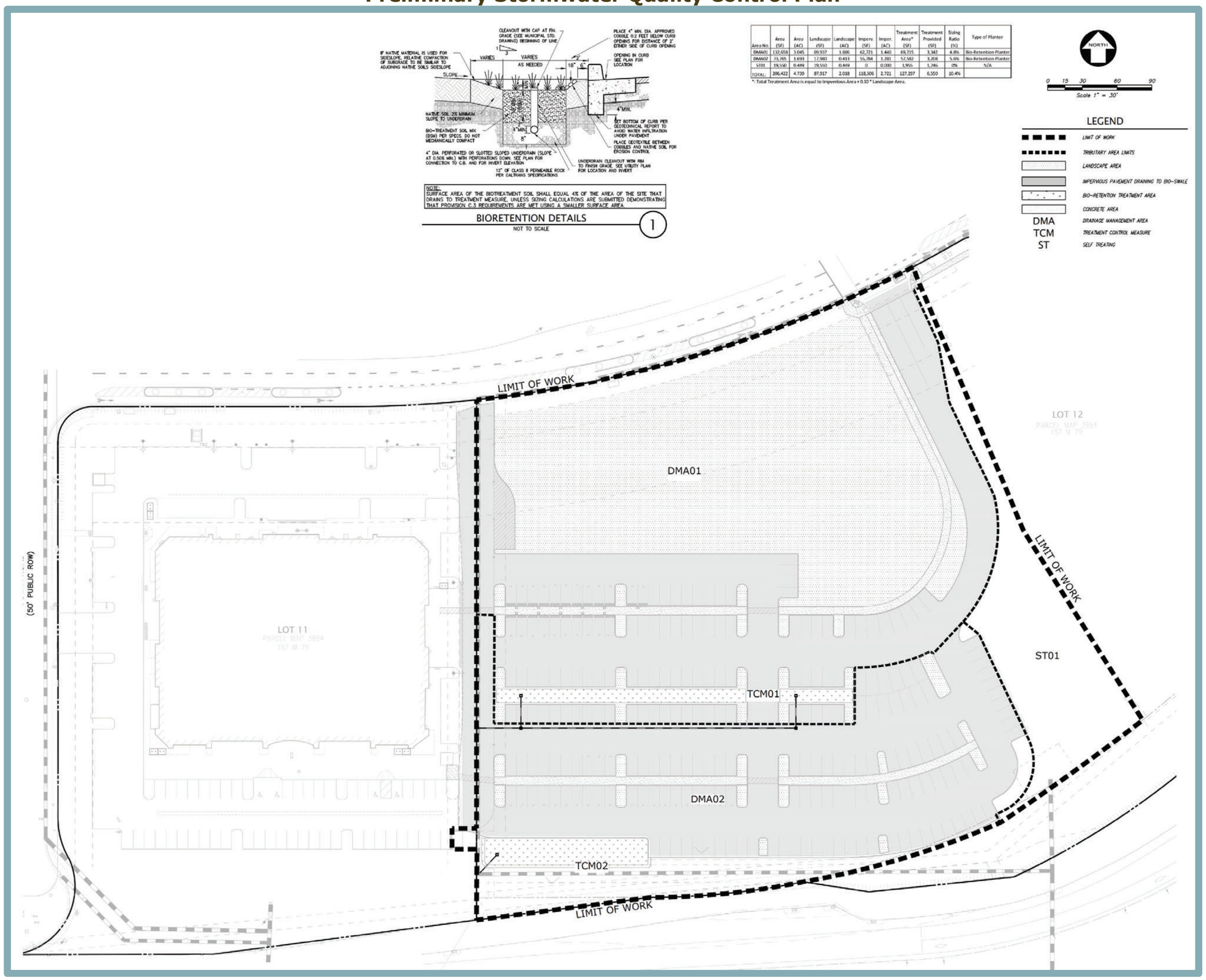
- Increase the limit of the allowable number of cardroom licenses per person from one to two cardroom licenses per person;
- Increase the limit on the number of cardroom tables citywide from one table per 4,200 residents to 32 tables citywide;
- Increase the maximum number of tables per cardroom from 10 tables to 16 tables;
- Increase tournament noticing requirements to the Chief of Police from 5 days to 14 days in advance of a tournament with a list of games to be played, a parking plan, and a security plan;
- Permission to play games not prohibited by State law, including Pai Gow with tiles;
- Increase the number of players allowed per card table from 10 seated players to 10 seated players and up to 10 standing betters;
- Increase allowed hours of operation from 24 hours a day, with a 9-hour closure on Mondays, to 24 hours a day, seven days a week;
- Increase maximum bet limit from $200 to $1,000; and
- Miscellaneous amendments made for clarification including the definition of a cardroom, references to applicable state law sections, entitlement and permit requirements, license fee exceptions, license revocation appeal process, employee work permit restrictions, process to grant additional card tables to eligible cardrooms, and cross references to sections within Chapter 5.20.

The aforementioned changes to Chapter 5.20 of the Livermore Municipal Code would apply to all cardrooms in the City, subject to City approval of a new or amended Development Agreement and Conditional Use Permit. Only one other cardroom, Livermore Casino, exists in the City. The Municipal Code changes would only apply if the Livermore Casino applies for a new or amended Development Agreement or Conditional Use Permit, which would be subject to separate environmental review and discretionary approval.

Development Agreement

The Livermore Development Code requires cardrooms requesting expanded services, such as the proposed project, to enter into a Development Agreement (DA) to provide the applicant assurance for the expanded services and require the applicant provide a public benefit. Parkwest Casino 580 has an existing DA with the City. However, the proposed project would require a new DA to allow for the modified operational changes and an amended public benefit. As discussed above, operational changes would include an increase in the total number of card tables from 10 to 16 tables, an increase in the hours of operation to 24/7 operations, an increase in the maximum bet limit from $200 to $1,000, permittance of up to 10 backline betters per table, and permittance of new card games not prohibited by state law, including Pai Gow with tiles.

Figure 4
Preliminary Stormwater Quality Control Plan



Area No.	Area (SF)	Area (AC)	Landscape (SF)	Landscape (AC)	Imperv. (SF)	Imper. (AC)	Treatment Area* (SF)	Treatment Provided (SF)	Sizing Ratio (%)	Type of Planter
DMA01	132,658	3.045	69,937	1.606	62,721	1.440	69,715	3,342	4.8%	Bio-Retention Planter
DMA02	73,765	1.693	17,980	0.413	55,784	1.281	57,582	3,208	5.6%	Bio-Retention Planter
ST01	19,550	0.449	19,550	0.449	0	0.000	1,955	1,746	0%	N/A
TOTAL:	206,422	4.739	87,917	2.018	118,506	2.721	127,297	6,550	10.4%	

*: Total Treatment Area is equal to Impverious Area + 0.10 * Landscape Area.

Amended public benefits associated with the proposed project would include payment of monthly fees per card table and additional financial contributions.

Conditional Use Permit

Pursuant to the INSP, cardrooms within the General Commercial land use designation require a Conditional Use Permit (CUP). In addition, cardrooms requesting expanded services, such as the proposed project, are subject to a CUP pursuant to the Livermore Development Code. The Parkwest Casino 580 operates under an existing CUP. However, the proposed project would require a modification to the existing CUP to allow for the modified operational changes.

Development Code Amendment

An amendment to Chapter 11, Definitions, of the Livermore Development Code would be required as part of the proposed project. The amendment would update the Livermore Municipal Code section referenced in the Livermore Development Code under the cardroom definition.

Site Plan and Design Review and Site Plan Design Review Modification

The proposed project would be subject to a Site Plan and Design Review and Site Plan Design Review Modification by the City of Livermore. Chapter 9.07 of the City's Development Code specifies that the purpose of Site Plan and Design Review "is to provide a process for the appropriate review of construction and development projects." Such review is intended to ensure that new development and/or redevelopment within the City respect environmental and aesthetic considerations, reduce potential visual impacts, and provide for physical safety of the public, among other considerations. As described above, the Site Plan Design Review and Site Plan Design Review Modification entitlements are required for the new parking lot, tree removal, and bicycle rack installation.

Discretionary Actions

The proposed project would require City approval of the following:

- Adoption of the IS/MND;
- Adoption of the MMRP;
- Municipal Code Amendment;
- Development Agreement;
- Conditional Use Permit Modification;
- Development Code Amendment;
- Site Plan and Design Review; and
- Site Plan Design Review Modification.

In addition, the California Bureau of Gambling Control (CBGC) must review and preliminarily approve all changes related to Livermore Municipal Code Chapter 5.20, Cardrooms. The CBGC provided preliminary approval of the proposed Municipal Code amendments in October 2023. Should the City Council approve the project, the City must provide a copy of the Municipal Code changes to the CBGC. Finally, the cardroom must apply for, and the California Gambling Control Commission must approve, the cardroom's request to operate 16 tables before the project applicant can apply for an amended cardroom license with the City. The project applicant will be leading the effort to acquire an updated gaming license.

G. ENVIRONMENTAL CHECKLIST

The following checklist contains the environmental checklist form presented in Appendix G of the CEQA Guidelines. The checklist form is used to describe the impacts of the proposed project. A discussion follows each environmental issue identified in the checklist. For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified, an EIR must be prepared.

Less Than Significant with Mitigation Incorporated: An impact that requires mitigation to reduce the impact to a less-than-significant level.

Less-Than-Significant Impact: Any impact that would not be considered significant under CEQA relative to existing standards.

No Impact: The project would not have any impact.

I. AESTHETICS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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 non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	✖	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	✖	☐

Discussion

a,b. Examples of typical scenic vistas include mountain ranges, ridgelines, or bodies of water as viewed from a highway, public space, or other area designated for the express purpose of viewing and sightseeing. In general, a project's impact to a scenic vista would occur if development of the project would substantially change or remove a scenic vista. The City's General Plan identifies a number of roadways within the Planning Area that are considered scenic routes. Scenic routes are designated as such because they pass through areas of high scenic value or provide access to important scenic, recreational, cultural, or historic points.[1] Scenic routes identified in the project vicinity include I-580 and Isabel Avenue. In addition, the General Plan identifies specific scenic vista points throughout the City. Figure 4-1 of the City's' General Plan identifies the area looking south from I-580 towards the Las Positas Golf Course as a scenic vista. In addition, Figure 2-6 of the INSP includes four scenic viewpoints located along I-580 to the east of the project site, none of which include the project site. The proposed project would not affect such views from I-580.

According to the City's General Plan, protection of scenic views from I-580 is of particular importance, because the roadway provides some of the best views of Livermore's surrounding hillsides and ridgelines. As such, the City seeks to preserve views from I-580 through control of grading, landscaping, and building height within the I-580 Scenic Corridor. The I-580 Scenic Corridor is defined as areas that are within 3,500 feet of the freeway centerline and are visible from the roadway. While the project site is located within 3,500 feet of I-580, the proposed project would be limited to the expansion of the existing parking lot and would not introduce new buildings that could block views from I-580. Additionally, the landscaping associated with the proposed project would be subject to approval of Site Plan and Design Review, which would reduce potential visual impacts.

According to the California Scenic Highway Mapping System, the project site is not located within the vicinity of an officially designated State Scenic Highway. I-580 is an Eligible State Scenic Highway, but has not been officially designated. The nearest officially designated State Scenic Highway is I-680, located approximately 5.4 miles from the

[1] City of Livermore. *City of Livermore General Plan 2003-2025*. Amended December 2014.

project site.[2] Thus, the proposed project would not have a significant impact on a State Scenic Highway.

Based on the above, development of the proposed project would not have a substantial adverse effect on a scenic vista and would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway. Therefore, a ***less-than-significant*** impact would occur.

c. The project site includes the existing Parkwest Casino 580, as well as an undeveloped parcel. Surrounding land uses include a business park to the north, across North Canyons Parkway; a gas station, restaurant, and three hotels to the east, across Airway Boulevard; I-580 and the Las Positas Golf Course to the south; and undeveloped land and Doolan Canyon to the west, across Doolan Road. Therefore, the site is in an urbanized area and, in accordance with the CEQA Guidelines, the relevant threshold is whether the project would conflict with applicable zoning and other regulations governing scenic quality.

Physical improvements associated with the proposed project would be limited to the expansion of the existing parking lot, and the exterior of the existing building would not change. Nonetheless, the proposed project would be subject to Site Plan and Design Review and Site Plan Design Review Modification pursuant to Section 9.07.020 of the City's Development Code. Chapter 9.07 of the City's Development Code specifies that the purpose of Site Plan and Design Review "is to provide a process for the appropriate review of construction and development projects." As part of the design review process, the project would be reviewed for conformance with the City of Livermore Design Standards and Guidelines, which include provisions related to architectural design, landscaping, exterior materials, and compatibility with existing uses.[3] For example, Section D, Landscape Design, of Chapter 5 of the City's Design Standards and Guidelines contains specific requirements related to landscape coverage and layout within parking areas. Compliance with such would ensure consistency with all applicable policies and guidelines related to visual resources in the project vicinity.

Based on the above, the proposed project would not conflict with applicable zoning and other regulations governing scenic quality, and a ***less-than-significant*** impact would occur.

d. Due to the undeveloped nature of the parking lot expansion area, existing sources of light and glare do not currently exist. However, the existing Parkwest Casino 580 creates sources of light and glare within a portion of the site. In addition, existing sources of light and glare are currently present within the project vicinity, mainly associated with traffic on I-580, roadway lighting along the project site frontages, and the outdoor and indoor lighting fixtures of existing development within the project vicinity such as the business park to the north.

Development of the project site with the proposed parking lot expansion would involve sources of light and glare associated with outdoor lighting within parking areas. However, through the City's Site Plan and Design Review process, the proposed project would be reviewed for consistency with the City's Design Standards and Guidelines.[4] Section F,

---

2 California Department of Transportation. *California State Scenic Highway System Map*. Available at: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed August 2024.

3 City of Livermore. *Design Standards and Guidelines*. Adopted June 28, 2004.

4 City of Livermore. *Design Standards and Guidelines* Adopted June 28, 2004.

Lighting Design, of Chapter 5 of the City's Design Standards and Guidelines contains specific restrictions to ensure that the design of fixtures and the light provided contributes to the character of development and does not adversely affect adjacent development. Pursuant to Guidelines F.1.2.3, area lighting should be directed downward or employ control features to avoid light being directed off-site and to avoid lighting of the night sky. Compliance with the City's Design Standards and Guidelines would ensure that lighting from the proposed project would not be directed off-site, and would not adversely affect existing development in the project vicinity.

Given that the Site Plan and Design Review process would include plan checks to ensure that proposed lighting features are properly designed to avoid lighting off-site onto nearby commercial developments, or into the night sky, implementation of the project would result in a ***less-than-significant*** impact with respect to creating a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

II. AGRICULTURE AND FOREST RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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?	☐	☐	☐	✖
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?	☐	☐	☐	✖

Discussion

a,e. The project site currently consists of the existing Parkwest Casino 580, as well as undeveloped land in the eastern parcel. According to the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP), the site is designated as "Urban and Built-Up Land."[5] With respect to whether the proposed project involves other changes in the existing environment which could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use, farmland is not located adjacent to the project site, such that it could potentially be directly or indirectly affected by the proposed project. Therefore, ***no impact*** would occur.

b. The proposed project site is not under a Williamson Act contract and is not designated or zoned for agricultural uses. Therefore, buildout of the proposed project would not conflict with existing zoning for agricultural use or a Williamson Act contract, and ***no impact*** would occur.

c,d. The project area is not considered forest land (as defined in PRC Section 12220[g]), timberland (as defined by PRC Section 4526), and is not zoned Timberland Production (as defined by Government Code Section 51104[g]). Therefore, the proposed project would have ***no impact*** with regard to conversion of forest land or any potential conflict with forest land, timberland, or Timberland Production zoning.

---

[5] California Department of Conservation. *California Important Farmland Finder.* Available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed May 2024.

III. AIR QUALITY. *Would the project:*	Potentially Significant Impact	Less Than Significant 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?	☐	☐	✖	☐

Discussion

a,b. The City of Livermore is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The SFBAAB area is currently designated as a nonattainment area for the State and federal ozone, State and federal fine particulate matter 2.5 microns in diameter ($PM_{2.5}$), and State respirable particulate matter 10 microns in diameter (PM_{10}) ambient air quality standards (AAQS). The SFBAAB is designated attainment or unclassified for all other AAQS. It should be noted that on January 9, 2013, the U.S. Environmental Protection Agency (USEPA) issued a final rule to determine that the Bay Area has attained the 24-hour $PM_{2.5}$ federal AAQS. Nonetheless, the Bay Area must continue to be designated as nonattainment for the federal $PM_{2.5}$ AAQS until such time as the BAAQMD submits a redesignation request and a maintenance plan to the USEPA, and the USEPA approves the proposed redesignation. The USEPA has not yet approved a request for redesignation of the SFBAAB; therefore, the SFBAAB remains in nonattainment for 24-hour $PM_{2.5}$.

In compliance with regulations, due to the nonattainment designations of the area, the BAAQMD periodically prepares and updates air quality plans that provide emission reduction strategies to achieve attainment of the AAQS, including control strategies to reduce air pollutant emissions through regulations, incentive programs, public education, and partnerships with other agencies. The current air quality plans are prepared in cooperation with the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG).

The most recent federal ozone plan is the 2001 Ozone Attainment Plan, which was adopted on October 24, 2001 and approved by the California Air Resources Board (CARB) on November 1, 2001. The plan was submitted to the USEPA on November 30, 2001 for review and approval. The most recent State ozone plan is the 2017 Clean Air Plan, adopted on April 19, 2017. The 2017 Clean Air Plan was developed as a multi-pollutant plan that provides an integrated control strategy to reduce ozone, PM, toxic air contaminants (TACs), and GHGs. Although a plan for achieving the State PM_{10} standard is not required, the BAAQMD has prioritized measures to reduce PM in developing the control strategy for the 2017 Clean Air Plan. The control strategy serves as the backbone of the BAAQMD's current PM control program.

The aforementioned air quality plans contain mobile source controls, stationary source controls, and transportation control measures to be implemented in the region to attain the State and federal AAQS within the SFBAAB. Adopted BAAQMD rules and regulations, as well as the thresholds of significance, have been developed with the intent to ensure continued attainment of AAQS, or to work towards attainment of AAQS for which the area is currently designated nonattainment, consistent with applicable air quality plans. The BAAQMD's established significance thresholds associated with development projects for emissions of the ozone precursors reactive organic gases (ROG) and oxides of nitrogen (NO_X), as well as for PM_{10}, and $PM_{2.5}$, expressed in pounds per day (lbs/day) and tons per year (tons/yr), are listed in Table 1.

Table 1
BAAQMD Thresholds of Significance

Pollutant	Construction	Operational	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10
NO_x	54	54	10
PM_{10} (exhaust)	82	82	15
$PM_{2.5}$ (exhaust)	54	54	10

Source: BAAQMD, CEQA Guidelines, May 2017.

By exceeding the BAAQMD's mass emission thresholds for construction or operational emissions of ROG, NO_X, PM_{10}, or $PM_{2.5}$, a project would be considered to conflict with or obstruct implementation of the BAAQMD's air quality planning efforts.

Particulate matter can be split into two categories: fugitive and exhaust. The BAAQMD thresholds of significance for exhaust are presented in Table 1. BAAQMD does not maintain quantitative thresholds for fugitive emissions of PM_{10} or $PM_{2.5}$, rather, BAAQMD requires all projects within the district's jurisdiction to implement Basic Construction Mitigation Measures (BCMMs) related to dust suppression.

In order to compare the proposed project's emissions to the most recent BAAQMD thresholds, air quality modeling was conducted for the proposed project. The proposed project's construction and operational emissions were quantified using the California Emissions Estimator Model (CalEEMod) web-based version 2022.1.1.26 – a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions, including GHG emissions, from land use projects. The model applies inherent default values for various land uses, including construction data, trip generation rates, vehicle mix, trip length, average speed, compliance with the California Building Standards Code (CBSC), etc. Where project-specific information is available, such information is applied in the model. For the proposed project, project-specific trip generation rates provided by TJKM traffic consultants were input into the model, as well as information related to the anticipated construction schedule for the proposed project. In addition, the modeling assumed that the grading phase of construction would require the removal of approximately 49,000 cubic yards (CY) of soil from the site, and the off-site improvements to North Canyons Parkway would include 0.35-acres of asphalt surfaces. All CalEEMod results are included as Appendix A to this IS/MND.

The proposed project's estimated emissions associated with construction and operations are presented and discussed in further detail below. A discussion of the proposed project's contribution to cumulative air quality conditions is provided below as well.

Construction Emissions

During construction of the proposed project, various types of equipment and vehicles would temporarily operate on the project site. Construction exhaust emissions would be generated from construction equipment, vegetation clearing and earth movement activities, construction worker commutes, and construction material hauling for the entire construction period. The aforementioned activities would involve the use of diesel- and gasoline-powered equipment that would generate emissions of criteria pollutants. Project construction activities also represent sources of fugitive dust, which include PM emissions. As construction of the proposed project would generate air pollutant emissions intermittently within the site, and the vicinity of the site, until all construction has been completed, construction emissions are a potential concern because the proposed project is in a non-attainment area for ozone and PM.

According to the CalEEMod results, the proposed project would result in maximum unmitigated construction criteria air pollutant emissions as shown in Table 2. As shown in the table, the proposed project's construction emissions would not exceed the applicable thresholds of significance for ROG, NO_x, PM_{10}, and $PM_{2.5}$.

Table 2
Maximum Unmitigated Construction Emissions (lbs/day)

Pollutant	Proposed Project Emissions	Threshold of Significance	Exceeds Threshold?
ROG	3.64	54	**NO**
NO_X	54.0	54	**NO**
PM_{10}*	0.87	82	**NO**
$PM_{2.5}$*	0.87	54	**NO**

Note:
* Denotes emissions from exhaust only. BAAQMD has not yet adopted PM thresholds for fugitive emissions.

Source: CalEEMod, August 2024 (see Appendix A).

All projects under the jurisdiction of the BAAQMD are required to implement all of the BAAQMD's BCMMs, which include the following:

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

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

The proposed project's required implementation of the BAAQMD's BCMMs listed above would help to further minimize construction-related emissions. In particular, implementation of the foregoing measures would reduce fugitive dust emissions resulting from project construction. Even without consideration of BAAQMD's BCMMs, as shown in Table 2, construction of the proposed project would result in emissions of criteria air pollutants below BAAQMD's thresholds of significance. Consequently, the proposed project would not conflict with or obstruct implementation of the applicable air quality plans during project construction.

Operational Emissions

According to the CalEEMod results, the proposed project would result in maximum unmitigated operational criteria air pollutant emissions as shown in Table 3. As shown in the table, the proposed project's operational emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$ would be below the applicable thresholds. Consequently, the proposed project would not conflict with or obstruct implementation of the applicable air quality plans during project operation.

Table 3
Unmitigated Maximum Operational Emissions

Pollutant	Proposed Project Emissions		Threshold of Significance		Exceeds Threshold?
	lbs/day	tons/yr	lbs/day	tons/yr	
ROG	1.13	0.19	54	10	**NO**
NO_X	1.11	0.19	54	10	**NO**
PM_{10}*	0.02	<0.005	82	15	**NO**
$PM_{2.5}$*	0.01	<0.005	54	10	**NO**

* Emissions from exhaust only. BAAQMD has not yet adopted thresholds for fugitive PM emissions.

Source: CalEEMod, August 2024 (see Appendix A).

Cumulative Emissions

Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By nature, air pollution is largely a cumulative impact. A single project is not sufficient in size to, by itself, result in nonattainment of AAQS. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. The thresholds of significance presented in Table 1 represent the levels at which a project's individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the SFBAAB's existing air quality conditions.[6] If a project

6 Bay Area Air Quality Management District. *2022 California Environmental Quality Act Guidelines.* April 2023.

exceeds the significance thresholds presented in Table 1, that project's emissions would be cumulatively considerable, resulting in significant adverse cumulative air quality impacts to the region's existing air quality conditions. As presented above, the proposed project would not exceed the applicable thresholds for criteria pollutant emissions during project construction or operations. Thus, the project would not result in a cumulatively considerable contribution to the region's existing air quality conditions.

Conclusion

As stated previously, the applicable regional air quality plans include the 2001 Ozone Attainment Plan and the 2017 Clean Air Plan. Because the proposed project would not result in construction or operational emissions of criteria pollutants in excess of BAAQMD's applicable threshold of significance, conflicts with or obstruction of implementation of the applicable regional air quality plans would not occur. Thus, a ***less-than-significant*** impact would result.

c. Some land uses are considered more sensitive to air pollution than others, due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and/or duration of exposure to air pollutants. Children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, childcare centers, playgrounds, retirement homes, convalescent homes, hospitals, and medical clinics. Within the project vicinity, the nearest sensitive receptor is the Acton Academy East Bay school, located approximately 700 feet northeast of the project site's northern boundary.

The major pollutant concentrations of concern are localized carbon monoxide (CO), TAC emissions, and criteria pollutant emissions, which are addressed in further detail below.

Localized CO Emissions

High levels of localized CO concentrations are only expected where background levels are high, and traffic volumes and congestion levels are high. Emissions of CO are of potential concern, as the pollutant is a toxic gas that results from the incomplete combustion of carbon-containing fuels such as gasoline or wood. CO emissions are particularly related to traffic levels.

In order to provide a conservative indication of whether a project would result in localized CO emissions that would exceed the applicable threshold of significance, the BAAQMD has established screening criteria for localized CO emissions. According to BAAQMD, a proposed project would result in a less-than-significant impact related to localized CO emission concentrations if all of the following conditions are true for the project:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans;
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; and
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, underpass, etc.).

The proposed project is anticipated to generate a total of approximately 304 daily trips, including 26 AM peak hour trips and 25 PM peak hour trips.[7] Additionally, the proposed project is consistent with the site's current land use and zoning designations. Therefore, the proposed project would not conflict with the Alameda County Transportation Commission Congestion Management Program (CMP).[8] The highest volume of an affected intersection (North Canyons Parkway/Airway Boulevard) under Existing Plus Project conditions would be 885 vehicles during the PM peak hour, thus the proposed project would not increase traffic volumes at any intersection to more than 44,000 vehicles per hour. Furthermore, areas where vertical and/or horizontal mixing is limited due to tunnels, underpasses, or similar features do not exist in the project area. Therefore, based on the BAAQMD's screening criteria for localized CO emissions, the proposed project would not be expected to result in substantial levels of localized CO at surrounding intersections or generate localized concentrations of CO that would exceed standards or cause health hazards.

TAC Emissions

Another category of environmental concern is TACs. The CARB's *Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook) provides recommended setback distances for sensitive land uses from major sources of TACs, including, but not limited to, freeways and high traffic roads, distribution centers, gas dispensing facilities, and rail yards. The CARB has identified diesel particulate matter (DPM) from diesel-fueled engines as a TAC; thus, high volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic are identified as having the highest associated health risks from DPM. Health risks associated with TACs are a function of both the concentration of emissions and the duration of exposure, where the higher the concentration and/or the longer the period of time that a sensitive receptor is exposed to pollutant concentrations would correlate to a higher health risk. As noted above, the nearest existing sensitive receptor to the project site is the Acton Academy East Bay school, located approximately 700 feet northeast of the project site's northern boundary.

The proposed project does not include any operations that would be considered a substantial source of TACs. Accordingly, operations of the proposed project would not expose sensitive receptors to excess concentrations of TACs.

Short-term, construction-related activities would result in the generation of TACs, specifically DPM, from on-road haul trucks and off-road equipment exhaust emissions. Construction is temporary and occurs over a relatively short duration in comparison to the operational lifetime of the proposed project. Health risks are typically associated with exposure to high concentrations of TACs over extended periods of time (e.g., 30 years or greater), whereas the construction activities associated with the proposed project are estimated to be temporary and periodic, with construction completed over the course of approximately eight months, and the intensive equipment phase occurring over a total period of four weeks.

All construction equipment and operation thereof would be regulated pursuant to the In-Use Off-Road Diesel Vehicle Regulation, which is intended to help reduce emissions associated with off-road diesel vehicles and equipment, including DPM. Project construction would also be required to comply with all applicable BAAQMD rules and regulations, particularly associated with permitting of air pollutant sources. In addition, only

7 TJKM. *Traffic Impact Analysis Report – Parkwest Casino 580 Expansion*. November 6, 2024.
8 Alameda County Transportation Commission. *2023 Congestion Management Program*. October 2023.

portions of the site would be disturbed at a time throughout the construction period, with operation of construction equipment occurring intermittently throughout the course of a day rather than continuously at any one location on the project site. Operation of construction equipment within portions of the development area would allow for the dispersal of emissions, and would ensure that construction-activity is not continuously occurring in the portions of the project site closest to existing sensitive receptors. Because construction equipment on-site would not operate for long periods of time and would be used at varying locations within the site, associated emissions of DPM would not occur at the same location (or be evenly spread throughout the entire project site) for long periods of time. Due to the temporary nature of construction and the relatively short duration of potential exposure to associated emissions, the potential for any one sensitive receptor in the area to be exposed to concentrations of pollutants for an extended period of time would be low.

Conclusion

Based on the above, the proposed project would not expose any sensitive receptors to substantial concentrations of localized CO or TACs during construction or operation. Therefore, the proposed project would result in a ***less-than-significant*** impact related to the exposure of sensitive receptors to substantial pollutant concentrations.

d. Emissions of concern include those leading to odors, emission of dust, or emissions considered to constitute air pollutants. Air pollutants have been discussed in sections “a” through “c” above. Therefore, the following discussion focuses on emissions of odors and dust.

Per the BAAQMD CEQA Guidelines, odors are generally regarded as an annoyance rather than a health hazard.[9] Manifestations of a person’s reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The presence of an odor impact is dependent on a number of variables including: the nature of the odor source; the frequency of odor generation; the intensity of odor; the distance of odor source to sensitive receptors; wind direction; and sensitivity of the receptor.

Due to the subjective nature of odor impacts, the different variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative analysis to determine the presence of a significant odor impact is difficult. Typical odor-generating land uses include, but are not limited to, wastewater treatment plants, landfills, and composting facilities. The proposed project would not introduce any such land uses.

Construction activities often include diesel-fueled equipment and heavy-duty trucks, which could create odors associated with diesel fumes that may be considered objectionable. However, the construction phase is temporary in nature and would occur over a period of approximately eight months, with the intensive equipment phase occurring over a total of only four weeks. Project construction would also be required to comply with all applicable BAAQMD rules and regulations, particularly associated with permitting of air pollutant sources. The aforementioned regulations would help to minimize emissions, including emissions leading to odors. Accordingly, substantial objectionable odors would not be expected to occur during construction activities.

---

9 Bay Area Air Quality Management District. *2022 California Environmental Quality Act Guidelines.* April 2023.

As noted previously, all projects under the jurisdiction of BAAQMD are required to implement the BAAQMD's BCMMs. The BCMMs would act to reduce construction-related dust by ensuring that haul trucks with loose material are covered, reducing vehicle dirt track-out, and limiting vehicle speeds within the improvement area, among other methods, which would ensure that construction of the proposed project does not result in substantial emissions of dust. Following construction, the entire improvement area would be either paved or landscaped. Thus, project operations would not generate significant amounts of dust that would adversely affect a substantial number of people.

For the aforementioned reasons, construction and operation of the proposed project would not result in emissions (such as those leading to odors) adversely affecting a substantial number of people, and a ***less-than-significant*** impact would result.

IV. BIOLOGICAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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, and regulations or by the California Department of Fish and Wildlife or US 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 resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of 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 Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	✖	☐

Discussion

a. Several species of plants and animals within the State of California have low populations, limited distributions, or both. Such species may be considered “rare” and are vulnerable to extirpation as the state’s human population grows and the habitats the species occupy are converted to agricultural and urban uses. State and federal laws have provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formerly designated as threatened or endangered under state and federal endangered species legislation. Others have been designated as “candidates” for such listing. Still others have been designated as “species of special concern” by CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered. Collectively, these plants and animals are referred to as “special-status species.” Although CDFW Species of Special Concern generally do not have special legal status, they are given special consideration under CEQA. Special-status species include the following:

- Plant and wildlife species that have been formally listed as threatened or endangered, or are candidates for such listing by the USFWS or National Marine Fisheries (NMFS);
- Plant and wildlife species that have been listed as threatened or endangered or are candidates for such listing by the CDFW;
- CDFW Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue;

- CDFW Fully Protected Species; and
- Species on CNPS Lists 1 and 2, which are considered to be rare, threatened, or endangered in California by the CNPS and CDFW.

As discussed below under Question 'f,' the project site is within the boundaries of the East Alameda County Conservation Strategy (EACCS), a guidance document for regional conservation and environmental permitting for private and public development projects. The proposed project would be subject to applicable EACCS requirements related to special-status species.

In addition to regulations for special-status species, most birds in the U.S., including non-status species, are protected by the Migratory Bird Treaty Act (MBTA) of 1918. Under the MBTA, destroying active nests, eggs, and young is illegal.

The following discussion is based primarily on a Biological Resource Technical Report (BRTR) prepared by WRA Environmental Consultants for the proposed project (see Appendix B).[10] The BRTR evaluated existing biological resources within the approximately 11.31-acre study area, which encompassed the area to be developed with the proposed parking lot, as well as the undeveloped land to the east of the project site bounded by North Canyons Parkway to the north, Airway Boulevard to the east, and an I-580 on-ramp to the south. With regard to the off-site improvements along North Canyons Parkway, the proposed project would not include any new ground disturbance within the existing right-of-way (ROW). In order to identify potential biological resource constraints and assess the suitability of habitats in the study area to potentially support State- and federally-protected species, the BRTR's analysis included review of background literature to determine the potential presence of sensitive vegetation communities, aquatic communities, and special-status plant and wildlife species. Resources reviewed for sensitive vegetation and aquatic features included aerial photography, mapped soil types, the CNPS Online Databases, the CDFW's California Natural Diversity Database (CNDDB), and the USFW's Information for Planning and Consultation (IPaC) database. Additionally, a site visit was conducted on June 18, 2024 to map vegetation, aquatic features, and other land cover types; document plant and wildlife species present; and evaluate on-site habitat for the potential to support special-status species.

Special-Status Plants

Based on the results of the CNDDB, CNPS, and IPaC search, a total of 14 special-status plant species have been documented to occur within the vicinity of the study area. The study area is unlikely or does not have potential to support 11 of the 14 of the species because hydrologic conditions, soil conditions, pH conditions, and vegetation communities, such as forest, woodland, scrub, or vernal pools, necessary to support the species are not present. Additionally, the study area is geographically isolated from the documented range of the majority of special-status species, and the historic land use of the study area has resulted in habitat conversion and has a degree of disturbance to preclude the colonization and establishment of special-status species.

Three special-status plant species were determined to have moderate potential to occur within the study area, including Livermore Valley tarplant (*Deinandra bacigalpuii*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), and San Joaquin spearscale (*Extriplex joaquiniana*). While the three aforementioned species were not observed during

---

10 WRA Environmental Consultants. *Biological Resource Technical Report – Casino Parkwest 580 Parking Lot Expansion*. November 2024.

the June 18, 2024, site visit, the species germinate and bolt in late spring, and bloom in the summer into fall. Likewise, the species are annuals that are tolerant of disturbance (e.g., tilling) and can tolerate competitive pressure from non-native annual herbs (e.g., wild oats (*Avena barbata*). The species are discussed in detailed below.

Livermore Valley Tarplant

Livermore Valley tarplant is listed as endangered by the CDFW and is a CNPS Rank 1B.1 plant. The species is an annual forb in the sunflower family (Asteraceae) that blooms from June through October and typically occurs in alkaline herbaceous communities and scalds within meadow and seep habitat at elevations ranging from 485 to 600 feet above mean sea level (amsl). Observed associated species include ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), Mediterranean barley (*Hordeum marinum*), salt grass (*Distichlis spicata*), iodine bush (*Allenrolfea occidentalis*), common spikeweed (*Centromadia pungens*), brittlescale (*Atriplex depressa*), sand spurry (*Spergularia* spp.), alkali heath (*Frankenia salina*), yellow tarweed (*Holocarpha virgata*), and three-ray tarweed (*Deinandra lobbii*).

The study area contains moderately alkaline clay soil. The most recent occurrence of the species is six miles northeast of the study area near Springtown Village. Livermore Valley tarplant has relative tolerance to disturbance; however, the species frequently occur in strongly alkali conditions, with extended saturation. Therefore, the population near Springtown Village is likely in better soil conditions than the project site. However, a *moderate* potential exists for the species to occur within the study area.

Congdon's Tarplant

Congdon's tarplant is a CNPS Rank 1B.1 plant. The species is an annual forb in the sunflower family (Asteraceae) that blooms from June to November. The species typically occurs in alkaline grassy areas on the edge of brackish marsh in valley and foothill grassland habitat at elevations ranging from 1 to 750 feet amsl. Observed associated species include common tarplant (*Centromadia pungens* ssp. *pungens*), alkali heath (*Frankenia salina*), salt grass (*Distichlis spicata*), Italian rye grass (*Festuca perennis*), Mediterranean barley (*Hordeum marinum*), foxtail barley (*Hordeum murinum*), stinkwort (*Dittrichia graveolens*), yellow star thistle (*Centaurea solstitialis*), Italian thistle (*Carduus pycnocephalus*), bull thistle (*Cirsium vulgare*), and Bermuda grass (*Cynodon dactylon*).

The study area contains moderately alkaline clay soils with species associated with Congdon's tarplant. Due to the species' relative tolerance to disturbance and the presence of a seed source within three miles to the west and within the direction of prevailing winds, *moderate* potential exists for the species to occur within the study area.

San Joaquin Spearscale

San Joaquin spearscale is a CNPS Rank 1B.2 plant. The species is an annual herb in the goosefoot family (Chenopodiaceae) that blooms from April to October. The species typically occurs in seasonal alkali sink scrub and wetlands in chenopod scrub, alkali meadow, and valley and foothill grassland habitat at elevations ranging from 0 to 2,740 feet amsl. Observed associated species include salt grass (*Distichlis spicata*), alkali heath (*Frankenia salina*), Mediterranean barley (*Hordeum marinum*), Italian rye grass (*Festuca perennis*), bird's-foot trefoil (*Lotus corniculatus*), docks (*Rumex crispus, R. pulcher*), tarplants (*Centromadia parryi, C. pungens*), pickleweed (*Salicornia pacifica*), and fat hen (*Atriplex prostrata*).

The study area contains grasslands with moderately alkaline clay soil. Due to the species' relative tolerance to disturbance and the presence of a seed source within three miles to the west and within the direction of prevailing winds, *moderate* potential exists for the species to occur within the study area.

Impacts to Special-Status Plant Species

The proposed project would involve permanent and temporary impacts to approximately 5.22 acres of non-native grassland, which was determined to have moderate potential to support Livermore Valley tarplant, Congdon's tarplant, and San Joaquin spearscale. Construction of concrete medians, bioswales, and grading for base rock and asphalt and landscaping could result in the direct removal of special-status plant species if present within the study area, which could result in a significant impact.

Special-Status Wildlife

Based on the results of the CNDDB and IPaC search, a total of 48 special-status wildlife species have been documented to occur within the project region. However, according to the BRTR, the majority of such species are excluded from the study area based on a lack of required habitat features, such as vernal pools, perennial aquatic habitat (e.g. streams, rivers or ponds), tidal marsh areas, broad-leafed woodland, cismontane woodland, serpentine soils to support host plants, sandy beaches or alkaline flats, presence of specific host plants, caves, mine shafts, and abandoned buildings.

The absence of such habitat features eliminates components critical to the survival or movement of most special-status species found in the vicinity. For example, California red-legged frog (*Rana draytonii*), northwestern pond turtle (*Actinemys marmota*), foothill-yellow legged frog (*Rana boylii*) and tricolored blackbird (*Agelaius tricolor*) are known to occur in the open spaces in the vicinity. However, suitable aquatic habitat such as streams, ponds, and emergent wetlands and associated movement corridors connecting the study area to source populations are absent due to development, precluding such species from inhabiting or dispersing through the study area. Furthermore, the project site lacks hydrologic connectivity suitable foothill-yellow legged frog habitats nearby. Tricolored blackbirds may occasionally be seen flying over the study area, though nesting habitat or significant foraging resources are not supported. Therefore, the aforementioned species have no potential or are unlikely to occur within the study area. Given the study area's relative proximity to sensitive habitats on the San Francisco Bay, many species documented nearby are additionally obligates to tidal marsh habitats which are not present on or in the immediate vicinity of the study area.

One special-status species has potential to occur in the immediate vicinity of or in portions of the study area: Crotch's bumble bee (*Bombus crotchii*). The species is discussed in detail below. In addition, non-listed native birds protected by MBTA and CDFW have the potential to occur on-site.

Crotch's Bumble Bee

Crotch's bumble bee is a candidate species for listing under the California Endangered Species Act (CESA). The species occurs primarily in central and southern California, from coastal areas inland to the foothills. The species is now largely absent from the Central Valley, although the species was historically common in the region. Crotch's bumble bee occurs in grassland and scrub habitats, and has also been documented in agricultural areas. Like other bumble bee species, Crotch's bumble bee is a social species with an annual life cycle. Queens emerge from hibernation in the late winter/early spring to establish a new colony. The colony produces workers throughout the spring and summer, and reproductives (i.e., drones and queens) in the early fall. Nests are built in pre-existing cavities. The species are commonly found underground, in abandoned rodent burrows, or aboveground in grass tufts, rock piles, abandoned bird nests, or tree cavities. Crotch's bumble bee feeds on pollen and nectar during all life stages; preferred host species include, but are not limited to, milkweeds (*Asclepias* spp.), chaenactis (*Chaenactis* spp.), clarkias (*Clarkia* spp.), larkspurs (*Delphinium* spp.), buckwheats (*Eriogonum* spp.), lupines (*Lupinus* spp.), medicks (*Medicago* spp.), bladderpod (*Peritoma arborea*), phacelias (*Phacelia* spp.), poppies (*Eschscholzia* spp.), sages (*Salvia* spp.), and thistles (*Centaurea* spp.). Queens overwinter in hibernacula; little is known about habitat requirements for hibernacula; bare ground, leaf litter and/or duff, and pre-existing cavities may provide overwintering habitat.

The study area is within the known range of the species and contains suitable foraging habitat and overwintering habitat for Crotch's bumble bee. According to the BRTR, several ground squirrel burrows are located along the perimeter of the study area. Rodent burrows provide suitable ground nesting sites; however, tilling and disking frequency could preclude the species from nesting. Foraging plants available include Italian thistle (*Carduus pycnocephalus*), yellow star thistle (*Centaurea solstitalis*), black mustard (*Brassica nigra*), and field mustard (*Hirschfeldia incana*). Therefore, *moderate* potential exists for Crotch's bumble bee to occur in the study area.

Project activities such as grubbing, vegetation removal, grading, and impervious surface installation would directly remove approximately 5.22 acres of potentially suitable foraging and nesting habitat. Project landscaping would temporarily impact potential Crotch's bumble bee foraging habitat. If the species is present, a potentially significant impact could occur to Crotch's bumble bee.

Nesting Birds and Raptors

The study area has the potential to seasonally support nesting birds and raptors protected by the MBTA and California Fish and Game Code (CFGC). Off-site trees along the perimeter of the study area and the un-mowed swale and fringe of the study area supporting annual grasses and forbs may provide nesting habitat. Tree removal, mechanized work, and vehicle traffic associated with construction of the proposed project could directly and indirectly disturb nesting birds and result in nest abandonment if individuals are present during initiation of ground-disturbing activity. Thus, a potentially significant impact could occur to nesting birds and raptors.

Conclusion

The proposed project would comply with all applicable EACCC requirements. However, based on the above, the proposed project could have an adverse effect, either directly or through habitat modifications, on species identified as special-status species in local or regional plans, policies, or regulations, or by the CDFW or the USFWS, and a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

Special-Status Plant Species

IV-1 *Prior to any vegetation removal or ground-disturbing activities, a focused survey shall be conducted to determine the presence of special-status plant species with potential to occur within the project site. Surveys shall be conducted in accordance with the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG 2009), which require rare plant surveys to be conducted at the proper time of year when rare or endangered species are both "evident" and identifiable. Field surveys shall be scheduled to coincide with known blooming periods, and/or during periods of physiological development that are necessary to identify the plant species of concern. The results of the surveys shall be submitted to the City of Livermore Community Development Department prior to the commencement of construction activities. If special-status plant species are not found, additional mitigation measures are not necessary. If any of the species are found on-site and cannot be avoided, the following measures shall be required:*

- *If the survey determines that special-status plant species are present within or adjacent to the project site, direct and indirect impacts of the project on the species shall be avoided where feasible through the establishment of activity exclusion zones, where ground-disturbing activities shall not take place, including construction of new facilities, construction staging, or other temporary work areas. Activity exclusion zones for special-status plant species shall be established prior to construction activities around each occupied habitat site, the boundaries of which shall be clearly marked with standard orange plastic construction exclusion fencing or its equivalent. The establishment of activity exclusion zones shall not be required if construction-related disturbance would not occur within 250 feet of the occupied habitat site.*
- *If exclusion zones and avoidance of impacts on special-status species within the project site are not feasible, then the loss of individuals or occupied habitat of special-status plants shall be compensated using the habitat mitigation rations impacts on habitat for the species as written below as prescribed by the East Alameda County Conservation Strategy (EACCS) and obtain an incidental take permit from the California Department of Fish and Wildlife (CDFW) for State listed species. Before the implementation of compensation measures, the project applicant shall provide detailed information to the CDFW and City of Livermore Community Development Department on the quality of preserved habitat, location of the preserved occurrences, provisions for protecting and managing the areas, the responsible parties involved, and other pertinent information that demonstrates the feasibility of the compensation.*
- *Compensation recommendations from the EACCS are as follows:*
    - *Temporary effects to State and federally listed species, such as Livermore tarplant at a 1:1 ratio.*
    - *Congdon's tarplant at a 5:1 ratio or above through coordination with relevant regulatory agencies.*
    - *San Joaquin spearscale at a 1:1 ratio.*

Crotch's Bumble Bee

IV-2 *The provisions contained herein only apply if Crotch's bumble bee is a candidate species or is listed under CESA at the commencement of construction. Following CDFW's status report on Crotch's bumble bee, if the California Fish and Game Commission finds that the petitioned action is not warranted, the provisions contained herein shall not be required.*

If feasible, initial ground-disturbing activities associated with the proposed project (e.g., grading, vegetation removal, staging) shall take place between September 1 and March 31 (i.e., outside the colony active period) to avoid potential impacts on special-status bumble bees. If completing all initial ground-disturbing activities between September 1 and March 31 is not feasible, then at a maximum of 14 days prior to the commencement of construction activities, a qualified biologist with 10 or more years of experience conducting biological resource surveys within California shall conduct a preconstruction survey for special-status bumble bees in the area(s) proposed for impact.

The survey shall occur during the period from one hour after sunrise to two hours before sunset, with temperatures between 65 degrees Fahrenheit and 90 degrees Fahrenheit, with low wind and zero rain. If the timing of the start of construction makes the survey infeasible due to the temperature requirements, the surveying biologist shall select the most appropriate days based on the National Weather Service seven-day forecast and shall survey at a time of day that is closest to the temperature range stated above. The survey duration shall be commensurate with the extent of suitable floral resources (which represent foraging habitat) present within the area proposed for impact, and the level of effort shall be based on the metric of a minimum of one person-hour of searching per three acres of suitable floral resources/foraging habitat. A meandering pedestrian survey shall be conducted throughout the area proposed for impact in order to identify patches of suitable floral resources. Suitable floral resources for Crotch's bumble bee include species in the following families: Apocynaceae, Asteraceae, Boraginaceae, Fabaceae, and Lamiaceae. Suitable floral resources for western bumble bee include species in the following families: Asteraceae, Fabaceae, Rhamnaceae, and Rosaceae, as well as plants in the genera Eriogonum and Penstemon.

At a minimum, preconstruction survey methods shall include the following:

- *Search areas with floral resources for foraging bumble bees. Observed foraging activity may indicate a nest is nearby, and therefore, the survey duration shall be increased when foraging bumble bees are present;*
- *If special-status bumble bees are observed, watch any special-status bumble bees present and observe their flight patterns. Attempt to track their movements between foraging areas and the nest;*

- *Visually look for nest entrances. Observe burrows, any other underground cavities, logs, or other possible nesting habitat;*
- *If floral resources or other vegetation preclude observance of the nest, small areas of vegetation may be removed via hand removal, line trimming, or mowing to a height of a minimum of four inches to assist with locating the nest;*
- *Look for concentrated special-status bumble bee activity;*
- *Listen for the humming of a nest colony; and*
- *If bumble bees are observed, attempt to photograph the individual and identify it to species.*

The biologist conducting the survey shall record when the survey was conducted, a general description of any suitable foraging habitat/floral resources present, a description of observed bumble bee activity, a list of bumble bee species observed, a description of any vegetation removed to facilitate the survey, and their determination of if survey observations suggest a special-status bumble bee nest(s) may be present or if construction activities could result in take of special-status bumble bees. The report shall be submitted to the City of Livermore Community Development Department prior to the commencement of construction activities.

If bumble bees are not located during the preconstruction survey or the bumble bees located are definitively identified as a common species (i.e., not special-status species), then further mitigation or coordination with the CDFW is not required.

If any sign(s) of a bumble bee nest is observed, and if the species present cannot be established as a common bumble bee, then construction shall not commence until either (1) the bumble bees present are positively identified as common (i.e., not a special-status species), or (2) the completion of coordination with CDFW to identify appropriate mitigation measures, which may include, but not be limited to, waiting until the colony active season ends, establishment of nest buffers, or obtaining an Incidental Take Permit (ITP) from CDFW.

If special-status bees are located, and after coordination with CDFW take of special-status bumble bees cannot be avoided, the project proponent shall obtain an ITP from CDFW, and the project proponent shall implement all conditions identified in the ITP. Mitigation required by the ITP may include, but not be limited to, the project proponent translocating nesting substrate in accordance with the latest scientific research to another suitable location (i.e., a location that supports similar or better floral resources as the impact area), enhancing floral resources on areas of the project site that will remain appropriate habitat, worker awareness training, and/or other measures specified by CDFW.

Nesting Birds and Raptors

IV-3 *If project construction begins during the nesting season (February 1 to August 31), a qualified biologist shall conduct a nesting bird survey within* *seven days prior to construction activities. The nesting bird survey shall include walking transects to search for ground nesting birds, and an examination of all trees on-site and within all accessible areas within 200 feet of the entire project site and off-site improvement areas (i.e., within a zone of influence of nesting birds). If nesting birds are not found within the project site or off-site improvement areas, further mitigation shall not be required.*

If migratory birds are identified nesting on or within the zone of influence, the Wildlife Agencies shall be notified immediately of nest locations. A qualified biologist shall establish a temporary protective nest buffer around the nest(s). The nest buffer shall be staked with orange construction fencing. The buffer must be of sufficient size to protect the nesting site from construction-related disturbance and shall be established by a qualified ornithologist or biologist with extensive experience working with nesting birds near and on construction sites. Typically, adequate nesting buffers are 75 feet from the nest site or nest tree dripline for small birds and up to 300 feet for sensitive nesting birds that include several raptor species known in the region of the project site but that are not expected to occur on the project site. Upon completion of nesting surveys, if nesting birds are identified on or within a zone of influence of the project site, a qualified ornithologist/biologist that frequently works with nesting birds shall prescribe adequate nesting buffers to protect the nesting birds from harm while the project is constructed.

Construction or earth-moving activity shall not occur within any established nest protection buffer prior to September 1 unless a qualified ornithologist/biologist determines that the young have fledged and have attained sufficient flight skills to avoid project construction zones, or that the nesting cycle is otherwise completed. In the region of the project site, most species complete nesting by mid-July; however, the date may be significantly earlier or later, and would have to be determined by the qualified biologist. At the end of the nesting cycle, and fledging from the nest by its occupants, as determined by a qualified biologist, temporary nesting buffers may be removed and construction may commence in established nesting buffers without further regard for the nest site. If active nesting buffers are established and a biologist does not confirm that the nesting cycle is completed, then the nesting buffers must be maintained until the end of the CDFW recognized nesting season (September 1).

Should construction activities cause a nesting bird to do any of the following in a way that would be considered a result of construction activities, then the exclusionary buffer shall be increased such that activities are far enough from the nest to stop the following agitated behavior: vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest. The revised non-disturbance buffer shall remain in place until the chicks have fledged or as otherwise determined by a qualified biologist in consultation with the City of Livermore.

A report detailing compliance with the provisions set forth herein shall be prepared by the qualified biologist and submitted for review and approval to the City of Livermore Community Development Department.

b,c. As part of the BRTR prepared for the proposed project, the project site was reviewed for the presence of wetlands and other aquatic resources according to the methods described in the U.S. Army Corp of Engineers (USACE) Manual, the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West/Western Mountains, Valleys, and Coast Region, and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. Areas meeting such indicators were not mapped, as aquatic resources were not found using the methods described above. Presence of riparian habitat was not identified, which was evaluated based on the lack of woody plant species meeting the definition of riparian vegetation provided in A Field Guide to Lake and Streambed Alteration Agreements, Section 1600-1607, California Fish and Game Code, and based on best professional judgement of biologists completing the site visit.

Therefore, sensitive land cover types or aquatic resources do not exist within the project site, and the proposed project would not have a substantial adverse effect on riparian habitat, sensitive natural communities, or federally protected wetlands. Thus, ***no impact*** would occur.

d. Wildlife corridors link areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. Fragmentation can also occur when a portion of one or more habitats is converted into another habitat, such as when woodland or scrub habitat is altered or converted into grasslands after a disturbance such as fire, mudslide, or grading activities. Wildlife corridors mitigate the effects of this fragmentation by: (1) allowing animals to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk of catastrophic events (such as fire or disease) on population or local species extinction; and (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs.

According to the BRTR prepared for the proposed project, the project site is not within a designated wildlife corridor, an essential habitat connectivity unit, and does not support the movement of wildlife species. The project site is located within a larger tract of mixed-development land within the INSP. While common wildlife species such as birds presumably utilize the site to some degree for movement at a local scale, the project site itself does not provide corridor functions beyond providing a similar land use as surrounding areas. Therefore, the proposed project would not interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites, and a ***less-than-significant*** impact would occur.

e. Chapter 12.20 of the City's Municipal Code comprises the City's Tree Preservation Ordinance. The proposed project would require the removal of one on-site tree located on the western parcel identified as 950 North Canyons Parkway. According to the BRTR, the tree proposed for removal is not protected under the City's Tree Preservation Ordinance. Therefore, the proposed project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and a ***less-than-significant*** impact would occur.

f. The project site is within the boundaries of the EACCS, a guidance document for regional conservation and environmental permitting for private and public development projects. While conservation strategies are provided by the EACCS, the document is not considered an adopted Habitat Conservation Plan or Natural Conservation Community Plan.

The proposed project would be subject to the EACCS requirements, which are intended to provide protection and mitigation for covered species. Covered species under the EACCC include the following 13 wildlife species: longhorn fairy shrimp; vernal pool fairy shrimp; callippe silverspot butterfly; California tiger salamander; California red-legged frog; foothill yellow-legged frog; Alameda whipsnake; Central California coastal steelhead; golden eagle; tricolored blackbird; western burrowing owl; American badger; and San Joaquin kit fox. The EACCS also includes the following six covered plant species: San Joaquin spearscale; big tarplant; Congdon's tarplant; palmate-bracted bird's-beak; Livermore Valley tarplant; and recurved larkspur. As discussed above, the potential exists for San Joaquin spearscale, Congdon's tarplant, and Livermore Valley tarplant to occur within the project site. However, Mitigation Measure IV-1, above, which requires preconstruction surveys for such species, as well as EACCS habitat mitigation requirements, would reduce any potential impacts to such species to a less-than-significant level.

Pursuant to the EACCS, the project site is located in CZ-4, which encompasses 9,409 acres of the largely urbanized Livermore Valley. The dominant natural land cover types in the conservation zone are annual grassland (4,253 acres), alkali meadow and scald (258 acres), valley sink scrub (410 acres), alkali wetland (106 acres), and seasonal wetland (347 acres). According to Figure 2-8 of the EACCS, the entirety of the project site consists of ruderal land.

Based on the discussion above, the proposed project would not conflict with the applicable provisions of the EACSS, and a ***less-than-significant*** impact would occur related to conflicts with an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan.

V. CULTURAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	✖	☐
b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	☐	✖	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries.	☐	✖	☐	☐

Discussion

The following is based on a Phase 1 Cultural Resources Study prepared for the proposed project by Historic Resources Associates (HRA).[11]

a. Historical resources are features that are associated with the lives of historically-important persons and/or historically-significant events, that embody the distinctive characteristics of a type, period, region or method of construction, or that have yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation. Examples of typical historical resources include, but are not limited to, buildings, farmsteads, rail lines, bridges, and trash scatters containing objects such as colored glass and ceramics.

The Phase 1 Cultural Resources Study consisted of a literature review to identify any previously recorded historical resources and a field survey, conducted on August 10, 2024, of the entire project site. On June 26, 2024, and July 16, 2024, record searches of the California Historic Resources Information System (CHRIS) were performed by the Northwest Information Center (NWIC) for cultural resource site records and survey reports within the project area. The NWIC concluded that three cultural resource studies encompassing the project site have been previously conducted. According to the NWIC records search, the project site does not contain precontact archaeological sites or historical archaeological resources. In addition, historic resources were not discovered on-site during the August 10 field survey. With regard to the off-site improvements along North Canyons Parkway, the proposed project would not include further disturbance within the existing ROW. Therefore, the proposed project would not cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5, and a ***less-than-significant*** impact would occur.

b,c. Based on the results of the records search of the CHRIS, conducted as part of the Phase 1 Cultural Resources Study, the NWIC concluded that the project site does not contain any recorded archaeological resources. In addition, based upon historic photographs, maps, and other documents, and the lack of precontact archeological resources identified within 0.25-mile of the project site, HRA determined that the archaeological site sensitivity of the site was low. Furthermore, the entirety of the project site was subjected to a pedestrian survey at 1-meter intervals and cultural resources, including precontact or historic-period artifacts or other indications of archaeological resources, were not discovered on-site during the field survey. Finally, a search of the Native American Heritage Commission (NAHC) Sacred Lands File did not yield any information regarding

---

[11] Historic Resource Associates. *Phase 1 Cultural Resources Study Parkwest Casino 580 Expansion Project 968 North Canyons Parkway, Livermore, Alameda County, California 945*50. August 2024.

the presence of Tribal Cultural Resources within the project site or the immediate area.[12] The site has also been subject to past disturbance associated with former unspecified agricultural uses and grading activities. Any subsurface resources would likely have been uncovered as part of the previous site disturbance.

Nonetheless, the City's General Plan notes that prehistoric resources have been discovered within the City's Planning Area. Thus, previously unrecorded archaeological resources, including human remains, have the potential to exist on-site, and such resources could be encountered during ground-disturbing activity related to project construction. Therefore, the proposed project could cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5 and/or disturb human remains, including those interred outside of formal cemeteries, should any such resources be encountered during construction. Consequently, the impact could be considered ***potentially significant***.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

V-1 *In the event a potentially significant cultural resource is encountered during subsurface earthwork activities, all construction activities on-site shall cease and workers should avoid altering the materials until an archaeologist who meets the Secretary of Interior's Professional Qualification Standards for archaeology has evaluated the find(s). The Applicant shall include a standard inadvertent discovery clause in every construction contract to inform contractors of this requirement. The qualified archeologist shall make recommendations to the Lead Agency on the measures that shall be implemented to protect the discovered resources, including but not limited to, culturally appropriate temporary and permanent treatment, which may include avoidance of cultural resources, in-place preservation, and/or re-burial on project property so the resource(s) are not subject to further disturbance in perpetuity. If avoidance is determined to be infeasible, pursuant to CEQA Guidelines Section 15126.4(b)(3)(C), a data recovery plan, which makes provisions for adequately recovering the scientifically consequential information from and about the historical resource, shall be prepared and adopted prior to any excavation being undertaken. Such studies shall be deposited with the California Historical Resources Regional Information Center. If necessary, excavation and evaluation of the find(s) shall comply with Section 15064.5 of the CEQA Guidelines.*

Potentially significant cultural resources include, but are not limited to, stone, bone, glass, wood, or shell artifacts or features, including hearths, structural remains, or historic dumpsites, including trash pits older than 50 years. Any previously undiscovered resources found during construction within the project site shall be recorded on appropriate Department of Parks and Recreation (DPR) 523 forms and will be submitted to the City of Livermore, the Northwest Information Center, and the State Historic Preservation Office (SHPO), as required.

[12] Native American Heritage Commission. *Parkwest Casino 580 Expansion Project, Alameda County*. July 12, 2024.

V-2 *In the event of the accidental discovery or recognition of any human remains, further excavation or disturbance of the find or any nearby area reasonably suspected to overlie adjacent human remains shall not occur until compliance with the provisions of CEQA Guidelines Section 15064.5(e)(1) and (2) has occurred. The Guidelines specify that in the event of the discovery of human remains other than in a dedicated cemetery, no further excavation at the site or any nearby area suspected to contain human remains shall occur until the County Coroner has been notified to determine if an investigation into the cause of death is required. If the Coroner determines that the remains are Native American, then, within 24 hours, the Coroner must notify the Native American Heritage Commission, which in turn will notify the most likely descendants who may recommend treatment of the remains and any grave goods. The potential exists that the Native American Heritage Commission may be unable to identify a most likely descendant, the most likely descendant fails to make a recommendation within 48 hours after notification by the Native American Heritage Commission, or the landowner or his authorized agent rejects the recommendation by the most likely descendant and mediation by the Native American Heritage Commission fails to provide a measure acceptable to the landowner. In such a case, the landowner or his authorized representative shall rebury the human remains and grave goods with appropriate dignity at a location on the property not subject to further disturbances. Should human remains be encountered, a copy of the resulting County Coroner report noting any written consultation with the Native American Heritage Commission shall be submitted as proof of compliance to the City's Community Development Department.*

VI. ENERGY. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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?	☐	☐	✖	☐

Discussion

a,b. A description of the currently adopted 2022 California Green Building Standards Code and the Building Energy Efficiency Standards, as well as discussions regarding the proposed project's potential effects related to energy demand during construction and operations are provided below.

California Green Building Standards Code

The 2022 California Green Building Standards Code, otherwise known as the CALGreen Code (CCR Title 24, Part 11), is a portion of the CBSC (CCR Title 24), which became effective on January 1, 2023. The purpose of the CALGreen Code is to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices. The CALGreen Code standards regulate the method of use, properties, performance, types of materials used in construction, alteration repair, improvement, and rehabilitation of a structure or improvement to property. The provisions of the code apply to the planning, design, operation, construction, use, and occupancy of every newly constructed building or structure throughout California. Requirements of the CALGreen Code include, but are not limited to, the following measures:

- Compliance with relevant regulations related to future installation of EV charging infrastructure in residential and non-residential structures;
- Reduction of indoor water use consumption through the establishment of maximum fixture water use rates;
- Outdoor landscaping compliance with the California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), or a local ordinance, whichever is more stringent, to reduce outdoor water use;
- Diversion of 65 percent of construction and demolition waste from landfills; and
- Mandatory use of low-pollutant emitting interior finish materials, such as paints, carpet, vinyl flooring, and particle board.

Building Energy Efficiency Standards

The 2022 Building Energy Efficiency Standards is a portion of the CBSC, which expands upon energy-efficiency measures from the 2019 Building Energy Efficiency Standards, and went into effect starting January 1, 2023. The 2022 standards provide for additional efficiency improvements beyond the 2019 standards. The proposed project would be subject to all relevant provisions of the most recent update of the CBSC, including the Building Energy Efficiency Standards. Adherence to the most recent CALGreen Code and Building Energy Efficiency Standards would ensure that the proposed project would consume energy efficiently.

Construction Energy Use

Construction of the proposed project would involve on-site energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting, welding, and for supplying energy to areas of the site where energy supply cannot be met through a hookup to the existing electricity grid. Project construction would not involve the use of natural gas appliances or equipment.

All construction equipment and operation thereof would be regulated pursuant to the CARB In-Use Off-Road Diesel Vehicle Regulation, which is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by imposing limits on idling, requiring all vehicles to be reported to CARB, restricting the addition of older vehicles into fleets, and requiring fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. The In-Use Off-Road Diesel Vehicle Regulation would subsequently help to improve fuel efficiency and reduce GHG emissions. Technological innovations and more stringent standards are being researched, such as multi-function equipment, hybrid equipment, or other design changes, which could help to further reduce demand on oil and limit emissions associated with construction.

Based on the above, the temporary increase in energy use occurring during construction of the proposed project would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. In addition, the proposed project would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, which would help to reduce the temporary increase in demand.

Operational Energy Use

Pacific Gas and Electricity Company (PG&E) currently provides electricity and natural gas to the project site and would continue to do so following the implementation of the proposed project. Energy use associated with operation of the proposed project would be typical of parking lots, including electricity associated with parking lot lighting and EV charging spaces. The energy use associated with operation of the proposed EV chargers and parking lot lighting would not be substantial. In addition, the proposed parking lot lighting would be subject to the outdoor lighting requirements pursuant to Section 140.7 of the 2022 Building Energy Efficiency Standards. The proposed project would also include the addition of operational changes to the interior of the casino, including increased allowed hours of operation to 24 hours a day, seven days a week. With the exception of an existing nine-hour closure requirement on Mondays, the Parkwest Casino 580 is allowed to operate 24 hours a day for the remainder of the week. However, the increased hours of operation would not create a substantial increase in energy consumption. Additional operational changes would not involve changes to the HVAC or other existing building features requiring energy and, thus, would not be expected to substantially increase the building energy usage beyond existing conditions.

Electricity supplied to the project by PG&E would comply with the State’s Renewable Portfolio Standard (RPS), which requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020 and to 60 percent by 2030. Thus, a portion of the energy consumed during project operations would originate from renewable sources.

In addition to on-site energy use, the proposed project would result in transportation energy use associated with vehicle trips generated by the customers and employees of the casino. While the proposed project would increase traffic compared to existing levels, and, thus, increase energy use associated with transportation, the proposed project would comply with all applicable regulations associated with vehicle efficiency and fuel economy. Further discussion of the proposed project's impacts related to transportation is provided in Section XVII, Transportation, of this IS/MND. As discussed therein, the proposed project would be considered a local-serving use, which would have a less than significant increase in vehicle miles travelled (VMT).

Conclusion

Based on the above, construction and operation of the proposed project would not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Thus, a ***less-than-significant*** impact would occur.

VII. GEOLOGY AND SOILS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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 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 18-1B 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 wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	✖
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	✖	☐	☐

Discussion

ai-aii. The project site is not located within the boundaries of an Earthquake Fault Zone, as designated pursuant to the Alquist-Priolo Earthquake Fault Zoning Act.[13] As noted in the City's General Plan, the City is located within the vicinity of the San Andreas, Calaveras, Hayward, and San Jacinto active faults. However, pursuant to Figure 10-1 of the General Plan, the project site is not underlain by any active faults or trace lines. Thus, fault rupture hazard is not a significant geologic hazard at the site.

Based on the proximity of the project site to local and regional faulting, as well as historical seismic activity, the project site is considered subject to relatively high ground shaking risk and related effects. The proposed project would not include construction of any habitable structures. In addition, the parking lot would be properly engineered in accordance with the CBSC, which includes engineering standards appropriate for the seismic area in which the project site is located. Proper engineering of the proposed parking lot would ensure that the proposed project would not be subject to substantial risks related to seismic ground shaking.

Thus, the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death associated with seismic-related ground failure, including rupture of a known earthquake fault, strong seismic ground

[13] California Department of Conservation. *California Earthquake Hazards Zone.* February 27, 2009.

shaking, liquefaction, or landslides. Therefore, a ***less-than-significant*** impact would occur.

b. Issues related to erosion are discussed in Section X, Hydrology and Water Quality, of this IS/MND. As noted therein, the proposed project would not result in substantial soil erosion or the loss of topsoil. Thus, a ***less-than-significant*** impact would occur.

aiii,aiv,
c. The proposed project's potential effects related to liquefaction, landslides, lateral spreading, and subsidence are discussed in detail below.

Liquefaction

Liquefaction is the temporary transformation of loose, saturated granular sediments from a solid state to a liquefied state as a result of seismic ground shaking. In the process, the soil undergoes transient loss of strength, which commonly causes ground displacement or ground failure to occur. Because saturated soils are a necessary condition for liquefaction, soil layers in areas where the groundwater table is near the surface have higher liquefaction potential than those in which the water table is located at greater depths. Additionally, loose unsaturated sandy soils have the potential to settle during strong seismic shaking. As noted in the City's General Plan, the majority of the planning area is underlain by materials which have a very low to moderate liquefaction potential. Additionally, the project site is not located within a State of California Seismic Hazard Zone for liquefaction.[14] Therefore, the proposed project would not be subject to risk from liquefaction.

Landslides

Seismically-induced landslides are triggered by earthquake ground shaking. The risk of landslide hazard is greatest in areas with steep, unstable slopes. The City has determined the potential for seismically-induced land sliding to occur would depend on a number of activities contributing to instability, such as extensive irrigation, poor drainage, removal of stabilizing vegetation, and over-steepening of slopes. The project site does not feature varying degrees of slope commonly associated with areas at risk for earthquake-induced landslides. Thus, landslides would not occur on-site as a result of the proposed project.

Lateral Spreading

Lateral spreading is horizontal/lateral ground movement of relatively flat-lying soil deposits towards a free face such as an excavation, channel, or open body of water; typically, lateral spreading is associated with liquefaction of one or more subsurface layers near the bottom of the exposed slope. Lateral spreading or lurching is a situation in which soil mass deforms laterally toward a free face, such as an excavation, channel, or open body of water, during a seismic event. The failure occurs along a liquefiable or weak subsurface layer. The amount of movement depends on the soil strength, duration and intensity of seismic shaking, topography, and free face geometry. Given that the project site does not contain any free faces, the potential for lateral spreading to pose a risk to the proposed project is negligible.

---

[14] California Department of Conservation. *California Earthquake Hazards Zone Application.* Available at: https://maps.conservation.ca.gov/cgs/EQZApp/app/. Accessed August 2024.

Subsidence/Settlement

Subsidence is the settlement of soils of very low density generally from either oxidation of organic material, desiccation and shrinkage, or both, following drainage. Subsidence takes place gradually, usually over a period of several years. According to the City of Livermore's General Plan EIR, subsidence is not likely to occur within the City. Additionally, compliance with General Plan policies would ensure future developments would be required to employ structurally sound building practices. Therefore, the potential subsidence/settlement to pose a risk to the proposed project is relatively low.

Conclusion

Based on the above discussion, the proposed project would not result in potential hazards or risks related to liquefaction, landslides, lateral spreading, or subsidence/settlement. Therefore, a ***less-than-significant*** impact would occur.

d. Expansive soils are soils which undergo significant volume change with changes in moisture content. Specifically, such soils shrink and harden when dried and expand and soften when wetted. Expansive soils can shrink or swell and cause heaving and cracking of slabs-on-grade, pavements, and structures founded on shallow foundation. Pursuant to the Natural Resource Conservation Service (NRCS) Web Soil Survey, the soils underlying the project site are made up of Diablo clay, very deep, three to 15 percent slopes.[15]

Soils with a linear extensibility rating of between six and nine percent with a clay content of 35 to 45 percent are characterized by a high shrink-swell class. According to the NRCS Web Soil Survey, the Diablo clay soils on-site have a linear extensibility rating of 7.5 percent and have a clay content of 47.5 percent. Therefore, the project site contains soil types that are considered to be moderate to highly expansive.

Based on the above, the proposed project has the potential to create substantial direct or indirect risks to life or property related to being located on expansive soil. Therefore, a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

VII-1 *Prior to approval of any grading permits, a Geotechnical Analysis shall be conducted by a California Registered Civil Engineer or Geotechnical Engineer to characterize the subsurface conditions of the project site. The report shall address and make recommendations on the following:*

- *Road, pavement, and parking area design;*
- *Grading practices;*
- *Erosion/winterization; and*
- *Special problems discovered on-site, (i.e., groundwater, expansive/unstable soils, etc.).*

---

15 Natural Resource Conservation Service. *Web Soil Survey*. Available at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed August 2024.

All grading plans for the project shall be designed by a Civil and Structural Engineer and reviewed and approved by the Director of Public Works/City Engineer, Chief Building Official, and a qualified Geotechnical Engineer prior to issuance of grading and building permits to ensure that all geotechnical recommendations specified in the Geotechnical Analysis are properly incorporated and utilized in the project design.

e. The construction or operation of septic tanks or other alternative wastewater disposal systems is not included as part of the project. Therefore, ***no impact*** regarding the capability of soil to adequately support the use of septic tanks or alternative wastewater disposal systems would occur.

f. The City's General Plan indicates that several Pleistocene aged paleontological fossils have been discovered within the City's Planning Area. In particular, the most recent fossil discovery within the City occurred in the vicinity of the Lawrence Livermore National Laboratory, which is approximately six miles southeast of the project site.

As noted in the City's General Plan, the City is underlain by alluvium, which consists mainly of unconsolidated gravel, sand, silt, and clay deposits. Such soil types are not considered unique geologic features and are common within the geographic area of the City. Furthermore, the City's General Plan does not note the existence of any unique geologic features within the City.

Nonetheless, should previously unknown paleontological resources exist within the project site, ground-disturbing activity, such as grading, trenching, or excavating, associated with implementation of the proposed project would have the potential to result in direct or indirect destruction of unique geologic features. Therefore, a ***potentially significant*** impact could occur.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above potential impact to a *less-than-significant* level.

VII-2 *The following requirements shall be noted on project Improvement Plans, subject to review and approval by the City of Livermore Community Development Department. Should any vertebrate fossils (e.g., teeth, bones), an unusually large or dense accumulation of intact invertebrates, or well-preserved plant material (e.g., leaves) be unearthed by the construction crew, then ground-disturbing activity shall be diverted to another part of the project site and a paleontologist shall be called on-site to assess the find and, if significant, recover the find in a timely matter. Finds determined significant by the paleontologist shall then be conserved and deposited with a recognized repository, such as the University of California Museum of Paleontology. The alternative mitigation would be to leave the significant finds in place, determine the extent of significant deposit, and avoid further disturbance of the significant deposit. The City of Livermore Community Development Department shall be notified of the discovery of any paleontological resources.*

VIII. GREENHOUSE GAS EMISSIONS. *Would the project:*	Potentially Significant Impact	Less Than Significant 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 gasses?	☐	☐	✖	☐

Discussion

a,b. Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on Earth. An individual project's GHG emissions are at a micro-scale level relative to global emissions and effects to global climate change; however, an individual project could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. As such, impacts related to emissions of GHG are inherently considered cumulative impacts.

Implementation of the proposed project would cumulatively contribute to increases of GHG emissions. Estimated GHG emissions attributable to future development would be primarily associated with increases of carbon dioxide (CO_2) and, to a lesser extent, other GHG pollutants, such as methane (CH_4) and nitrous oxide (N_2O) associated with area sources, mobile sources or vehicles, utilities (electricity), water usage, and the generation of solid waste. The primary source of GHG emissions for the project would be mobile source emissions. The common unit of measurement for GHG is expressed in terms of annual metric tons of CO_2 equivalents ($MTCO_2e$/yr).

The proposed project is located within the jurisdictional boundaries of BAAQMD. The most recent BAAQMD Air Quality Guidelines were released in April 2023.[16] The updated GHG thresholds address more recent climate change legislation, including Senate Bill (SB) 32, Executive Order (EO) B-55-18, and EO S-03-05, and provide qualitative thresholds, as discussed in further detail below.

BAAQMD Thresholds of Significance

According to BAAQMD's qualitative GHG thresholds of significance, a project must either include specific project design elements (e.g., exclude use of natural gas, achieve a specific reduction in project-generated VMT below the regional average) or be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b).[17]

On November 28, 2022, the City of Livermore adopted an updated 2022 Climate Action Plan (CAP), which, according to Section 2 of Appendix D of the CAP, meets the criteria to be a GHG reduction strategy under CEQA Guidelines Section 15183.5(b). Therefore, the following analysis is based on the proposed project's consistency with the City's 2022 CAP.

---

16 Bay Area Air Quality Management District. *2022 California Environmental Quality Act Guidelines*. April 2023.

17 Bay Area Air Quality Management District. *CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans*. April 2022.

City of Livermore CAP Consistency

The 2022 CAP is intended to create a roadmap to achieve emissions reductions of 40 percent below 1990 levels by 2030, and carbon neutrality (i.e., net zero carbon emissions) by 2045. The CAP contains mitigation strategies and actions, consistent with State climate mitigation targets, which were developed to reduce the City's GHG emissions to reach its adopted reduction targets for 2030 and 2045. The project's consistency with the applicable mitigation strategies and actions is assessed in Table 4 below. As shown in the table, the proposed project would be consistent with the applicable strategies and actions of the City's CAP.

Table 4
Project Consistency with the Livermore Climate Action Plan

Strategies and Actions	Consistency Discussion
Strategy D-1: Improve water conservation and reuse.	All landscaping improvements would be consistent with Section 13.25 of the Municipal Code, Water Efficient Landscape, and would be irrigated by an automatic irrigation system. Therefore, the proposed project would be generally consistent with Strategy D-1.
Action D-1.3: Continue implementing the Water Efficient Landscape Ordinance.	As discussed above, all landscaping improvements would be consistent with Section 13.25 of the Municipal Code, Water Efficient Landscape, and would be irrigated by an automatic irrigation system. Therefore, the proposed project would be consistent with Action D-1.3.
Action F-1.5: Require new hardscape to be permeable.	Page 46 of the Livermore CAP recognizes that for Action F-1.5, the City must first update standards for new development hardscape to be consistent with CALGreen Tier 1 and/or increase the current fee for installation of new impervious surfaces. The City has not yet updated its standards and, thus, consistency with Action F-1.5 is not required.
Strategy B-1: Require new buildings to be all-electric and incentivize electrification retrofits of existing buildings.	The proposed project would not include the development of new buildings or improvements to existing buildings. Thus, Strategy B-1 is not applicable to the proposed project.
Action B-1.1: Require new construction to be all-electric.	See consistency discussion for Strategy B-1.
Action T-1.1: Expand EV infrastructure to support EV adoption.	The City of Livermore has adopted Reach Code amendments to the CBSC, which include EV charging requirements for new development projects within the City. For non-residential projects such as the proposed parking lot expansion, the City's Reach Code requires that 10 percent of all parking spaces must be EV Capable, and 10 percent of all parking spaces must provide electric vehicle supply equipment (EVSE), which is installed charging receptacles or permanently installed chargers. The proposed project is anticipated to include 230 paved parking spaces. Therefore, based on the City's Reach Code requirements, the proposed project would be required to provide 23 EV Capable spaces, and 23 spaces would be required

(Continued on next page)

Table 4
Project Consistency with the Livermore Climate Action Plan

Strategies and Actions	Consistency Discussion
	to include EVSE, in compliance with the City's Reach Code. The current site plans include a total of 26 EVSE spaces and 26 EV Capable spaces. Therefore, the proposed project would be consistent with Action T-1.1.
Strategy W-1: Reduce the amount of waste that is landfilled.	The project would be required to comply with all applicable provisions of Chapter 8.08, Solid Waste Management, of the City's Municipal Code. In addition, as discussed below, the proposed project would be required to comply with the CALGreen Code's construction waste diversion standards during construction of the proposed project. Therefore, the proposed project would generally be consistent with Strategy W-1.
Action W-1.5: Reduce construction waste.	The CALGreen Code requires all new construction projects to recycle and/or salvage for reuse a minimum 65 percent of all non-hazardous construction and demolition waste. The proposed project would be required to comply with the CALGreen Code standards, and, therefore, would be consistent with Action W-1.5.
Source: City of Livermore, 2022.	

Conclusion

Based on the above, the proposed project would be consistent with the City's CAP strategies and actions. Therefore, the proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. Thus, a ***less-than-significant*** impact could occur.

IX. HAZARDS AND HAZARDOUS MATERIALS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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 likely release of hazardous materials into the environment?	☐	☐	✖	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	✖	☐
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	✖	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard 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 the risk of loss, injury or death involving wildland fires?	☐	☐	✖	☐

Discussion

a,b. Casinos are not typically associated with the routine transport, use, disposal, or generation of substantial amounts of hazardous materials. Maintenance and operation of the proposed increased business operations and parking lot expansion may use common household cleaning products, fertilizers, and herbicides on-site, any of which could contain potentially hazardous chemicals; however, such products would be expected to be used in accordance with label instructions. Due to the regulations governing use of such products and the amount anticipated to be used on the site, routine use of such products would not represent a substantial risk to public health or the environment.

Construction activities associated with the proposed project would consist of the construction of a new parking lot, which could involve the limited use of equipment that would contain fuels and oils, and various other products such as paints and adhesives. However, contractors would be required to comply with all California Health and Safety Codes and local City ordinances regulating the handling, storage, and transportation of hazardous and toxic materials. Thus, construction activities related to the proposed project would not represent a substantial risk to public health or the environment.

Based on the above, the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment. Thus, a ***less-than-significant*** impact would occur.

c. The project site is located approximately 700 feet southwest from the Acton Academy East Bay, and is therefore located within 0.25-mile of an existing school. However, the project site consists of the existing Parkwest Casino 580 and undeveloped grassland. As such, evidence of recognized environmental conditions (RECs), controlled RECs or historical RECs have not been identified in connection with the project site. In addition, operation of the site as a casino and associated parking lot would not include any activities that would involve the routine transport, use, or disposal of hazardous material. As such, future operations at the project site would not emit any hazardous emissions, substances, or waste. Therefore, the project would result in a ***less-than-significant*** impact.

d. The California Environmental Protection Agency (Cal EPA) has compiled a list of data resources that provide information regarding the facilities or sites identified as meeting the "Cortese List" requirements, pursuant to Government Code 65962.5. The components of the Cortese List include the Department of Toxic Substances Control (DTSC) Hazardous Waste and Substances Site List,[18] the list of leaking underground storage tank (UST) sites from the State Water Resources Control Board (SWRCB's) GeoTracker database,[19] the list of solid waste disposal sites identified by the SWRCB, and the list of active Cease and Desist Orders (CDOs) and Cleanup and Abatement Orders (CAOs) from the SWRCB.[20] The project site is not included on the DTSC Hazardous Waste and Substances Site List. In addition, the project site is not listed on the SWRCB's list of solid waste disposal sites, list of leaking UST sites, or list of active CDOs and CAOs. Therefore, the proposed project would not create a significant hazard to the public or the environment related to being located on a site which is included on a list of hazardous materials compiled pursuant to Government Code Section 65962.5, and a ***less-than-significant*** impact would occur.

e. The nearest airport to the project site is the Livermore Municipal Airport, located approximately 0.3-mile south of the project site. Given the proximity of Livermore Municipal Airport, the project site is included within the Airport's Land Use Compatibility Plan (ALUCP). The project site is located within the Airport Protection Area boundaries.[21] Given that the project site is located within an airport land use plan, the proposed project has the potential to expose people residing or working in the project area to a safety hazard or excessive noise associated with such. Impacts related to the exposure of people to excessive noise are discussed in Section XIII, Noise, of this IS/MND. Therefore, the following discussion is focused on whether the proposed project would result in the potential to expose people residing or working in the project area to a safety hazard related to the Livermore Municipal Airport.

The ALUCP has developed land use safety compatibility criteria to minimize the risks to people and property on the ground, as well as people in an aircraft in the event of an accident or emergency landing occurring outside the airport boundary. As such, a total of seven different safety zones are identified within the ALUCP based on runway length and flight patterns, and incompatible, conditional, and permitted uses were identified for each zone. As shown on Figure 3-3 of the ALUCP, the project site is located within Zone 6.

---

18 Department of Toxic Substances Control. *Hazardous Waste and Substances Site List (Cortese).* Available at: https://www.envirostor.dtsc.ca.gov/public/. Accessed August 2024.

19 State Water Resources Control Board. *GeoTracker.* Available at: https://geotracker.waterboards.ca.gov/map/?myaddress=California&from=header&cqid=8858350455. Accessed August 2024.

20 CalEPA. *Cortese List Data Resources*. Available at: https://calepa.ca.gov/sitecleanup/corteselist/. Accessed August 2024.

21 Alameda County Community Development Agency. *Livermore Executive Airport Land Use Compatibility Plan* [Figure 3-1]. August 2012.

According to Table 3-2 of the ALUCP, non-residential land uses are permitted uses within Zone 6. In addition, the proposed project would comply with the criteria included within the ALUCP, such as avoiding uses that could create hazards to flights, such as building height and prohibiting critical infrastructure facilities. The proposed project would not require an avigation easement.

Based on the above, the proposed project would not result in a safety hazard for people working in the project area, and a ***less-than-significant*** impact would occur.

f. The City of Livermore adopted the City of Livermore Emergency Operations Plan in January 2018.[22] The plan provides a basis for future responses to a wide range of citywide hazards and vulnerabilities. The plan outlines the general authority, organization, and response actions for City of Livermore staff when disasters occur. Implementation of the proposed project would not result in any substantial modifications to the existing roadway system and, thus, would not physically interfere with the Emergency Operations Plan, particularly with any roadways needed in the case of an emergency evacuation within the City. Furthermore, the proposed project would not include land uses or operations that could impair implementation of the plan.

Therefore, the proposed project would not interfere with an emergency evacuation or response plan, and a ***less-than-significant*** impact would occur.

g. Issues related to wildfire hazards are discussed in Section XX, Wildfire, of this IS/MND. According to the California Department of Forestry and Fire Protection (CAL FIRE) Fire and Resource Assessment Program, the project site is not located within a Very High Fire Hazard Severity Zone (FHSZ).[23] While a High FHSZ is located immediately west of Doolan Road in close proximity to the project site, the expansion of the existing parking lot would include the removal of existing on-site vegetation, which would reduce wildfire risks. Therefore, the proposed project would not expose people or structures to the risk of loss, injury or death involving wildland fires, and a ***less-than-significant*** impact would occur.

---

[22] City of Livermore. *Emergency Operations Plan*. January 2018.

[23] California Department of Forestry and Fire Protection. *Fire Hazard Severity Zone Viewer*. Available at: https://experience.arcgis.com/experience/03beab8511814e79a0e4eabf0d3e7247/. Accessed August 2024.

X. HYDROLOGY AND WATER QUALITY. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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 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?	☐	☐	✖	☐

Discussion

a. The following discussion provides a summary of the proposed project's potential to violate water quality standards/waste discharge requirements or otherwise degrade water quality during construction and operation.

Construction

During the early stages of construction activities, topsoil would be exposed during ground-disturbance. Prior to overlaying the ground surface with impervious surfaces, the potential exists for wind and water erosion to discharge sediment and/or urban pollutants into stormwater runoff, which could adversely affect water quality downstream.

The SWRCB regulates stormwater discharges associated with construction activities where clearing, grading, or excavation results in a land disturbance of one or more acres. The City's National Pollutant Discharge Elimination System (NPDES) permit requires applicants to show proof of coverage under the State's General Construction Permit prior to receipt of any construction permits. The State's General Construction Permit requires a Storm Water Pollution Prevention Plan (SWPPP) to be prepared for the site. A SWPPP describes Best Management Practices (BMPs) to control or minimize pollutants from entering stormwater and must address both grading/erosion impacts and non-point source pollution impacts of the development project. Because the proposed project would disturb greater than one acre of land, the proposed project would be subject to the requirements of the State's General Construction Permit.

In addition, the proposed project would be required to comply with Chapter 13.45, Stormwater Management and Control Program, of the City's Municipal Code, which includes standards for managing stormwater runoff during construction and operation. Pursuant to Section 13.45.090, any construction contractor performing work in the City must provide filter materials at the catch basin to retain any debris and dirt flowing into the City's stormwater system. Therefore, the proposed project would not discharge sediment or urban pollutants through soil erosion, violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality during construction.

Operation

The proposed project would not involve operations typically associated with the generation or discharge of polluted water. Following completion of project buildout, disturbed areas of the site would be largely covered with impervious surfaces or landscaping, and topsoil would no longer be exposed. All municipalities within Alameda County (and the County itself) are required to develop more restrictive surface water control standards for new development projects as part of the renewal of the Countywide NPDES permit. Thus, typical operations on the project site would not violate any water quality standards or waste discharge requirements, nor degrade water quality.

The City of Livermore has adopted the Alameda County C.3 Stormwater Standards, which require new development and redevelopment projects that create or alter 10,000 or more square feet (sf) of impervious area to contain and treat all stormwater runoff from the project site. A total of approximately 118,506 sf of new impervious surfaces would exist on-site following implementation of the proposed project. Thus, the project would be subject to the requirements of the C.3 Stormwater Standards related to stormwater treatment, which are included in the City's NPDES General Permit.

Stormwater runoff within the project site would flow to three bioretention planters located within the parking lot that would provide treatment and detention of the on-site stormwater runoff. In addition, the project would include various other landscaping elements that would allow for stormwater infiltration. The bio-treatment planters consist primarily of pervious landscaping, allowing for stormwater to infiltrate underlying soils. The proposed project would also include an approximately 0.45-acre landscaped self-treatment area located in the eastern portion of the project site.

Each of the bio-treatment planters would be sized to adequately handle all runoff from the proposed impervious surfaces and landscaping within the project site. Thus, the proposed project would comply with the requirements of the SWRCB and the Regional Water Quality Control Board (RWQCB), and would meet C.3 Standards related to stormwater treatment. During operation, the project would comply with all relevant water quality standards and waste discharge requirements, and would not degrade water quality.

Conclusion

Based on the above, the proposed project would not result in the violation of water quality standards or degradation of water quality during construction or operation, and a ***less-than-significant*** impact would occur.

b,e. Water supplies in the northwest, northeast, and eastern portions of the City of Livermore, including the project site, are provided by Livermore Municipal Water. Pursuant to the City of Livermore 2020 Urban Water Management Plan (UWMP), the City does not pump groundwater to meet any water demands of the municipal water service area and does not overlay an adjudicated/unadjudicated basin. However, the City does retain a pumping quota of approximately 30 acre-feet per year (AFY) from the Livermore-Amador Valley Groundwater Basin, an unadjudicated basin.

Bulletin 118 – Interim Update 2016 defines 517 groundwater basins and subbasins in California. Per the Sustainable Groundwater Management Act (SGMA), the Department of Water Resources (DWR) is required to prioritize the 517 groundwater basins and subbasins as either High, Medium, Low, or Very Low. Prioritization is based on the following considerations:

- The population overlying the basin or subbasin;
- The rate of current and projected growth of the population overlying the basin or subbasin;
- The number of public supply wells that draw from the basin or subbasin;
- The total number of wells that draw from the basin or subbasin;
- The irrigated acreage overlying the basin or subbasin;
- The degree to which persons overlying the basin or subbasin rely on groundwater as their primary source of water;
- Any documented impacts on the groundwater within the basin or subbasin, including overdraft, subsidence, saline intrusion, and other water quality degradation; and
- Any other information determined to be relevant by the department, including adverse impacts on local habitat and local streamflows.

Each basin's priority determines which provisions of California Statewide Groundwater Elevation Monitoring and SGMA apply. SGMA requires Medium and High priority basins to develop groundwater sustainability agencies, develop groundwater sustainability plans, and manage groundwater for long-term sustainability. The Livermore-Amador Valley Groundwater Basin is considered Medium Priority per the DWR[24] and is addressed by the Zone 7 Groundwater Management Plan (2005 GMP).[25] The DWR has not identified the Basin as either in overdraft or expected to be in overdraft.[26]

Pursuant to the 2020 UWMP, water supplies are projected to meet expected demand during five-year droughts beginning in 2025, 2030, 2035, 2040, and 2045. The proposed project would involve a relatively modest increase in water demand associated with the casino's increased capacity. However, the project site is currently developed, and such demand would not represent a substantial increase from existing conditions at the site. In addition, all landscaping improvements would be consistent with Section 13.25 of the Municipal Code, Water Efficient Landscape, and would be irrigated by an automatic irrigation system. Therefore, the project would not result in substantially increased use of

---

24 Department of Water Resources. *Sustainable Groundwater Management Act 2018 Basin Prioritization* [Table A-1]. January 2019.

25 Zone 7 Water Agency. *Groundwater Management Plan for Livermore-Amador Valley Groundwater Basin.* September 2005.

26 Zone 7 Water Agency. *2015 Urban Water Management Plan* [pg. 6-7]. March 31, 2016.

groundwater supplies beyond what has been anticipated for the site by the City and accounted for in the UWMP.

Project development would result in an increase in on-site impervious surfaces, which would reduce the infiltration of groundwater as compared to existing conditions. However, approximately 2.02 acres, or approximately 42 percent of the site, would remain as pervious surfaces, which would allow for the natural percolation of stormwater in those areas, which would continue to contribute to groundwater recharge similar to existing conditions. Furthermore, the proposed project would include the development of three on-site bioretention planters, which would allow for the on-site infiltration of surface water to continue, and contribute to groundwater recharge. Therefore, the proposed project would not interfere substantially with groundwater recharge on-site or interfere with groundwater recharge in the area.

Based on the above, the proposed project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the Livermore-Amador Valley Groundwater Basin. In addition, the project would not conflict with or obstruct implementation of a water quality control plan or the 2005 GMP. Thus, a ***less-than-significant*** impact would occur.

c.i-iii. A total of approximately 118,506 sf of new impervious surfaces would exist on-site following implementation of the proposed project. As discussed above, the proposed project would be subject to the County C.3 Standards related to stormwater.

Storm water runoff within the project site would flow to three bioretention planters located in the proposed parking lot that would provide treatment and retention of the on-site stormwater runoff. As shown above in Figure 4, the total treatment area on-site would be equal to new impervious area plus 10 percent of the landscaped area, as required by the County C.3 Stormwater Standards. Thus, adequate storage would be provided on-site.

The proposed project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion, siltation, or flooding on- or off-site. The proposed project would not 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. Consequently, the proposed project would result in a ***less-than-significant*** impact.

c.iv. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map number 06001C03329G, the project site is located within an Area of Minimal Flood Hazard (Zone X).[27] The site is not classified as a Special Flood Hazard Area or otherwise located within a 100-year or 500-year floodplain. Therefore, development of the proposed project would not impede or redirect flood flows and ***no impact*** would result.

d. As discussed under question 'c.iv' above, the project site is not located within a flood hazard zone. Thus, the proposed project would not be subject to substantial flooding risks. Tsunamis are defined as sea waves created by undersea fault movement, whereas a seiche is a long-wavelength, large-scale wave action set up in a closed body of water such as a lake or reservoir. Due to the project site's substantial distance from the coast, the

27 Federal Emergency Management Agency. *Flood Insurance Rate Map 06001C0329G.* Effective August 3, 2009.

proposed project would not be exposed to flooding risks associated with tsunamis. Seiches do not pose a risk to the proposed project, as the project site is not located adjacent to any closed body of water. Therefore, the proposed project would not pose a risk related to the release of pollutants due to project inundation due to flooding, tsunami, or seiche, and ***no impact*** would occur.

XI. LAND USE AND PLANNING. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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?	☐	☐	✖	☐

Discussion

a. A project risks dividing an established community if the project would introduce infrastructure or alter land uses so as to change the land use conditions in the surrounding community, or isolate an existing land use. Currently, the project site is developed with the existing Parkwest Casino 580, and does not contain existing housing. The site is bounded by Doolan Road to the west, North Canyons Parkway to the north, undeveloped land to the east, and I-580 to the south. In addition, the proposed project would be compatible with the existing surrounding land uses in the project area and would not alter the existing general development trends in the area or isolate an existing land use. Therefore, the proposed project would not physically divide an established community, and a ***less-than-significant*** impact would occur.

b. The proposed project consists of a parking lot expansion for the existing Parkwest Casino 580 and an increase in business operations. Cardrooms are a conditionally permitted use in the site's INSP General Commercial designation. The existing cardroom casino is subject to an approved Conditional Use Permit, which would require a modification to increase the business operations; the modification to the existing Conditional Use Permit and the proposed amendments to the City of Livermore Municipal Code are discretionary actions subject to approval by the City of Livermore City Council. As discussed throughout this IS/MND, the proposed project would not result in any significant environmental effects that cannot be mitigated to a less-than-significant level by the mitigation measures provided herein. In addition, the proposed project would not conflict with City policies and regulations adopted for the purpose of avoiding or mitigating an environmental effect, including, but not limited to, the City's noise standards, applicable SWRCB regulations related to stormwater, and EACCS standards. Therefore, the proposed project would not cause a significant environmental impact in excess of what has already been analyzed and anticipated in the INSP EIR, and would not conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental impact. Thus, a ***less-than-significant*** impact would occur.

XII. MINERAL RESOURCES. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	✖
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	✖

Discussion

a,b. Pursuant to the City's General Plan, areas within the vicinity of Livermore are underlain by alluvial deposits, which contain significant reserves of sand and gravel deposits suitable for use as aggregate in the production of Portland Concrete Cement. However, the General Plan does not identify any mineral resources in the project area.[28] The General Plan EIR concluded that buildout of the Planning Area, including the project site, would result in a less-than-significant impact to mineral resources with implementation of applicable General Plan policies, including Policies OSC-4.1.P1 through P5. The aforementioned policies require the City to take into account potentially available mineral resources within the City, while also ensuring mining operations comply with all applicable City policies and standards. In addition, pursuant to the INSP EIR, the INSP Planning Area does not have known mineral resources of regional or statewide value, or locally-important mineral resource recovery sites delineated on a land use plan. Therefore, ***no impact*** to mineral resources would occur as a result of development of the project.

---

[28] City of Livermore. *City of Livermore General Plan 2003-2025* [Figure 8-3]. December 2014.

XIII. NOISE. *Would the project result in:*	Potentially Significant Impact	Less-Than-Significant 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?	☐	☐	✖	☐

Discussion

a. The discussion below presents information regarding sensitive noise receptors in proximity to the project site, applicable noise standards, the existing noise environment, and the potential for the proposed project to result in noise impacts during project construction and operation. The following terms are referenced in the sections below:

- Decibel (dB): A unit of sound energy intensity. An A-weighted decibel (dBA) is a decibel corrected for the variation in frequency response to the typical human ear at commonly encountered noise levels. All references to decibels (dB) in this report will be A-weighted unless noted otherwise.
- Community Noise Equivalent Level (CNEL): The cumulative noise exposure over a 24-hour period. Weighting factors of +5 and +10 dBA are applied to the evening and nighttime periods, respectively, to account for the greater sensitivity of people to noise during those periods.
- Day-Night Average Level (L_{dn}): The average sound level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours.
- Equivalent Sound Level (L_{eq}): The average sound level over a given time-period.
- Maximum Sound Level (L_{max}): The maximum sound level over a given time-period.
- Median Sound Level (L_{50}): The sound level exceeded 50 percent of the time over a given time-period.

City Noise Standards

Both the City's Municipal Code and General Plan include regulations related to the generation of noise.

Chapter 9.36 of the City of Livermore Municipal Code prohibits any person to make or continue, or cause to be made or continued, any loud, disturbing, unnecessary, unusual or habitual noise, or any noise which annoys, disturbs, injures or endangers the comfort, health, repose, peace or safety of other persons within the City. Noise sources from both construction and operations of the proposed project are discussed in comparison to the foregoing general standard included in the City's Municipal Code.

Pursuant to City of Livermore Municipal Code Chapter 9.36, construction activities associated with development of the proposed project would be prohibited during the following time periods: 6:00 PM Saturday to 7:00 AM Monday; 8:00 PM to 7:00 AM on Monday, Tuesday, Wednesday and Thursdays; 8:00 PM Friday to 9:00 AM on Saturday; and on all City-observed holidays.

General Plan Policy N-1.5.P1 requires that industrial and commercial uses be designed and operated so as to avoid the generation of noise effects on surrounding sensitive land uses from exceeding the following noise levels for exterior environments:

(a) 55 dBA L_{50} (7:00 AM to 10:00 PM)
(b) 45 dBA L_{50} (10:00 PM to 7:00 AM)

In addition, the City's General Plan Policy N-1.1.P4 establishes acceptable and unacceptable ranges for exterior noise levels at various land uses within the City. The acceptable and unacceptable noise ranges are included in Table 9-7 of the City's General Plan, which is reproduced as Table 5 below.

Table 5
Land Use Compatibility Guidelines for Exterior Noise (dBA)

Land Use	Normally Acceptable[1]	Conditionally Acceptable[1]	Normally Unacceptable[1]	Clearly Unacceptable[1]
Residential-Low Density, Single-Family, Duplex, Mobile Homes	≤60	55-70	70-75	>75
Residential Multi-Family	≤65	60-70	70-75	>75
Transient Lodging, Hotels, Motels	≤65	60-70	70-80	>80
School, Library, Church, Hospital, Nursing Home	≤70	60-70	70-80	>80
Auditorium, Concert Hall, Amphitheater	X	<70	X	>65
Sports Arena, Outdoor Spectator Sports	X	<75	X	>70
Playground, Neighborhood Park	≤70	X	70-75	>75
Golf Course, Water Recreation, Cemetery	≤75	X	70-80	>80

(Continued on next page)

Office Building, Business Commercial, Professional, Retail	≤70	70-75	>75	X
Industrial, Manufacturing, Utilities, Agricultural	≤75	70-80	>75	X
[1] Where dBA levels overlap between these categories, determination of noise level acceptability will be made on a project-by-project basis. dBA is measured in CNEL or L_{dn} (see General Plan Policy N-1.1.P4).				
Source: City of Livermore General Plan [Table 9-7]. December 2014.				

As shown in Table 5, the normally acceptable exterior noise level range for both office buildings and schools is less than or equal to 70 dBA L_{dn}. Should project traffic and operational noise result in exterior noise levels exceeding 70 dBA L_{dn} at the office buildings located approximately 210 feet to the north of the project site or the Acton Academy East Bay school located approximately 700 feet to the northeast of the project site, the proposed project would be considered to result in a significant noise impact.

The City of Livermore has not established a threshold for significant increases in traffic noise. However, the Federal Interagency Committee on Noise (FICON) has developed guidance for determining increases in traffic noise. Therefore, in addition to the 70 dBA L_{dn} limit specified in the City of Livermore Noise Element, increases in the ambient noise environment due to the proposed project were evaluated using the criteria developed by FICON. Although the FICON guidelines were originally developed for aircraft noise impacts, the noise increase thresholds are generally considered appropriate for evaluation of noise increases at noise sensitive uses such as single-family residences or schools. The significance criteria are provided in Table 6, below.

Table 6
FICON Noise Exposure Increases for Determining Level of Significance

Noise Exposure without Project	Potential Significant Impact
< 60 dB CNEL	5 dB or more
60-65 dB CNEL	3 dB or more
>65 dB CNEL	1.5 dB or more
Source: Federal Interagency Committee on Noise.	

As shown in the table, according to the FICON, an increase in the traffic noise level of 5 dB or more would be significant where the pre-project noise levels are less than 60 dB L_{dn}. In areas where the pre-project noise levels range from 60 to 65 dBA, a 3 dBA barely perceptible noise level increase appears to be appropriate for most people. When the pre-project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact, given that the noise increase likely contributes to an existing noise exposure exceedance.

Sensitive Noise Receptors

Some land uses are considered more sensitive to noise than others, and, thus, are referred to as sensitive noise receptors. Land uses often associated with sensitive noise receptors generally include residences, schools, libraries, hospitals, and passive recreational areas. Noise sensitive land uses are typically given special attention in order to achieve protection from excessive noise. In the vicinity of the project site, the nearest existing noise sensitive land uses is Acton Academy East Bay, located approximately 700 feet northeast of the project site's northern boundary.

Existing Noise Environment

The existing ambient noise environment at the project site is primarily defined by traffic noise emanating from I-580, located immediately south of the project site, existing on-site parking lot movements, and by adjacent commercial operations.

Project Construction Noise

During construction of the proposed project, heavy equipment would be used for site grading and paving, which would increase ambient noise levels in the project area when in use. Standard construction equipment, such as graders, backhoes, loaders, and trucks, would be used on-site. Noise levels would vary depending on the type of equipment used, how the equipment is operated, and how well the equipment is maintained. In addition, noise exposure at any single point outside the project site would vary depending on the proximity of construction activities to that point.

Table 7 shows maximum noise levels associated with typical construction equipment. Based on the table, activities involved in typical construction would generate maximum noise levels ranging from 76 to 90 dB at a distance of 50 feet. As one increases the distance between equipment, or increases separation of areas with simultaneous construction activity, dispersion and distance attenuation reduce the effects of combining separate noise sources. The noise levels from a source decrease at a rate of approximately 6 dB per every doubling of distance from the noise source.

Table 7
Construction Equipment Noise

Type of Equipment	Maximum Level, dB at 50 feet
Auger Drill Rig	84
Backhoe	78
Compactor	83
Compressor (air)	78
Concrete Saw	90
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Jackhammer	89
Pneumatic Tools	85

***Source:** Federal Highway Administration, Roadway Construction Noise Model User's Guide, January 2006.*

The City of Livermore has not adopted a formal standard for evaluating temporary construction noise which occurs within allowable hours. However, the California Department of Transportation (Caltrans) defines a significant increase due to noise as an increase of 12 dBA over existing ambient noise levels. Construction equipment is predicted to generate noise levels of up to 90 dBA L_{max} at 50 feet. The nearest noise-sensitive use, Acton Academy East Bay, is located approximately 700 feet as measured from the northeastern boundary of the proposed parking lot expansion. At such a distance, maximum construction noise levels would be approximately 67.5 dBA. According to Figure 9-1 of the General Plan EIR, the project site and the Acton Academy East Bay are located within the existing 60 dBA CNEL noise contour. Therefore, project construction would not cause an increase of greater than 12 dBA over existing maximum noise levels at the nearest sensitive receptor.

In addition, the noise increase during construction would be of short duration and would likely occur primarily during daytime hours, pursuant to City of Livermore Municipal Code Chapter 9.36. Although construction activities associated with the proposed project could result in infrequent periods of high noise, the construction noise would not be sustained and would occur only during the City's permitted construction noise hours. Therefore, a less-than-significant impact would occur related to construction noise.

Project Operational Noise

Noise generated during operations of the proposed project would consist of typical commercial noise and traffic noise, as discussed in further detail below.

On-Site Operational Noise

On-site operational noise sources would include on-site noise associated with parking lot activity, including engines starting and stopping, car doors opening and closing, and persons conversing as they entered and exited the vehicles.

According to the Environmental Noise and Vibration Assessment prepared for the Livermore Valley Academy Project by Bollard Acoustical Consultants, individual parking lot movements generate mean noise levels of approximately 70 dB sound exposure level (SEL) at a reference distance of 50 feet. The maximum noise level associated with parking lot activity typically do not exceed 65 dB L_{max} at the same reference distance.

To compute hourly average (L_{eq}) noise levels generated by parking lot activities, the approximate number of hourly operations in any given area and distance to the effective noise center of the activities is required. To be conservative, the analysis herein assumes that all of the 230 proposed parking stalls could fill or empty during a given peak hour. The hourly average noise level generated by parking lot movements is computed using the following formula:

$$\textit{Peak Hour } L_{eq} = 70+10*\log (N) - 35.6$$

Where 70 is the mean SEL for an automobile parking lot arrival or departure, N is the number of parking lot operations in a given hour, and 35.6 is 10 times the logarithm of the number of seconds in an hour. Median (L_{50}) parking lot noise levels would be approximately 5 dB less than hourly average noise levels (L_{eq}). As such, parking lot activities would be approximately 53.02 dB L_{50} at a reference distance of 50 feet.

Using the information provided above, and assuming a standard 6 dB decrease in noise levels per doubling of distance, the L_{50} noise levels at the nearest off-site existing sensitive uses, the Acton Academy East Bay, associated with on-site parking activities would be approximately 30 dB L_{50}.

The City of Livermore General Plan establishes an exterior daytime noise level standard of 55 dB L_{50} for sensitive land uses. As indicated above, noise level exposure from the project parking lot movements would satisfy the General Plan 55 dB L_{50} exterior daytime noise level standard at the nearest sensitive land use.

In addition, as shown above in Table 5, the City of Livermore General Plan establishes acceptable and unacceptable ranges for exterior noise levels measured in CNEL at various land uses. It can be reasonably assumed that L_{50} noise measurements would be greater than the CNEL measurement, as L_{50} was calculated as the sound level exceeded 50 percent of the time within one peak hour, and CNEL occurs over a 24-hour period. The L_{50} noise level calculated for the proposed project is also a conservative assumption of parking lot operations, as every space was assumed to empty and fill within one peak hour. As such, because parking lot activity noise was calculated to be approximately 53.4 dB L_{50} at a reference distance of 50 feet, it is reasonable to conclude that the parking lot activities associated with the proposed project would be below the acceptable 70 dB CNEL noise level at all nearest uses.

Because parking lot movement noise level exposure from on-site noise sources is calculated to satisfy applicable City of Livermore General Plan daytime noise level standards at the nearest existing off-site noise-sensitive uses, noise level exposure from parking lot movement noise sources is not expected to result in a significant increase in ambient noise levels at the nearest sensitive receptors. As such, noise level increases that could occur due to on-site noise sources during project operation would result in a less-than-significant impact.

Traffic Noise

The primary noise source associated with the operation of the proposed project would be traffic noise on local roadways. As part of the Traffic Impact Analysis (TIA) Report conducted for the proposed project, TJKM determined the proposed project would generate an increase of approximately 304 trips per day, including 26 weekday AM peak hour trips and 25 weekday PM peak hour trips.[29]

Based on Figure 9-1 of the General Plan, the project site is located in an area with existing noise levels of 60 dBA CNEL. Pursuant to the FICON criteria presented in Table 6, where existing traffic noise levels are between 60 and 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in roadway noise levels would be considered significant. Generally, a doubling in traffic volumes is required to increase traffic noise levels by 3 dB, which is considered to be the threshold for a significant increase pursuant to the FICON. The increase of approximately 304 trips per day associated with the proposed project would not result in a doubling of traffic volumes along area roadways. Therefore, the proposed project would not result in a substantial increase in noise levels related to vehicle traffic, and increased traffic noise generated from implementation of the proposed project would result in a less-than-significant impact.

[29] TJKM. *Traffic Impact Analysis Report – Parkwest Casino 580 Expansion*. November 6, 2024.

Conclusion

Noise associated with construction or operations of the proposed project would not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of the standards established in the City's General Plan, or applicable standards of other agencies. Thus, a ***less-than-significant*** impact related to the generation of a substantial temporary and 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 could occur.

b. Similar to noise, vibration involves a source, a transmission path, and a receiver. However, noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration depends on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration is measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of peak particle velocities (PPV) in inches per second (in/sec). Standards pertaining to perception, as well as damage to structures, have been developed for vibration levels defined in terms of PPV.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 8, which was developed by Caltrans, shows the vibration levels that would normally be required to result in damage to structures. As shown in the table, the threshold for architectural damage to structures is 0.20 in/sec PPV and continuous vibrations of 0.10 in/sec PPV, or greater, would likely cause annoyance to sensitive receptors.

Table 8
Effects of Vibration on People and Buildings

PPV			
mm/sec	**in/sec**	**Human Reaction**	**Effect on Buildings**
0.15 to 0.30	0.006 to 0.019	Threshold of perception; possibility of intrusion	Vibrations unlikely to cause damage of any type
2.0	0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
2.5	0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
5.0	0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations)	Threshold at which there is a risk of "architectural" damage to normal dwelling - houses with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage
10 to 15	0.4 to 0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Caltrans. Transportation Related Earthborne Vibrations. TAV-02-01-R9601. February 20, 2002.

The primary vibration-generating activities associated with the proposed project would occur during grading activities and construction of the proposed parking lot. Table 9 shows the typical vibration levels produced by construction equipment at various distances. As shown in the table, the most substantial source of groundborne vibrations associated with project construction would be the use of vibratory compactors during construction of the proposed parking areas within the project site.

Table 9
Vibration Levels for Various Construction Equipment

Type of Equipment	PPV at 25 feet (in/sec)	PPV at 50 feet (in/sec)
Large Bulldozer	0.089	0.029
Loaded Trucks	0.076	0.025
Small Bulldozer	0.003	0.000
Auger/drill Rigs	0.089	0.029
Jackhammer	0.035	0.011
Vibratory Hammer	0.070	0.023
Vibratory Compactor/roller	0.210	0.070

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006.

As shown in the table, construction vibration levels are less than 0.2 in/sec threshold at distances of 26 feet. Sensitive receptors which could be impacted by construction-related vibrations, especially compactors/rollers, are located further than 26 feet from construction activities. Therefore, development of the proposed project would not expose people to or generate excessive groundborne vibration or groundborne noise levels, and a ***less-than-significant*** impact would occur.

c. The nearest airport to the project site is the Livermore Municipal Airport, located approximately 0.3-mile south of the site. According to Figure 3-2 (Noise Compatibility Zones) of the Livermore Municipal Airport Land Use Compatibility Plan, the project area is geographically located within the Airport Protection Area. The project site is located within the 55 dB CNEL airport noise contour. According to Table 3-1 of the ALUCP, commercial uses are compatible within the 55 and 60 CNEL contours. Thus, a ***less-than-significant*** impact would occur.

XIV. POPULATION AND HOUSING. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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 (e.g., through projects in an undeveloped area or extension of major infrastructure)?	☐	☐	✖	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	✖

Discussion

a. Development of the project site would not result in direct population growth by proposing new homes or a new business. The project could indirectly attract residents to the area for employment opportunities through the expansion of existing commercial uses; however, new employment opportunities would be limited due to the relatively small increase in operational activities, and new employees would likely be drawn from current residents in the project area. Therefore, the proposed project would not induce substantial unplanned population growth either directly or indirectly, and a ***less-than-significant*** impact would occur.

b. The project site currently includes undeveloped land and the existing Parkwest Casino 580 and does not include existing housing or other habitable structures. As such, the proposed project would not displace existing housing or people and would not necessitate the construction of replacement housing elsewhere. Therefore, ***no impact*** would occur.

XV. PUBLIC SERVICES. *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:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Fire protection?	☐	☐	✖	☐
b. Police protection?	☐	☐	✖	☐
c. Schools?	☐	☐	✖	☐
d. Parks?	☐	☐	✖	☐
e. Other Public Facilities?	☐	☐	✖	☐

Discussion

a,b. Fire protection services are currently provided to the site by the Livermore-Pleasanton Fire Department (LPFD). The nearest fire station to the project site is Station #10, located at 330 Airway Boulevard, approximately 0.65-mile southeast from the project site. The LPFD maintains ten fire stations and is staffed by approximately 100 fire suppression staff. The LPFD operates a total of 52 vehicles. The LPFD does not maintain a minimum fire protection staff/population ratio; however, the General Plan EIR determined that population growth resultant from General Plan buildout would require the hiring of additional staff. Implementation of the applicable General Plan policies would ensure that adequate capital improvements are made to accommodate any increased demand in fire protection services. Nonetheless, the CEQA Guidelines do not require identification of impacts associated with the need for increased staffing levels; rather, determination of impacts is based on whether the project would result in substantial adverse physical impacts associated with construction of new or physically altered governmental facilities in order to meet acceptable service ratios, response times, or other performance objectives.

The City of Livermore Police Department provides police protection services at the project site. The City's Police Department headquarters is located at 1110 South Livermore Avenue, approximately 5.5 miles southeast from the project site. The General Plan implements policies that ensure 1.25 police officers are provided per 1,000 residents. The increase in casino operations could result in periodic calls for service, but the need for law enforcement would not be anticipated to be substantial and necessitate the construction of additional law enforcement facilities.

Because the proposed project is consistent with the project site's current INSP land use and zoning designations, potential increases in demand for fire and police protection services associated with the proposed project have been anticipated by the City and analyzed in the INSP EIR, which concluded that environmental impacts related to the potential need for new facilities would be less than significant. Additionally, any potential demand for fire or police protection services associated with the proposed project would not be substantial as to require new or expanded fire and police protection facilities. The project would comply with all applicable State and local requirements related to fire safety and security. Compliance with such standards would minimize fire and police protection demands associated with the proposed project. Therefore, the proposed project would have a ***less-than-significant*** impact related to the need for new or physically altered fire or police protection facilities, the construction of which could cause significant environmental impacts.

c-e. The proposed project is commercial in nature, and, therefore, would not include any development that would result in direct population growth such that demand for schools, parks, or other public facilities would increase. The nearest park to the project site is Cayetano Park, located approximately 1.6 miles to the east.

The proposed project would not bring school-age children to the area; thus, an impact to schools would not occur with implementation of the proposed project. Nonetheless, the project would be subject to payment of School Impact Mitigation Development Fees to fund local school services. Furthermore, pursuant to Section 12.60 of the City of Livermore Municipal Code, the City's park facility fee is based on the number of employees per square foot for non-residential uses. Therefore, the proposed project would be subject to payment of the City's park facility fee, as applicable, if additional employees are hired due to the expanded casino operations. The fee would help to fund expanded park facilities and services within the City. Therefore, the proposed project would have a ***less-than-significant*** impact related to the need for new or physically altered schools, parks, or other public facilities, the construction of which could cause significant environmental impacts.

XVI. RECREATION. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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?	☐	☐	✖	☐

Discussion

a,b. The nearest park to the project site is Cayetano Park, located approximately 1.6 miles to the east. The proposed project would include the expansion of the existing parking lot and casino operations, and would not result in direct population growth that could result in increased demand on existing recreational facilities or cause the construction or expansion of recreational facilities. Furthermore, as discussed above, the project would be subject to payment of the City's park facility fee in accordance with Section 12.60 of the Livermore Municipal Code, as applicable. The fee would help to fund expanded park facilities and services within the City. Thus, a ***less-than-significant*** impact would occur.

XVII. TRANSPORTATION. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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 section 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?	☐	☐	✖	☐

Discussion

a. The law has changed with respect to how transportation-related impacts may be addressed under CEQA. Traditionally, lead agencies used level of service (LOS) to assess the significance of such impacts, with greater levels of congestion considered to be more significant than lesser levels. Enacted as part of SB 743 (2013), PRC Section 21099, subdivision (b)(1), directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the Secretary of the Natural Resources Agency for certification and adoption proposed CEQA Guidelines addressing "criteria for determining the significance of transportation impacts of projects within transit priority areas. Those criteria shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."

Pursuant to SB 743, the Natural Resources Agency promulgated CEQA Guidelines Section 15064.3 in late 2018. It became effective in early 2019. Subdivision (a) of that section provides that "[g]enerally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in subdivision (b)(2) below (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact."

Please refer to Question 'b' for a discussion of VMT.

Pedestrian and Bicycle Facilities

Currently, pedestrian and bicycle facilities are present in the project area. Specifically, paved sidewalks are located within the project vicinity on the eastern side of Doolan Road and the northern side of North Canyons Parkway. Along North Canyons Parkway, the width of the sidewalk is approximately 8.3 feet. All intersections in the project vicinity have marked crosswalks and signalized intersections, and are equipped with pedestrian push buttons and pedestrian signal heads (see Figure 5). ADA compliant curb-ramps are located at the intersection of North Canyons Parkway/Airway Boulevard.

The City of Livermore maintains four classes of bicycle facilities, including Class I Shared-Use Paths, Class II Bike Lanes, Class III Bike Routes, and Class IV Bikeways. The nearest existing bicycle facility in the vicinity of the project site is an existing Class II bicycle lane on North Canyons Parkway. Class II bicycle facilities are also located along Airway Boulevard to the east of the project site.

Figure 5
Existing Pedestrian and Bicycle Facilities

According to Figure 3-1 of the Livermore Bicycle and Trails Active Transportation Plan, proposed bikeways in the project vicinity include a Class IA paved share use path on Doolan Road and the northern side of North Canyons Parkway, and a Class IIA bicycle lane on the southern side of North Canyons Parkway.[30] The proposed project would include off-site improvements along North Canyons Parkway, including developing a Class IV separated bikeway on North Canyons Parkway. Such improvements would implement the upgraded bicycle facilities previously planned in the Livermore Bicycle and Trails Active Transportation Plan and would be consistent with the INSP. Improvements associated with the proposed project would not preclude the City's ability to implement additional bicycle facilities in the future. Therefore, the project would not conflict with the existing or proposed facilities. Therefore, the proposed project would implement previously proposed bicycle facilities, and would not conflict with a program, plan, ordinance, or policy addressing pedestrian or bicycle facilities.

Transit Service and Facilities

Transit service in the City of Livermore is provided by the Livermore Amador Valley Transit Authority (LAVTA). The LAVTA provides the WHEELS service, which provides local public transit to the cities of Dublin, Livermore, and Pleasanton, as well as the adjacent unincorporated areas of Alameda County. LAVTA provides a variety of transportation services, including fixed routes, direct access responsive transit (DART), prime time express bus routes, shuttle service, and Dial-A-Ride. The main transit center in the City is the Livermore Transit Center, located in Downtown Livermore. From the Transit Center, riders can connect to Dublin/Pleasanton BART, Lawrence Livermore National Laboratory, Las Positas College, as well as local destinations.

Route 30R provides a loop service to destinations throughout the City of Dublin and the City of Livermore and stops near the project site on North Canyons Parkway. Route 30R operates Monday through Sunday from 4:43 AM to 11:16 PM.[31] The proposed project would include off-site improvements along North Canyons Parkway including shifting the bus turnout and future bus shelter pad north for future use and installation as determined by LAVTA. The proposed project does not include any features which could conflict with existing or planned transit facilities, nor would the project result in substantial increases in transit demand, and existing pedestrian facilities in the project vicinity provide adequate connectivity for pedestrians to the transit stops. Therefore, current transit facilities are adequate and the proposed project would not result in any significant impacts to the nearby transit network.

Conclusion

Based on the above, the project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities, and a ***less-than-significant*** impact would occur.

b. Section 15064.3 of the CEQA Guidelines provides specific considerations for evaluating a project's transportation impacts. Pursuant to Section 15064.3, analysis of VMT attributable to a project is the most appropriate measure of transportation impacts. The OPR released a Technical Advisory on Evaluating Transportation Impacts in CEQA in December 2018, which provides recommendations regarding VMT evaluation

30 City of Livermore. *Livermore Bicycle and Trails Active Transportation Plan.* June 11, 2018.
31 Livermore Amador Valley Transit Authority. *30R Dublin-Livermore via Las Positas College*. August 10, 2024.

methodology, significance thresholds, and screening thresholds for land use projects.[32] The City of Livermore has not yet adopted a policy or thresholds of significance regarding VMT and, thus, the City typically relies on the recommendations set forth by OPR to evaluate transportation impacts pursuant to CEQA.

Pursuant to the Governor's OPR, certain projects are presumed to have a less-than-significant effect on VMT due to project size, project location, or project type. Specifically, according to OPR, local-serving uses may generally be presumed to have a less-than-significant VMT impact and can generally be screened from further VMT analysis. OPR based the presumption on substantial research demonstrating that adding local-serving uses typically improves destination accessibility to residents, often reducing trip distances because residents need to travel shorter distances than they previously did, as adding new local-serving uses typically shifts trips away from another use rather than adding entirely new trips to the region.

The OPR Technical Advisory notes that retail projects less than 50,000 sf can generally be considered local-serving. According to the Traffic Impact Analysis (TIA) Report prepared for the proposed project, the proposed project would generate 304 new daily trips. The generation of 304 new daily trips would result in the equivalent retail square footage of approximately 8,053 sf (Institute of Transportation Engineers [ITE] Land Use Code 820, where 37.75 trips is equivalent to 1,000 sf). Thus, the project's equivalent retail square footage would be below 50,000 sf, and, as a result, could be considered local-serving.[33] Based on the above, the proposed project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b), and a ***less-than-significant*** impact would occur.

c,d. The proposed parking lot would connect to the existing casino parking lot to the west, which is currently accessed from driveways on Doolan Road and North Canyons Parkway. The proposed parking lot would also connect to a new driveway on North Canyons Parkway, at the northeast corner of the project site. The proposed project would not result in any changes to the existing driveway that would affect site access, safety, or sight distance.

The proposed project would include a new driveway on North Canyons Parkway, extending from the existing Waxie Driveway on the northern side of North Canyons Parkway. The North Canyons Parkway/Waxie Driveway intersection would serve as a new access point to the parking lot expansion. A queuing analysis was conducted for exclusive left- and right-turn pockets at the study intersections for Existing Plus Project and Cumulative Plus Project conditions as part of the TIA Report prepared for the proposed project. The queuing analysis presented that the existing storage length of the westbound left-turn lane at North Canyons Parkway/Waxie Driveway is sufficient under both Existing Plus Project and Cumulative Plus project Conditions for the additional trips that would use the new parking lot because very light commute peak traffic would be generated by the proposed project.

In addition, emergency response vehicles would be able to access the site by way of North Canyons Parkway. The proposed vehicular access and the existing driveway would meet

32 Governor's Office of Planning and Research. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018.

33 TJKM. *Traffic Impact Analysis Report – Parkwest Casino 580 Expansion*. November 6, 2024.

the access requirements for emergency vehicles. Therefore, the proposed project would not substantially increase hazards due to design features or incompatible uses, and emergency access to the site would be adequate. The proposed project would result in a ***less-than-significant*** impact.

XVIII. TRIBAL CULTURAL RESOURCES. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. 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).	☐	✖	☐	☐
b. 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	✖	☐	☐

Discussion

a,b. As discussed in Section V, Cultural Resources, of this IS/MND, a Phase 1 Cultural Resources Study was prepared for the proposed project by HRA. Based on historic photographs, maps, and other documents, and the lack of precontact archeological resources identified within 0.25-mile of the project site, HRA determined that the archeological site sensitivity of the site was low.[34] In addition, a records search of the NAHC Sacred Lands File was completed and the results did not yield any information regarding the presence of cultural resources within the project site or the immediate area.[35] Cultural resources were also not discovered on-site during the August 10, 2024, site visit conducted by HRA.

In compliance with AB 52 (PRC Section 21080.3.1), project notification letters were distributed to the the Amah Mutsun Tribal Band of Mission San Juan Baustista, Confederated Villages of Lisjan Nation, Costanoan Rumsen Carmel Tribe, Indian Canyon Mutsun Band of Costanoan, Muwekma Ohlone Tribe of the San Francisco Bay Area, Northern Valley Yokut/Ohlone Tribe, the Ohlone Indian Tribe, Wilton Rancheria, and Wuksachi Indian Tribe/Eshom Valley Band on July 24, 2024. Three responses were received by the City on July 24, 2024, and one additional response was received on August 13, 2024, within the mandatory 30-day response period.

The Ohlone Indian Tribe requested NAHC Sacred Lands File results and archaeological reports. The Confederated Villages of Lisjan Nation requested consultation, and requested to be notified of any findings regarding the proposed project. The Confederated Villages of Lisjan Nation also requested implementation of the tribe's standard unanticipated discoveries mitigation measures be included in this IS/MND which are incorporated as Mitigation Measures V-1, XVIII-2, and XVIII-3. The Amah Mutsun Tribal Band of Mission San Juan Baustista and the Indian Canyon Band of Costanoan Ohlone People both recommended cultural sensitivity training for construction personnel and a

---

34 Historic Resource Associates. *Phase 1 Cultural Resources Study Parkwest Casino 580 Expansion Project 968 North Canyons Parkway, Livermore, Alameda County, California 945*50 August 2024.

35 Native American Heritage Commission. *Parkwest Casino 580 Expansion Project, Alameda County.* July 12, 2024.

monitor to be present during ground-disturbing activities, incorporated as Mitigation Measures XVIII-2 and XVIII-4.

While known Tribal Cultural Resources do not exist within the site, the possibility exists that the proposed project could result in a substantial adverse change in the significance of a Tribal Cultural Resource if previously unknown Tribal Cultural Resources are uncovered during ground-disturbing activities. Thus, a ***potentially significant*** impact to Tribal Cultural Resources could occur.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above potential impact to a *less-than-significant* level.

XVIII-1 *Implement Mitigation Measures V-1 and V-2.*

XVIII-2 *Tribal Monitoring. Prior to ground disturbing activities, the project applicant shall coordinate with the Confederated Villages of Lisjan Nation, the Amah Mutsun Tribal Band of San Juan Bautista, and the Indian Canyon Band of Costanoan Ohlone People to retain a representative Tribal Monitor(s). The Tribal Monitor(s) shall have the authority to halt and redirect work should any archeological or Tribal Cultural Resources be identified during monitoring. If archeological or Tribal Cultural Resources are encountered during ground disturbing activities, work within 100 feet of the find must halt and the find must be evaluated for listing in the CRHR and NRHP. Monitoring may be reduced or halted at the discretion of the Tribal Monitor(s), in consultation with the City of Livermore Community Development Department, as warranted by conditions such as encountering bedrock, sediments being excavated are fill, negative findings during the first 50 percent of the entire area of ground disturbance, etc. If monitoring is reduced to spot checking, spot checking shall occur when ground disturbing activities moves to a new location within the project site and when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).*

XVIII-3 *Inadvertent Discovery of Tribal Cultural Resources. If cultural resources of Native American origin are identified during grading or excavation of the proposed project, all ground disturbing activities within 100 feet shall cease until an archeologist has evaluated the nature and significance of the find as a cultural resource and a representative from culturally affiliated Native American Tribes is consulted by the government agency. The archeologist will stake the area of discovery, placing stakes no more than 10 feet apart, forming a circle having a radius of no less than 100 feet from the point of discovery. If the entity in consultation with the consulting Tribe(s), determines that the resource is a Tribal Cultural Resource and thus significant under CEQA and/or the Tribe, the entity shall retain a qualified archeologist and a Tribal monitor, at the applicant's expense, to prepare a mitigation plan, which shall be implemented by the entity in accordance with state guidelines and in consultation with the consulting Tribe. The mitigation plan shall include avoidance of the resource or, if avoidance of the resource is not feasible, the plan shall outline appropriate treatment of the resource in coordination with the consulting Tribe and, if applicable, a* *qualified archeologist. Examples of appropriate mitigation for the Tribal cultural resources include, but are not limited to, protecting the cultural character and integrity of the resources, protecting traditional use of the resources, protecting the confidentiality of the resources, or heritage recovery.*

XVIII-4 *<u>Tribal Cultural Resources Awareness Training</u>. The following language shall be noted on project Improvement Plans, subject to review and approval by the City of Livermore Community Development Department:*

Prior to the initiation of construction, all construction crew members, consultants, and other personnel involved in project implementation shall receive project-specific Tribal Cultural Resource (TCR) Awareness Training. The training shall be conducted in coordination with qualified cultural resource specialists and representatives from culturally affiliated Native American Tribes. The training will emphasize the requirement for confidentiality and culturally appropriate, respectful treatment of any finds of significance to culturally affiliated Native American Tribes. All personnel required to receive the training shall also be required to sign a form that acknowledges receipt of the training, which shall be submitted to the City of Livermore Community Development Department for review and approval. As a component of the training, a brochure will be distributed to all personnel associated with the project implementation. At a minimum the brochure shall discuss the following topics in clear and straightforward language:

- *Field indicators of potential archaeological or cultural resources (i.e., what to look for, for example: archaeological artifacts, exotic or non-native rock, unusually large amounts of shell or bone, significant soil color variations, etc.)*
- *Regulations governing archeological resources and tribal cultural resources.*
- *Consequences of disregarding or violating laws protecting archeological or tribal cultural resources.*
- *Steps to take if a worker encounters a possible resource.*

The training shall include project specific guidance for on-site personnel including protocols for resource avoidance, when to stop work, and whom to contact if potential archeological or TCRs are identified. The training shall also address the stoppage of work if potentially significant cultural resources are discovered during ground disturbing activities, and in the case of possible human remains the proper course of action requiring immediate contact with the County Coroner and the NAHC.

XIX. UTILITIES AND SERVICE SYSTEMS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant 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 wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	✖	☐
d. 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?	☐	☐	✖	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	✖	☐

Discussion

a. The proposed project would not include any new development or modifications that would require the relocation or expansion of water, wastewater treatment, stormwater drainage, electricity, natural gas, and telecommunications facilities. All utilities for the proposed project would be provided by way of existing infrastructure located within the existing project site and vicinity. Therefore, the proposed project would result in a ***less-than-significant*** impact related to 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. Livermore Municipal Water would provide water to the project site. According to the City of Livermore Water Resources Division 2020 UWMP, all potable water distributed through the Livermore Water Resources Division is purchased wholesale from Zone 7 Water Agency.[36] Zone 7 oversees water issues within the Livermore-Amador Valley and is a State Water Project (SWP) contractor. Water sources for the City of Livermore Water Resources Division through Zone 7 include surface water from the SWP, water transferred from the Byron Bethany Irrigation District, local surface runoff captured in Del Valle Reservoir, groundwater extraction from the Livermore Valley Main Groundwater Basin, non-local groundwater storage in the Semitropic Water Storage District and Cawelo Water District, and future local storage in the Chain-of-Lakes.

The City of Livermore Water Resources Division water service area consists of three water service area zones within the City's urban growth boundary (UGB): the Zone 1 Water

[36] City of Livermore Water Resources Division. *2020 Urban Water Management Plan* [pg. 4-1]. June 28, 2021.

Service Area on the west side of the City, and the Zone 2 and Zone 3 Water Service Areas on the east side of the City. The project site is located within Zone 1.[37] Currently, the water service area zones encompass approximately 23-square miles and include over 28,000 residential and commercial customers.[38] Pursuant to the Livermore 2020 UWMP, adequate water supplies will be available to accommodate buildout of the City under normal year, single year, and multiple-dry year demand scenarios.[39]

While the project site currently includes water demands associated with the casino use and irrigation of landscaping features, given the nature of the proposed parking lot expansion and increased casino operations, the proposed project would not involve substantially increased water demand relative to what currently exists on-site. All landscaping improvements would be consistent with the State MWELO requirements, pursuant to Section 13.25, Water Efficient Landscape, of the City's Municipal Code. The proposed project would require a landscape documentation package, which would include water budget calculations, a soils management report, and landscaping, irrigation, and grading design plans. The proposed project would be required to be irrigated by an automatic irrigation system to ensure the efficient use of water. In addition, the site would be consistent with the General Plan land use and zoning designations. Therefore, the City of Livermore Water Resources Division would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years, and a ***less-than-significant*** impact would occur.

c. Within the City of Livermore, sewer service is provided by the City of Livermore's Public Works Department. With the exception of two pump stations, all of the wastewater flow in Livermore is conveyed to the City of Livermore Water Reclamation Plant by gravity. Currently, over six million gallons of wastewater per day from throughout the Livermore area are processed at the Water Reclamation Plant, which has a design capacity of 8.5 million gallons per day.[40] Consequently, the Water Reclamation Plant has existing capacity to treat 1.5 million gallons of additional wastewater per day. Per the General Plan, new facilities at the Water Reclamation Plant would be needed to handle projected ultimate flows occurring under buildout of the City's Planning Area.[41] The City has planned a Phase VI expansion project to address future increases in demand and has a sanitary sewer impact fee program in place to fund the required improvements. Completion of the Phase VI project would provide sufficient capacity for the plant to process the projected ultimate flows.

The proposed project would be consistent with the project site's current General Plan land use designation and INSP designation. Thus, increased demand for wastewater collection and treatment facilities associated with the project site have been generally anticipated by the City and analyzed in the General Plan EIR and INSP EIR. Thus, the City would have adequate capacity to serve the wastewater demand projected for the proposed project in addition to the City's existing commitments, and a ***less-than-significant*** impact would occur.

---

37 City of Livermore. *2020 Urban Water Management Plan* [Figure 1-1]. June 28, 2021.
38 City of Livermore. *Livermore Municipal Water*. Available at: https://www.livermoreca.gov/departments/public-works/water-resources/livermore-municipal-water. Accessed August 2024.
39 City of Livermore. *2020 Urban Water Management Plan* [pg. 14]. June 28, 2021.
40 City of Livermore. *Livermore Water Reclamation Plant.* Available at: http://www.cityoflivermore.net/citygov/pw/public_works_divisions/wrd/water_reclamation_plant/lwrp.htm. Accessed May 2021.
41 City of Livermore. *General Plan, 2003-2025.* Amended December 2014.

d,e. Solid waste, recyclable materials, and compostable material collection within the City of Livermore is provided through a franchise agreement with Livermore Sanitation, Inc. Currently, Livermore Sanitation, Inc. transports solid waste from Livermore to the Republic Services Vasco Road, LLC Landfill for disposal. The Republic/Vasco Road Landfill is designated as a Class III disposal site that permits the disposal of municipal waste, with separate disposal areas required for asbestos and auto-shredder waste. The Vasco Road Landfill has a remaining capacity of approximately 11,560,000 CY, or 28.7 percent of the total permitted capacity of the landfill (40,207,100 CY).[42]

The addition of six gaming tables and increased operations to an existing casino would produce relatively small waste generation as compared to the residential or commercial uses within the City. Additionally, because the proposed project would be consistent with the project site's current General Plan and INSP land use designations, construction and operation of the proposed project would not result in increased solid waste generation beyond what has been previously anticipated for the site by the City and analyzed in the General Plan EIR and the INSP EIR. In addition, the project would be required to comply with all applicable provisions of Chapter 8.08, Solid Waste Management, of the City's Municipal Code. Therefore, the proposed project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals and would comply with federal, State, and local management and reduction statutes and regulations related to solid waste. Therefore, a ***less-than-significant*** impact related to solid waste would occur as a result of the proposed project.

[42] Department of Resources Recycling and Recovery. *SWIS Facility Detail, Vasco Road Sanitary Landfill (01-AA-0010).* Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/9?siteID=8. Accessed August 2024.

XX. WILDFIRE. *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:*	Potentially Significant Impact	Less-Than-Significant 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?	☐	☐	✖	☐

Discussion

a-d. According to the CAL FIRE Fire and Resource Assessment Program, the project site is not located within a State Responsibility Area or a Very High FHSZ. However, a High FHSZ is located immediately west of Doolan Road in close proximity to the project site.[43] However, the expansion of the existing parking lot would include the removal of existing on-site vegetation, which would reduce wildfire risks. Furthermore, the existing Parkwest Casino 580 is required to include fire sprinklers, and other fire suppression features, consistent with the CBSC and California Fire Code (CFC).

As noted in Section IX, implementation of the proposed project would not interfere with potential evacuation or response routes used by emergency response teams. The project would not conflict with the City of Livermore Emergency Operations Plan. In addition, the proposed project would not include any development on, or at the base of, a substantial slope. Thus, implementation of the proposed project would not exacerbate any existing conditions or hazards related to downslope flooding or landslides, slope instability, or drainage changes. Therefore, the project area does not include any existing features that would substantially increase fire risk for customers and employees.

The proposed project would not require the development of additional utility infrastructure, and, thus, would not result in substantial fire risks related to installation or maintenance of such infrastructure. Therefore, the proposed project would not be subject to substantial risks related to wildfires, and a ***less-than-significant*** impact would occur.

[43] California Department of Forestry and Fire Protection. *Fire Hazard Severity Zone Viewer*. Available at: https://experience.arcgis.com/experience/03beab8511814e79a0e4eabf0d3e7247/. Accessed August 2024.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE.	Potentially Significant Impact	Less-Than-Significant 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?	☐	☐	✖	☐

Discussion

a. As discussed in Section IV, Biological Resources, of this IS/MND, with implementation of Mitigation Measures IV-1 through IV-3, the proposed project would not result in any significant impacts to special-status plant or wildlife species. The project site is disturbed and does not contain any known historic or prehistoric resources. Thus, implementation of the proposed project is not anticipated to have the potential to result in impacts related to historic or prehistoric resources. Nevertheless, Mitigation Measures V-1 and V-2 would ensure that in the event that historic or prehistoric resources are discovered within the project site during construction activities, such resources would be protected in compliance with the requirements of CEQA. Additionally, Mitigation Measures XVIII-2 through XVIII-4 would require monitoring of construction activities by a tribal monitor, appropriate avoidance and preservation measures in the case of inadvertent discovery of Tribal Cultural Resources, and Tribal Cultural Resources awareness training for construction crew members.

Considering the above, the proposed project would not: 1) degrade the quality of the environment; 2) substantially reduce or impact the habitat of fish or wildlife species; 3) cause fish or wildlife populations to drop below self-sustaining levels; 4) threaten to eliminate a plant or animal community; 5) reduce the number or restrict the range of a rare or endangered plant or animal; or 6) eliminate important examples of the major periods of California history or prehistory. Therefore, a ***less-than-significant*** impact would occur.

b. The proposed project in conjunction with other development within the City of Livermore could incrementally contribute to cumulative impacts in the area. However, as demonstrated in this IS/MND, all potential environmental impacts that could occur as a result of project implementation would be reduced to a less-than-significant level through compliance with the mitigation measures included in this IS/MND, as well as applicable General Plan policies, INSP standards, Municipal Code standards, and other applicable local and State regulations. The proposed project would include operational changes and the expansion of the existing casino parking lot, consistent with the site's existing land use and zoning designations.

Therefore, when viewed in conjunction with other closely related past, present, or reasonably foreseeable future projects, the proposed project would not result in a cumulatively considerable contribution to cumulative impacts in the City of Livermore, and the project's incremental contribution to cumulative impacts would be ***less than significant***.

c. As described in this IS/MND, the proposed project would comply with all applicable General Plan policies, INSP standards, Municipal Code standards, other applicable local and State regulations, and mitigation measures included herein. In addition, as discussed in the Air Quality, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, and Noise sections of this IS/MND, the proposed project would not cause substantial effects to human beings, which cannot be mitigated to less-than-significant levels, including effects related to exposure to air pollutant and GHG emissions, geologic hazards, hazardous materials, and excessive noise. Therefore, the proposed project's impact would be ***less than significant***.

APPENDIX A

AIR QUALITY MODELING RESULTS

Parkwest Casino 580 Expansion Project Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Parkwest Casino 580 Expansion Project
Construction Start Date	4/1/2025
Operational Year	2025
Lead Agency	City of Livermore
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.00
Precipitation (days)	33.2
Location	37.70203565920632, -121.82178414339562
County	Alameda
City	Livermore
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	1677
EDFZ	1
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.28

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
Parking Lot	252	Space	4.70	0.00	87,120	—	—	—

Other Asphalt Surfaces	0.35	Acre	0.35	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

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.	5.41	4.16	68.2	39.3	0.31	1.53	19.8	21.2	1.47	10.1	11.4	—	46,048	46,048	2.39	6.96	95.9	48,277
Mit.	3.67	3.64	54.0	39.1	0.31	0.87	19.8	19.9	0.87	10.1	10.2	—	46,048	46,048	2.39	6.96	95.9	48,277
% Reduced	32%	13%	21%	< 0.5%	—	44%	—	6%	41%	—	10%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.26	0.18	2.53	1.67	0.01	0.07	0.58	0.65	0.06	0.21	0.27	—	1,372	1,372	0.07	0.19	1.15	1,432
Mit.	0.15	0.08	1.67	1.63	0.01	0.03	0.58	0.61	0.03	0.21	0.24	—	1,372	1,372	0.07	0.19	1.15	1,432
% Reduced	43%	52%	34%	2%	—	61%	—	6%	58%	—	14%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.05	0.03	0.46	0.31	< 0.005	0.01	0.11	0.12	0.01	0.04	0.05	—	227	227	0.01	0.03	0.19	237
Mit.	0.03	0.02	0.31	0.30	< 0.005	< 0.005	0.11	0.11	< 0.005	0.04	0.04	—	227	227	0.01	0.03	0.19	237

% Reduced	43%	52%	34%	2%	—	61%	—	6%	58%	—	14%	—	—	—	—	—	—	—

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	5.41	4.16	68.2	39.3	0.31	1.53	19.8	21.2	1.47	10.1	11.4	—	46,048	46,048	2.39	6.96	95.9	48,277
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.26	0.18	2.53	1.67	0.01	0.07	0.58	0.65	0.06	0.21	0.27	—	1,372	1,372	0.07	0.19	1.15	1,432
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.05	0.03	0.46	0.31	< 0.005	0.01	0.11	0.12	0.01	0.04	0.05	—	227	227	0.01	0.03	0.19	237

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	3.67	3.64	54.0	39.1	0.31	0.87	19.8	19.9	0.87	10.1	10.2	—	46,048	46,048	2.39	6.96	95.9	48,277
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.15	0.08	1.67	1.63	0.01	0.03	0.58	0.61	0.03	0.21	0.24	—	1,372	1,372	0.07	0.19	1.15	1,432

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.03	0.02	0.31	0.30	< 0.005	< 0.005	0.11	0.11	< 0.005	0.04	0.04	—	227	227	0.01	0.03	0.19	237

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.	1.22	1.13	0.95	9.44	0.02	0.02	2.12	2.13	0.01	0.54	0.55	0.00	2,522	2,522	0.11	0.10	9.34	2,565
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.18	1.08	1.11	8.93	0.02	0.02	2.12	2.13	0.01	0.54	0.55	0.00	2,384	2,384	0.12	0.11	0.24	2,422
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.16	1.07	1.05	8.60	0.02	0.02	2.07	2.09	0.01	0.53	0.54	0.00	2,396	2,396	0.12	0.11	4.03	2,436
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.21	0.19	0.19	1.57	< 0.005	< 0.005	0.38	0.38	< 0.005	0.10	0.10	0.00	397	397	0.02	0.02	0.67	403

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	1.19	1.09	0.95	9.44	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,419	2,419	0.09	0.10	9.34	2,461
Area	0.03	0.03	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	100	100	0.02	< 0.005	—	101

Water	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	1.22	1.13	0.95	9.44	0.02	0.02	2.12	2.13	0.01	0.54	0.55	0.00	2,522	2,522	0.11	0.10	9.34	2,565
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.15	1.05	1.11	8.93	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,281	2,281	0.11	0.11	0.24	2,318
Area	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	100	100	0.02	< 0.005	—	101
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	1.18	1.08	1.11	8.93	0.02	0.02	2.12	2.13	0.01	0.54	0.55	0.00	2,384	2,384	0.12	0.11	0.24	2,422
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.13	1.03	1.05	8.60	0.02	0.02	2.07	2.09	0.01	0.53	0.54	—	2,293	2,293	0.10	0.11	4.03	2,332
Area	0.03	0.03	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	100	100	0.02	< 0.005	—	101
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	1.16	1.07	1.05	8.60	0.02	0.02	2.07	2.09	0.01	0.53	0.54	0.00	2,396	2,396	0.12	0.11	4.03	2,436
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.21	0.19	0.19	1.57	< 0.005	< 0.005	0.38	0.38	< 0.005	0.10	0.10	—	380	380	0.02	0.02	0.67	386
Area	0.01	0.01	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	16.6	16.6	< 0.005	< 0.005	—	16.8
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.45	0.45	< 0.005	< 0.005	—	0.46
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.21	0.19	0.19	1.57	< 0.005	< 0.005	0.38	0.38	< 0.005	0.10	0.10	0.00	397	397	0.02	0.02	0.67	403

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	1.19	1.09	0.95	9.44	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,419	2,419	0.09	0.10	9.34	2,461
Area	0.03	0.03	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	100	100	0.02	< 0.005	—	101
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	1.22	1.13	0.95	9.44	0.02	0.02	2.12	2.13	0.01	0.54	0.55	0.00	2,522	2,522	0.11	0.10	9.34	2,565
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.15	1.05	1.11	8.93	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,281	2,281	0.11	0.11	0.24	2,318
Area	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	100	100	0.02	< 0.005	—	101
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	1.18	1.08	1.11	8.93	0.02	0.02	2.12	2.13	0.01	0.54	0.55	0.00	2,384	2,384	0.12	0.11	0.24	2,422
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	1.13	1.03	1.05	8.60	0.02	0.02	2.07	2.09	0.01	0.53	0.54	—	2,293	2,293	0.10	0.11	4.03	2,332
Area	0.03	0.03	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	100	100	0.02	< 0.005	—	101
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	1.16	1.07	1.05	8.60	0.02	0.02	2.07	2.09	0.01	0.53	0.54	0.00	2,396	2,396	0.12	0.11	4.03	2,436
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.21	0.19	0.19	1.57	< 0.005	< 0.005	0.38	0.38	< 0.005	0.10	0.10	—	380	380	0.02	0.02	0.67	386

Area	0.01	0.01	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	16.6	16.6	< 0.005	< 0.005	—	16.8
Water	—	—	—	—	—	—	—	—	—	—	—	0.00	0.45	0.45	< 0.005	< 0.005	—	0.46
Waste	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.21	0.19	0.19	1.57	< 0.005	< 0.005	0.38	0.38	< 0.005	0.10	0.10	0.00	397	397	0.02	0.02	0.67	403

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	—	—	—	—	—	—	0.63	0.63	—	0.09	0.09	—	—	—	—	—	—	—
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	0.38	< 0.005	0.02	—	0.02	0.02	—	0.02	—	65.7	65.7	< 0.005	< 0.005	—	65.9

Demolition	—	—	—	—	—	—	0.01	0.01	—	< 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	0.08	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.9	10.9	< 0.005	< 0.005	—	10.9
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	0.05	0.05	0.03	0.58	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	130	130	< 0.005	< 0.005	0.52	132
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	0.04	0.01	0.61	0.24	< 0.005	0.01	0.13	0.14	0.01	0.04	0.05	—	501	501	0.03	0.08	1.11	527
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	—	2.33	2.33	< 0.005	< 0.005	< 0.005	2.36
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	—	9.61	9.61	< 0.005	< 0.005	0.01	10.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	< 0.005	0.39
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	—	1.59	1.59	< 0.005	< 0.005	< 0.005	1.67

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	0.36	0.36	4.51	18.2	0.03	0.06	—	0.06	0.06	—	0.06	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	—	0.63	0.63	—	0.09	0.09	—	—	—	—	—	—	—
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	0.01	0.09	0.35	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	65.7	65.7	< 0.005	< 0.005	—	65.9
Demolition	—	—	—	—	—	—	0.01	0.01	—	< 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	< 0.005	< 0.005	0.02	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	10.9	10.9	< 0.005	< 0.005	—	10.9
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	0.05	0.05	0.03	0.58	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	130	130	< 0.005	< 0.005	0.52	132
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	0.04	0.01	0.61	0.24	< 0.005	0.01	0.13	0.14	0.01	0.04	0.05	—	501	501	0.03	0.08	1.11	527
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	—	2.33	2.33	< 0.005	< 0.005	< 0.005	2.36
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	—	9.61	9.61	< 0.005	< 0.005	0.01	10.1
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	< 0.005	0.39
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	—	1.59	1.59	< 0.005	< 0.005	< 0.005	1.67

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 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	—	—	—	—	—	—	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	0.01	0.01	0.09	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.5	14.5	< 0.005	< 0.005	—	14.6
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.40	2.40	< 0.005	< 0.005	—	2.41
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	0.06	0.06	0.04	0.67	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	152	152	< 0.005	0.01	0.60	154
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	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	< 0.005	0.39
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	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.07
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	0.50	0.50	2.59	28.3	0.05	0.10	—	0.10	0.10	—	0.10	—	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	< 0.005	< 0.005	0.01	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.5	14.5	< 0.005	< 0.005	—	14.6
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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.40	2.40	< 0.005	< 0.005	—	2.41
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	0.06	0.06	0.04	0.67	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	152	152	< 0.005	0.01	0.60	154

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	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.39	0.39	< 0.005	< 0.005	< 0.005	0.39
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	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.07
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	—	—	—	—	—	—	7.41	7.41	—	3.47	3.47	—	—	—	—	—	—	—
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	0.45	0.49	< 0.005	0.02	—	0.02	0.02	—	0.02	—	81.1	81.1	< 0.005	< 0.005	—	81.4
Dust From Material Movement	—	—	—	—	—	—	0.20	0.20	—	0.10	0.10	—	—	—	—	—	—	—
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	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.4	13.4	< 0.005	< 0.005	—	13.5
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
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	0.05	0.05	0.03	0.58	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	130	130	< 0.005	< 0.005	0.52	132
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	3.28	0.97	51.9	20.8	0.28	0.81	11.4	12.2	0.81	3.11	3.92	—	42,959	42,959	2.27	6.93	95.4	45,175
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	—	3.32	3.32	< 0.005	< 0.005	0.01	3.37
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	0.09	0.03	1.47	0.57	0.01	0.02	0.31	0.33	0.02	0.08	0.11	—	1,177	1,177	0.06	0.19	1.13	1,236
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.55	0.55	< 0.005	< 0.005	< 0.005	0.56
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	0.02	< 0.005	0.27	0.10	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	195	195	0.01	0.03	0.19	205

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	0.29	0.29	2.04	17.8	0.03	0.06	—	0.06	0.06	—	0.06	—	2,959	2,959	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	—	7.41	7.41	—	3.47	3.47	—	—	—	—	—	—	—
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	0.01	0.01	0.06	0.49	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	81.1	81.1	< 0.005	< 0.005	—	81.4
Dust From Material Movement	—	—	—	—	—	—	0.20	0.20	—	0.10	0.10	—	—	—	—	—	—	—
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	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.4	13.4	< 0.005	< 0.005	—	13.5
Dust From Material Movement	—	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
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	0.05	0.05	0.03	0.58	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	130	130	< 0.005	< 0.005	0.52	132
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	3.28	0.97	51.9	20.8	0.28	0.81	11.4	12.2	0.81	3.11	3.92	—	42,959	42,959	2.27	6.93	95.4	45,175
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	—	3.32	3.32	< 0.005	< 0.005	0.01	3.37
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	0.09	0.03	1.47	0.57	0.01	0.02	0.31	0.33	0.02	0.08	0.11	—	1,177	1,177	0.06	0.19	1.13	1,236
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.55	0.55	< 0.005	< 0.005	< 0.005	0.56
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	0.02	< 0.005	0.27	0.10	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	195	195	0.01	0.03	0.19	205

3.7. Paving (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	0.95	0.80	7.45	9.98	0.01	0.35	—	0.35	0.32	—	0.32	—	1,511	1,511	0.06	0.01	—	1,517
Paving	3.31	3.31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.01	0.08	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16.6	16.6	< 0.005	< 0.005	—	16.6
Paving	0.04	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.74	2.74	< 0.005	< 0.005	—	2.75
Paving	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	0.05	0.05	0.03	0.58	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	130	130	< 0.005	< 0.005	0.52	132
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	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.35
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	—	0.22	0.22	< 0.005	< 0.005	< 0.005	0.22
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

3.8. Paving (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	0.31	0.28	3.36	10.4	0.01	0.11	—	0.11	0.10	—	0.10	—	1,511	1,511	0.06	0.01	—	1,517
Paving	3.31	3.31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	< 0.005	< 0.005	0.04	0.11	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16.6	16.6	< 0.005	< 0.005	—	16.6
Paving	0.04	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.74	2.74	< 0.005	< 0.005	—	2.75
Paving	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	0.05	0.05	0.03	0.58	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	130	130	< 0.005	< 0.005	0.52	132

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	—	1.33	1.33	< 0.005	< 0.005	< 0.005	1.35
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	—	0.22	0.22	< 0.005	< 0.005	< 0.005	0.22
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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	1.19	1.09	0.95	9.44	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,419	2,419	0.09	0.10	9.34	2,461
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	1.19	1.09	0.95	9.44	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,419	2,419	0.09	0.10	9.34	2,461

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	1.15	1.05	1.11	8.93	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,281	2,281	0.11	0.11	0.24	2,318
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	1.15	1.05	1.11	8.93	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,281	2,281	0.11	0.11	0.24	2,318
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.21	0.19	0.19	1.57	< 0.005	< 0.005	0.38	0.38	< 0.005	0.10	0.10	—	380	380	0.02	0.02	0.67	386
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	0.21	0.19	0.19	1.57	< 0.005	< 0.005	0.38	0.38	< 0.005	0.10	0.10	—	380	380	0.02	0.02	0.67	386

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	1.19	1.09	0.95	9.44	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,419	2,419	0.09	0.10	9.34	2,461
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	1.19	1.09	0.95	9.44	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,419	2,419	0.09	0.10	9.34	2,461
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Parking Lot	1.15	1.05	1.11	8.93	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,281	2,281	0.11	0.11	0.24	2,318
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	1.15	1.05	1.11	8.93	0.02	0.02	2.12	2.13	0.01	0.54	0.55	—	2,281	2,281	0.11	0.11	0.24	2,318
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.21	0.19	0.19	1.57	< 0.005	< 0.005	0.38	0.38	< 0.005	0.10	0.10	—	380	380	0.02	0.02	0.67	386
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	0.21	0.19	0.19	1.57	< 0.005	< 0.005	0.38	0.38	< 0.005	0.10	0.10	—	380	380	0.02	0.02	0.67	386

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	100	100	0.02	< 0.005	—	101
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	100	100	0.02	< 0.005	—	101
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	100	100	0.02	< 0.005	—	101

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	100	100	0.02	< 0.005	—	101
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	16.6	16.6	< 0.005	< 0.005	—	16.8
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	16.6	16.6	< 0.005	< 0.005	—	16.8

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	100	100	0.02	< 0.005	—	101
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	100	100	0.02	< 0.005	—	101
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	100	100	0.02	< 0.005	—	101
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	100	100	0.02	< 0.005	—	101

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	16.6	16.6	< 0.005	< 0.005	—	16.8
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	16.6	16.6	< 0.005	< 0.005	—	16.8

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Other Asphalt Surfaces	0.00	0.00	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	0.00	0.00	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Other Asphalt Surfaces	0.00	0.00	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	0.00	0.00	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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

Other Asphalt Surfaces	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.2.4. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Other Asphalt Surfaces	0.00	0.00	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	0.00	0.00	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Other Asphalt Surfaces	0.00	0.00	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	0.00	0.00	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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
Other Asphalt Surfaces	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. 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	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	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	0.03	0.03	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer Product	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	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	0.01	0.01	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3.2. 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	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	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	0.03	0.03	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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.03	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	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	0.01	0.01	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.4. 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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.45	0.45	< 0.005	< 0.005	—	0.46
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.45	0.45	< 0.005	< 0.005	—	0.46

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	2.73	2.73	< 0.005	< 0.005	—	2.76
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.45	0.45	< 0.005	< 0.005	—	0.46
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.45	0.45	< 0.005	< 0.005	—	0.46

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	4/1/2025	4/9/2025	5.00	7.00	—
Site Preparation	Site Preparation	4/10/2025	4/10/2025	5.00	1.00	—
Grading	Grading	4/11/2025	4/24/2025	5.00	10.0	—
Paving	Paving	4/25/2025	4/30/2025	5.00	4.00	—

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
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38

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	Tier 4 Final	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Tier 4 Final	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Tier 4 Final	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Tier 4 Final	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Tier 4 Final	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Tier 4 Final	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	3.00	8.00	84.0	0.37
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Pavers	Diesel	Tier 4 Final	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Tier 4 Final	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Tier 4 Final	2.00	8.00	36.0	0.38

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	11.7	LDA,LDT1,LDT2
Demolition	Vendor	—	8.40	HHDT,MHDT
Demolition	Hauling	7.14	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—

Site Preparation	Worker	17.5	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	613	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	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	11.7	LDA,LDT1,LDT2
Demolition	Vendor	—	8.40	HHDT,MHDT
Demolition	Hauling	7.14	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	11.7	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.40	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—

Grading	Worker	15.0	11.7	LDA,LDT1,LDT2
Grading	Vendor	—	8.40	HHDT,MHDT
Grading	Hauling	613	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	11.7	LDA,LDT1,LDT2
Paving	Vendor	—	8.40	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	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)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	200	—
Site Preparation	0.00	0.00	1.50	0.00	—
Grading	0.00	49,000	10.0	0.00	—
Paving	0.00	0.00	0.00	0.00	5.05

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
Parking Lot	4.70	100%
Other Asphalt Surfaces	0.35	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	204	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
Parking Lot	305	305	305	111,296	2,999	2,999	2,999	1,094,487
Other Asphalt Surfaces	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
Parking Lot	305	305	305	111,296	2,999	2,999	2,999	1,094,487
Other Asphalt Surfaces	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	0.00	0.00	13,199

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)
Parking Lot	179,345	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	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)
Parking Lot	179,345	204	0.0330	0.0040	0.00
Other Asphalt Surfaces	0.00	204	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)
Parking Lot	0.00	989,797
Other Asphalt Surfaces	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Parking Lot	0.00	989,797
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Parking Lot	0.00	—
Other Asphalt Surfaces	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)

Parking Lot	0.00	—
Other Asphalt Surfaces	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

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

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)

8. User Changes to Default Data

Screen	Justification
Land Use	Applicant provided information. Other asphalt surfaces land uses representative of frontage bike lane improvements.
Construction: Construction Phases	Building Construction and Architectural Coating not required for parking lot expansion. Applicant provided construction timing.
Construction: Dust From Material Movement	Applicant provided information.
Construction: Paving	Applicant provided information.
Operations: Vehicle Data	Trip generation of 304 trips per day provided by Traffic Impact Analysis Report prepared for the proposed project by TJKM. Trip rate equal to trip generation/total spaces. Increase in trips associated with the new games and six additional gaming tables to be proposed to be added to the interior of the casino.
Construction: Trips and VMT	Applicant provided haul length information

APPENDIX B

BIOLOGICAL RESOURCES TECHNICAL REPORT

Biological Resource Technical Report

Casino Parkwest 580 Parking Lot Expansion

Livermore, Alameda County, California

Prepared for:

Raney Planning and Management Inc
1501 Sports Drive, Suite A
Sacramento, CA, 95834

Attn: Nancy Pham
npham@raneymanagement.com

November 2024

Prepared by:

WRA, Inc.
2169 G East Francisco Boulevard
San Rafael, CA 94901

Attn: Carla Angulo
Carla.angulo@wra-ca.com

WRA#26166-1

Contents

List of Tables

List of Appendices

List of Preparers

Rob Schell	Principal in Charge
Carla Angulo	Wildlife Biologist
Maya Avendano	Botanist
Peter Kobylarz	GIS Analyst

List of Acronyms

AMM	Avoidance and Minimization Measure
APN	Accessor's Parcel Number
BCC	USFWS Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
BRA	Biological Resources Assessment
BRTR	Biological Resources Technical Report
Caltrans	California Department of Transportation
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
CFP	California Fully Protected Species
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of Alameda
Corps	U.S. Army Corps of Engineers
CPRC	California Public Resources Code
CRLF	California Red Legged Frog
CSRL	California Soils Resource Lab
CTS	California Tiger Salamander
CWA	Clean Water Act
CZ	Conservation Zone
EACCS	East Alameda County Conservation Strategy
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
ESHA	Environmentally Sensitive Habitat Area
INSP	Isabel Neighborhood Specific Plan
Inventory	California Native Plant Society Rare Plant Inventory
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation & Management Act
MBTA	Migratory Bird Treaty Act
MM	Mitigation Measure
MMPA	Marine Mammal Protection Act
NCCP	Natural Community Conservation Plan
NETR	National Environmental Title Research
NOAA	National Oceanic and Atmospheric Administration
NMFS	National Marine Fisheries Service
NPPA	California Native Plant Protection Act
NRCS	Natural Resource Conservation Service
NWI	National Wetland Inventory
NWPL	National Wetland Plant List
OHWM	Ordinary High Water Mark
Rank	California Rare Plant Ranks
RHA	Rivers and Harbors Act

RWQCB	Regional Water Quality Control Board
SC	State Candidate
SFEI	San Francisco Estuary Institute
SSC	Species of Special Concern
SWRCB	State Water Resource Control Board
TOB	Top of Bank
USC	U.S. Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WBWG	Western Bat Working Group
WRA	WRA, Inc.

1.0 INTRODUCTION

This Biological Resources Technical Report evaluates existing biological resources, potential impacts, and mitigation measures (if required) for the Casino Parkwest 580 Parking Lot Expansion Project (Project) proposed at Accessor Parcel Number (APN) 905-000-901-303 adjacent to 968 North Canyons Parkway, Livermore, Alameda County, California (Appendix A – Figure 1, Study Area). The approximately 11.31 acre Study Area is boarded by North Canyons Parkway and a business park to the north, Airway Boulevard and a gas station, restaurant and three hotels to the east, an on ramp to Interstate 580 to the south and the Las Positas Golf Course further south and a parking lot for commercial building, Doolan Road and undeveloped land past Doolan Road to the west. The Study Area is within the Isabel Neighborhood Specific Plan (INSP) area and is designated as a General Commercial. The proposed Project involves developing a 252-space parking lot to accommodate patrons of the Parkwest Casino at 968 North Canyons Parkway.

1.1 Overview and Purpose

This Biological Resources Technical Report provides an assessment of biological resources the Study Area and immediate vicinity and gather information on sensitive land cover types and special-status plant and wildlife species to support an evaluation of the Project under the California Environmental Quality Act (CEQA). This report includes an update to the previous biological resources report and wetland assessment (cite) . This report describes the results of the site visit, which assessed the Study Area for (1) the presence of sensitive land cover types, special-status plant species, and special-status wildlife species, (2) the potential for the site to support special-status plant and wildlife species and potential impacts to sensitive land cover types and special-status species resulting from the proposed Project. If the proposed Project has the potential to result in significant impacts to these biological resources, measures to avoid, minimize, or mitigate for those impacts are described.

This assessment provides general information on the presence, or potential presence, of sensitive species and habitats. Additional focused studies (such as protocol level species surveys) may be required to support regulatory permit applications or to implement mitigation measures included in this report. This assessment is based on information available at the time of the study and on-site conditions that were observed on the dates the site was visited. Conclusions are based on currently available information used in combination with the professional judgement of the biologists completing this study.

1.2 Project Description

The Parkwest Casino 580 is an entertainment and gambling facility, which includes 10 gaming tables, a bar, restaurant, and 108-space parking lot for customers. Parking demands by casino customers have now exceeded the 108 parking spaces available, and as a result, casino employees have begun parking along the east side of Doolan Road and north side of Collier Canyon Road, both of which are located within unincorporated Alameda County. Generally, the employee vehicles are parked on unpaved (but firmly surfaced) shoulders and do not interfere with the flow of traffic in the area, which aside from Casino-bound traffic is very light. The employee on-street parking is concentrated in about a 1,200-foot length of the east side of Doolan Road north of Collier Canyon Road and a length of about 800 feet on the north side of

Collier Canyon Road west of Doolan Road. In parking observations conducted by TJKM, 60 to 100 vehicles are generally parked in this area.

The applicant (Parkwest Casino 580) is proposing to add a new surface parking lot with 252 parking spaces, which would be located east of the existing casino, and would serve the casino's customers and employees. The proposed parking lot expansion totals approximately 5.23 acres within the existing 11.31 acres of the Study Area. The new parking lot would be located on the southern portion of the eastern parcel and would include 202 standard stalls, 22 electric vehicle charging stations, one accessible EV charging station, and four Americans with Disabilities Act (ADA) stalls, as well as racks for up to 35 bicycles. The additional 252 parking spaces would increase the number of available parking spaces for the casino from 108 to 360. In addition, the applicant is proposing to add new games and six additional gaming tables to the interior of the casino, which would increase the number of available gaming tables from 10 to 16. The proposed parking lot would alleviate the existing parking deficit and accommodate the anticipated increase in parking demand resulting from the increase in gaming tables at the casino. The proposed hardscape associated with the parking lot expansion includes concrete totaling 3.29 acres.

A large landscape area planted with hydroseed grass would be located north of the proposed parking lot expansion and smaller landscape medians would be located throughout the parking lot. The proposed landscape area approximately totals 1.52 acres. Three bioretention planters would be located along the center and southwest corner of the parking lot with an approximate acreage of 0.16. Concrete pavement would be located along the western border of the large landscape area and three concrete medians would be located within the parking lot. In addition, poles and lighting would be installed within the parking lot medians. The proposed parking lot would connect to the existing casino parking lot to the west, which is currently accessed via driveways off of Doolan Road and North Canyons Parkway. The proposed parking lot would also connect to a new driveway off of North Canyons Parkway, at the northeast corner of the project site.

On-site improvements would include additional ADA stripping and symbols at four designated ADA parking spaces located in front of the casino entrance, a total of 0.06 acres. The proposed project would also include off-site improvements along North Canyons Parkway including the development of a new bike lane, restriping of traffic lanes, and installment of a new bus shelter, which would replace the existing bus stop. One tree would be removed as part of the proposed project located in the existing parking lot. Removal of the tree would be required to accommodate a pedestrian connection from the new surface parking lot to the existing sidewalk surrounding the building. No changes are to occur to the existing trees that are located along Airway Boulevard. No changes are to occur to half of the undeveloped parcel which contains a storm drain.

The parking lot expansion will require City approval of a Site Plan and Design Review. Exterior improvements to the existing Parkwest Casino 580 will not occur as part of the project. Interior improvements would consist of the additional six gaming tables. Approvals for the increase in gaming tables will be confirmed with the City but are expected to involve both State and City approvals.

1.3 Summary of Results

Approximately 5.23 acres of a total 11.31 acres of non-native grassland and landscaped land across the Study Area are proposed to be converted to parking spaces and associated landscape and bioswale infrastructure, therefore impacting 5.22 acres of non-native grassland and approximately 0.002 acres of existing landscape. Non-native grasslands and landscaped land are not considered sensitive under Alameda County or CDFW. No compensatory mitigation for loss of sensitive habitats is recommended. No aquatic resources are present within the Study Area and therefore no impacts due to Project activities are anticipated, so no additional permitting from the resource agencies will be required.

Three special-status plants: Livermore tarplant (*Deinandra bacigalupii,* SE, CRPR 1B.1), Cangdon's tarplant (*Centromadia parryi* ssp. *congdonii*, CRPR 1B.1), and San Joaquin spearscale (*Extriplex joaquinana*, CRPR 1B.2), and one special-status invertebrate, Crotch's bumble bee (*Bombus crotchii*, State Candidate), as well as non-status birds with baseline legal protections, have the potential to occur in the Study Area. Mitigation measures and best management practices have been developed and provided herein to avoid impacts to these resources, such as rare plant surveys.

Table 1. Summary of Biological Resources Evaluation

CEQA Assessment Category[1] IV – Biological Resources	Biological Resources Considered	Relevant Laws & Regulations	Responsible Regulatory Agency	Summary of Findings & Report Section[2]
Question A. **Special-status Species**	Special-status Plants Special-status Wildlife Designated Critical Habitat	Federal Endangered Species Act CA Endangered Species Act CA Native Plant Protection Act Migratory Bird Treaty Act Bald & Golden Eagle Protection Act	U.S. Fish & Wildlife Service National Marine Fisheries Service CA Department of Fish & Wildlife	Potentially significant impacts were identified and mitigation measures are recommended. **See Section 7.1 for more information.**
Question B. **Sensitive natural communities & riparian habitat**	Sensitive Natural Communities Streams, Lakes & Riparian Habitat	CA Fish & Game Code Oak Woodland Conservation Act Porter-Cologne Act Clean Water Act	CA Department of Fish & Wildlife U.S. Army Corps of Engineers U.S. Environmental Protection Agency State Water Resources Control Board Regional Water Quality Control Board	Potentially significant impacts were not identified, no mitigation is required for less than significant impacts.
Question C. **State and federally protected wetlands**	Wetlands Unvegetated surface waters	Clean Water Act: Sections 404/401 Rivers & Harbors Act: Section 10 Porter-Cologne Act	U.S. Army Corps of Engineers U.S. Environmental Protection Agency State Water Resources Control Board Regional Water Quality Control Board	Potentially significant impacts were not identified and mitigation measures are not recommended.

[1] *CEQA Questions have been summarized here, see Section 6.2 for details.*
[2] *As given in this report, see Section 5.0 subheadings.*

Table 1. Summary of Biological Resources Evaluation

CEQA Assessment Category[1] IV – Biological Resources	Biological Resources Considered	Relevant Laws & Regulations	Responsible Regulatory Agency	Summary of Findings & Report Section[2]
Question D. **Fish & Wildlife corridors**	Essential Fish Habitat Wildlife Corridors	CA Fish & Game Code Magnuson-Stevens Fishery Conservation & Management Act	CA Department of Fish and Wildlife National Marine Fisheries Service	Potentially significant impacts were not identified and mitigation measures are not recommended.
Question E. **Local policies**	Protected Trees Coastal zone resources Other biological protections	Local Tree Ordinance General Plan (e.g. Stream & Wetland Setbacks) Local ordinances	Local and regional agencies CA Coastal Commission San Francisco Bay Conservation and Development Commission	Potentially significant impacts were identified and mitigation measures are included that reduce those impacts to a level that is less than significant. **See Section 7.5 for more information**
Question F. **Local, state, federal conservation plans**	Habitat Conservation Plans Natural Community Conservation Plans	Federal Endangered Species Act Natural Community Conservation Planning Act	U.S. Fish and Wildlife Service CA Department of Fish and Wildlife	Potentially significant impacts were not identified and mitigation measures are not recommended.

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of this biological assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential project impacts. Table 1 shows the correlation between these regulations and each Biological Resources question in the Environmental Checklist Form (Appendix G) of the CEQA guidelines.

2.1 Federal and State Regulatory Setting

2.1.1 Vegetation and Aquatic Communities

CEQA provides protections for particular vegetation types defined as sensitive by the California Department of Fish and Wildlife (CDFW) and aquatic features protected by laws and regulations administered by the U.S Army Corps of Engineers (Corps), State Water Resources Control Board (SWRCB), and Regional Water Quality Control Boards (RWQCB). The laws and regulations that provide protection for these resources are summarized below.

Sensitive Natural Communities: Sensitive natural communities include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" (CDFW 2024a) and keeps records of their occurrences in its California Natural Diversity Database (CNDDB; CDFW 2021b). Natural communities are ranked 1 through 5 in the CNDDB based on NatureServe's (2020) methodology, with those communities ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW or U.S. Fish and Wildlife Service (USFWS) must be considered and evaluated under CEQA (California Code of Regulations [CCR] Title 14, Div. 6, Chap. 3, Appendix G). In addition, this general class includes oak woodlands that are protected by local ordinances under the Oak Woodlands Protection Act and Section 21083.4 of California Public Resources Code (CPRC).

Waters of the United States, Including Wetlands: The Corps regulates “Waters of the United States” under Section 404 of the Clean Water Act (CWA). Waters of the United States are defined in the Code of Federal Regulations (CFR) as including the territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, such as tributaries, lakes and ponds, impoundments of waters of the U.S., and wetlands that are hydrologically connected with these navigable features (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Unvegetated waters including lakes, rivers, and streams may also be subject to Section 404 jurisdiction and are characterized by an ordinary high water mark (OHWM) identified based on field indicators such as the lack of vegetation, sorting of sediments, and other indicators of flowing or standing water. The placement of fill material into Waters of the United States generally requires a permit from the Corps under Section 404 of the CWA.

The Corps also regulates construction in navigable waterways of the U.S. through Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 U.S. Code [USC] 403). Section 10 of the RHA requires Corps approval and a permit for excavation or fill, or alteration or modification of the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor or refuge, or enclosure within the limits of any breakwater, or of the channel of any navigable water of the United States. Section 10 requirements apply only to navigable waters themselves, and are not applicable to tributaries, adjacent wetlands, and similar aquatic features not capable of supporting interstate commerce.

<u>Waters of the State, Including Wetlands</u>: The term “Waters of the State” is defined by the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The SWRCB and nine RWQCB protect waters within this broad regulatory scope through many different regulatory programs. Waters of the State in the context of a CEQA Biological Resources evaluation include wetlands and other surface waters protected by the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2019). The SWRCB and RWQCB issue permits for the discharge of fill material into surface waters through the State Water Quality Certification Program, which fulfills requirements of Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require a Clean Water Act permit are also required to obtain a Water Quality Certification. If a project does not require a federal permit but does involve discharge of dredge or fill material into surface waters of the State, the SWRCB and RWQCB may issue a permit in the form of Waste Discharge Requirements.

<u>Sections 1600-1616 of California Fish and Game Code</u>: Streams and lakes, as habitat for fish and wildlife species, are regulated by CDFW under Sections 1600-1616 of California Fish and Game Code (CFGC). Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term “stream,” which includes creeks and rivers, is defined in the CCR as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life [including] watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). The term “stream” can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). Riparian vegetation has been defined as “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself” (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

2.1.2 Special-status Species

<u>Endangered and Threatened Plants, Fish, and Wildlife.</u> Specific species of plants, fish, and wildlife species may be designated as threatened or endangered by the federal Endangered Species Act (ESA), or the California Endangered Species Act (CESA). Specific protections and permitting mechanisms for these species differ under each of these acts, and a species’ designation under one law does not automatically provide protection under the other.

The ESA (16 USC 1531 et seq.) is implemented by the USFWS and the National Marine Fisheries Service (NMFS). The USFWS and NMFS maintain lists of endangered and threatened plant and animal species (referred to as "listed species"). "Proposed" or "candidate" species are those that are being considered for listing and are not protected until they are formally listed as threatened or endangered. Under the ESA, authorization must be obtained from the USFWS or NMFS prior to take of any listed species. “Take” under the ESA is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Take under the ESA includes direct injury or mortality to individuals, disruptions in normal behavioral patterns resulting from factors such as noise and visual disturbance and impacts to habitat for listed species. Actions that may result in take of an ESA-listed species may obtain a permit under ESA Section 10, or via the interagency consultation described in ESA Section 7. Federal-listed plant species are only protected when removal or destruction occurs on federal land; however, if a federal agency authorizes, funds, or carries out an action, that agency must insure through Section 7 consultation that the action is not likely to jeopardize the continued existence of the species.

The ESA also provides for designation of critical habitat, which are specific geographic areas containing physical or biological features “essential to the conservation of the species.” Protections afforded to designated critical habitat apply only to actions that are funded, permitted, or carried out by federal agencies. Critical habitat designations do not affect activities by private landowners if there is no other federal agency involvement.

The CESA (CFGC 2050 et seq.) prohibits the take of any plant and animal species that the CFGC determines to be an endangered or threatened species in California. CESA regulations include take protection for threatened and endangered plants on private lands, as well as extending this protection to candidate species that are proposed for listing as threatened or endangered under CESA. The definition of a "take" under CESA ("hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") only applies to direct impact to individuals, and does not extend to habitat impacts or harassment. CDFW may issue an Incidental Take Permit under CESA to authorize take if it is incidental to otherwise lawful activity and if specific criteria are met. Take of these species is also authorized if the geographic area is covered by a Natural Community Conservation Plan (NCCP), as long as the NCCP covers that activity. CDFW may also authorize take for voluntary restoration projects through the Restoration Management Permit (RMP).

<u>Fully Protected Species and Designated Rare Plant Species.</u> This category includes specific plant and wildlife species that are designated in the CFGC as protected even if not listed under CESA or ESA. Fully Protected Species includes specific lists of birds, mammals, reptiles, amphibians, and fish designated in CFGC. Fully protected species may not be taken or possessed at any time. No licenses or permits may be issued for take of fully protected species, except for necessary scientific research and conservation purposes. The definition of "take" is the same under the California Fish and Game Code and the CESA. By law, CDFW may not issue an Incidental Take Permit for Fully Protected Species. Under the California Native Plant Protection Act (NPPA), CDFW has listed 64 “rare” or “endangered” plant species, and prevents “take,” with few exceptions, of these species. CDFW may authorize take of species protected by the NPPA through the Incidental Take Permit process, or under a NCCP. CDFW may also authorize take for voluntary restoration projects through the Restoration Management Permit (RMP).

<u>Special Protections for Nesting Birds and Bats.</u> The federal Bald and Golden Eagle Protection Act provides relatively broad protections to both of North America’s eagle species [bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*)] that in some regards are similar to those provided by the ESA. In addition to regulations for special-status species, most native birds in the United States, including non-status species, have baseline legal protections under the Migratory Bird Treaty Act of 1918 and CFGC, i.e., sections 3503, 3503.5 and 3513.

Under these laws/codes, the intentional harm or collection of adult birds as well as the intentional collection or destruction of active nests, eggs, and young is illegal. For bat species, the Western Bat Working Group (WBWG) designates conservation status for species of bats, and those with a high or medium-high priority are typically given special consideration under CEQA.

Essential Fish Habitat. The Magnuson-Stevens Fishery Conservation and Management Act provides for conservation and management of fishery resources in the U.S., administered by NMFS. This Act establishes a national program intended to prevent overfishing, rebuild overfished stocks, ensure conservation, and facilitate long-term protection through the establishment of Essential Fish Habitat (EFH). EFH consists of aquatic areas that contain habitat essential to the long-term survival and health of fisheries, which may include the water column, certain bottom types, vegetation (e.g., eelgrass (*Zostera* spp.)), or complex structures such as oyster beds. Any federal agency that authorizes, funds, or undertakes action that may adversely affect EFH is required to consult with NMFS.

Species of Special Concern, Movement Corridors, and Other Special-status Species under CEQA. A Species of Special Concern (SSC) is a species formally designated by the CDFW which meets one or more criteria related to a Federal ESA status (if it is not listed under CESA), including extirpation from California, documented population declines, or small population size within California and risk of declines. In addition, CDFW has developed a special animals list as "a general term that refers to all of the taxa the CNDDB is interested in tracking, regardless of their legal or protection status." This list includes lists developed by other organizations, including for example, the Audubon Watch List Species, the Bureau of Land Management Sensitive Species, and USFWS Birds of Conservation Concern. Plant species on the California Native Plant Society (CNPS) Rare Plant Inventory (Inventory; CNPS 2024) with California Rare Plant Ranks (Rank) of 1 and 2, as well as some with a Rank of 3 or 4, are also considered special-status plant species and must be considered under CEQA. Some Rank 3 and Rank 4 species are typically only afforded protection under CEQA when such species are particularly unique to the locale (e.g., range limit, low abundance/low frequency, limited habitat) or are otherwise considered locally rare. Some species listed in the *Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties (web application)* (Lake 2024) are considered sensitive (see Section 2.2). Additionally, any species listed as sensitive within local plans, policies and ordinances are likewise considered sensitive. Movement and migratory corridors for native wildlife (including aquatic corridors) as well as wildlife nursery sites are given special consideration under CEQA.

2.2 Local Plans and Policies

Livermore General Plan. The Livermore General Plan contains policies pertaining to the following biological resources categories:

- Wetlands, streams, riparian, and aquatic areas (Policy OSC-1.2-P3, OSC-1.2-P4, OSC-1.2-P7, etc.)
- Vegetation communities (Policy OSC-1.2-P2, OSC-1.2-P4, OSC-1.2-P5, etc.)
- Plant Species (Policy OSC-1-P4, OSC-1.2-P6, OSC-1.2-P8, etc.)
- Wildlife Species (Policy OSC-1-P4, OSC-1.2-P1, OSC-1.2-P6, OSC-1.2-P8, etc.)
- Wildlife Corridors (Policy OSC-1-P1, OSC-1.2-P12, OSC-1.2-P13, etc.)

Isabel Neighborhood Specific Plan. The Isabel Neighborhood Specific Plan contains policies pertaining to the following biological resources categories:

- Wetlands, streams, riparian, and aquatic areas (Policy ENV-18, ENV-20, ENV-26)
- Vegetation communities (Policy ENV-19, EN-28)
- Plant Species (Policy ENV-21, ENV-22, ENV-23, ENV-24)
- Wildlife Species (Policy ENV-21, ENV-23, ENV-24, ENV-25, ENV-27)
- Wildlife Corridors (Policy ENV-23)

City of Livermore Tree Ordinance. The City of Livermore Tree Ordinance Chapter 12.20 *Street Trees and Tree Preservation* Article I, requires a permit for the trimming, root pruning or removal of any street tree category from any street right-of-way, parkway strip, sidewalk, park, landscaped area, playground or any other public area in the City. The Ordinance also defines a "protected tree" under Article II as a single-trunked, multi-trunked tree or stand of trees dependent upon each other for survival meeting the criteria below:

1. Any tree located on private property occupied by single-family residential development that meets the following criteria:

   a. Any tree with a circumference (CBH) of 60 inches or more; or

   b. Any California native tree having a circumference (CBH) of 24 inches or more;
2. Any tree located on private property occupied by commercial, industrial, institutional (i.e., religious, public agency, hospital, care facilities, etc.), mixed-use or multifamily residential (two or more units) development with a circumference (CBH) of 24 inches or more; or
3. Any tree located on an undeveloped or underdeveloped property, regardless of zoning district, use, or development status, for which new development is proposed, with a circumference (CBH) of 18 inches or more; or
4. Any tree located in an open space, riparian, or habitat area with a circumference (CBH) of 18 inches or more; or
5. Any tree approved as part of a site plan approval, or required as a condition of approval for a development project, zoning use permit, use permit or other site development review; or
6. Any tree designated by the City Council as determined to be an ancestral tree; and/or
7. Any tree listed on the City's ancestral tree inventory; or
8. Any tree required to be planted as mitigation for unlawfully removed trees.

The City of Livermore requires a permit under Section 12.20.190 for any removal or encroachment within a protected zone of any protected tree within a parcel in the City. Permits associated with developments will require a report by a certified arborist. Pursuant to Section 12.20.220 the preservation of protected trees within a site which is undergoing development may request protection measures as a condition of approval. Pursuant to Section 12.20.230 other conditions of approval include mitigation for the removal of protected trees by planting replacement trees or payment to the urban forestry maintenance fund. Residential applicants are generally required to replace removed trees at a minimum ratio of two 15-gallon size trees or one 15-gallon California native tree for each protected tree removed. Multifamily, commercial, industrial, institutional, multiuse etc. applicants are generally required to replace removed trees at a ratio of three 15-gallon, or two 24-inch box or one 48-inch box replacement trees to each protected tree removed, the type of tree shall be a California native to the extent feasible.

City of Livermore Stream Policies. Policy ENV-18 requires stream setbacks from toe of the channel of 2.5:1 plus 20 feet. In addition, Policy ENV-26 states that construction within 300 feet of freshwater marsh or streambank habitat take place during the non-breeding season for tricolored blackbirds (September 1 through January 31) to the extent feasible.

Rare, Unusual, and Significant Plants of Alameda and Contra Costa Counties. *Rare, Unusual, and Significant Plants of Alameda and Contra Costa Counties (web application)* (Lake 2024) is a database produced by the East Bay Chapter of the CNPS that lists plant taxa which are considered locally rare, unusual, or significant in Alameda and Contra Costa counties. Taxa are assigned rankings of A, B, or C to indicate their degree of rarity or endangerment in the two counties. See Table 2 for a description of each of the rankings. A-ranked taxa receive consideration under sections 15380 and 15125(a) of CEQA and are considered “locally rare” for the purposes of this report. Any locally rare taxa observed in the Study Area are discussed in this report.

Table 2. Description of East Bay CNPS Locally Rare Plant Rankings

RANK	DESCRIPTION
A1	Locally Rare Species. Species occurring in two or fewer regions in Alameda and Contra Costa counties
A1x	Locally Rare Species. Species presumed extirpated from Alameda and Contra Costa counties
A1?	Locally Rare Species. Species possibly occurring in Alameda and Contra Costa counties. Identification or location is uncertain
A2	Locally Rare Species. Plants occurring in three to five regions or are otherwise threatened in Alameda and Contra Costa counties.
B	High Priority Watch List. Plants occurring in six to nine regions in Alameda and Contra Costa counties.
C	Second Priority Watch List. Plants occurring in ten to fifteen regions in Alameda and Contra Costa counties.

*Ranks preceded by an asterisk (e.g., “*A1”) also have a statewide rarity ranking

East Alameda County Conservation Strategy (EACCS)

The Study Area is within the boundaries of the EACCS due to the classification of the City of Livermore as a limited urban growth region, an HCP was deemed unnecessary. The EACCS was developed in partnership with the USFWS, CDFW, SFRWQCB, EBRPD and several local agencies within East Alameda County with the efforts of streamlining the permitting process for listed species and implementation of mitigation for development an infrastructure projects, as well as improve voluntary conservation and improve mitigation and conservation of listed and unlisted species. The EACCS includes specific avoidance, minimization and mitigation measures to implement for impacts on 19 focal species including endangered, threatened and special status species and non-listed species, however, no incidental take permits are to result as is the case in an HCP. Protections are also outlined for sensitive habitat types in which these species can or do exist. The goal of EACCS is to provide a baseline of biological resources and conservation priorities for project-level planning and environmental permitting.

3.0 ASSESSMENT METHODOLOGY

On June 18, 2024, WRA, Inc. (WRA) biologists visited the Study Area to map vegetation, aquatic features, and other land cover types; document plant and wildlife species present; and evaluate on-site habitat for the potential to support special-status species as defined by CEQA. Prior to the site visit, WRA biologists reviewed literature resources and performed database searches to assess the potential for sensitive land cover types and special-status species, including:

- Web Soil Survey (USDA 1966)
- Livermore, Dublin, Altamont, diablo, Tassajara, Bryon Hot Springs, Niles, La Costa Valley, and Mendenhall Springs 7.5-minute U.S. Geological Survey (USGS) quadrangle (USGS 2024
- Contemporary aerial photographs (Google Earth 2024)
- National Wetlands Inventory (USFWS 2024a)
- California Aquatic Resources Inventory (SFEI 2024)
- CNDDB (CDFW 2024b)
- CNPS Inventory (CNPS 2024)
- Consortium of California Herbaria (CCH1 2024, CCH2 2024)
- USFWS Information for Planning and Consultation (USFWS 2024b)
- eBird Online Database (Cornell Lab of Ornithology 2024)
- California Bird Species of Special Concern in California (Shuford and Gardali 2008)
- California Amphibian and Reptile Species of Special Concern (Thomson et al. 2016)
- A Field Guide to Western Reptiles and Amphibians (Stebbins 2003)
- A Manual of California Vegetation, Online Edition (CNPS 2024)
- California Natural Community List (CDFW 2024a)
- Database searches (i.e., CNDDB, CNPS) for special-status species focused on the Livermore, Dublin, Altamont, diablo, Tassajara, Bryon Hot Springs, Niles, La Costa Valley, and Mendenhall Springs USGS 7.5-minute quadrangles.

Following the remote assessment, WRA biologists completed a field review to document: (1) land cover types (e.g., vegetation communities, aquatic resources), (2) existing conditions and to determine if such provide suitable habitat for any special-status plant or wildlife species, (3) if and what type of aquatic land cover types (e.g., wetlands) are present, and (4) if special-status species are present.

3.1 Vegetation Communities and Other Land Cover Types

During the site visit, WRA evaluated the species composition and area occupied by distinct vegetation communities, aquatic communities, and other land cover types. Mapping of these classifications utilized a combination of aerial imagery and ground surveys. In most instances, communities are characterized and mapped based on distinct shifts in plant assemblage (vegetation) and follow the California Natural Community List (CDFW 2021a) and A Manual of

California Vegetation, Online Edition (CNPS 2024). These resources cannot anticipate every component of every potential vegetation assemblage in California, and so in some cases, it is necessary to identify other appropriate vegetative classifications based on best professional judgment of WRA biologists. When undescribed variants are used, it is noted in the description. Vegetation alliances (natural communities) with a CDFW Rank of 1 through 3 (globally critically imperiled [S1/G1], imperiled [S2/G2], or vulnerable [S3/G3]) (CDFW 2021a), were evaluated as sensitive as part of this assessment.

On June 18, 2024, the site was reviewed for the presence of wetlands and other aquatic resources according to the methods described in the Corps Manual (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West/Western Mountains, Valleys, and Coast Region* (Corps 2008/Corps 2010), and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (Lichvar and McColley 2008). No areas meeting these indicators were mapped as no aquatic resources were found using the methods described above. Aquatic communities which are mapped in the NMFS EFH Mapper (NMFS 2020) were outside of the Study Area. There was no presence of riparian habitat which was evaluated based on the lack of woody plant species meeting the definition of riparian provided in *A Field Guide to Lake and Streambed Alteration Agreements, Section 1600-1607, California Fish and Game Code* (CDFG 1994) and based on best professional judgement of biologists completing the field surveys. Special-status Species

3.1.1 General Assessment

Potential occurrence of special-status species in the Study Area was evaluated by first determining which special-status species occur in the vicinity of the Study Area through a literature and database review as described above. Presence of suitable habitat for special-status species was evaluated during the site visit based on physical and biological conditions of the site as well as the professional expertise of the investigating biologists. The potential for each special-status species to occur in the Study Area was then determined according to the following criteria (see Appendix C):

- **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).
- **Unlikely.** 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.
- **Present.** Species is observed on the site or has been recorded (i.e., CNDDB, other reports) on the site in the recent past.

If a more thorough assessment was deemed necessary, a targeted or protocol-level assessment or survey is recommended as a future study. If a special-status species was observed during the site visit, its presence was recorded and discussed below in Section 5.2. If designated critical habitat is present for a species, the extent of critical habitat present and an evaluation of critical habitat elements is provided as part of the species discussions below.

3.2 Wildlife Corridors and Native Wildlife Nursery Sites

To account for potential impacts to wildlife movement/migratory corridors, biologists reviewed maps from the California Essential Connectivity Project (CalTrans 2010), and habitat connectivity data available through the CDFW Biogeographic Information and Observation System (CDFW 2024). Additionally, aerial imagery (Google Earth 2024) for the local area was referenced to assess if local core habitat areas were present within, or connected to the Study Area. This assessment was refined based on observations of on-site physical and/or biological conditions, including topographic and vegetative factors that can facilitate wildlife movement, as well as on-site and off-site barriers to connectivity.

The potential presence of native wildlife nursery sites is evaluated as part of the site visit and discussion of individual wildlife species below. Examples of native wildlife nursery sites include nesting sites for native bird species (particularly colonial nesting sites), marine mammal pupping sites, and colonial roosting sites for other species (such as for monarch butterfly [*Danaus plexippus*]).

4.0 ECOLOGICAL SETTING

The approximately 11.31-acres Study Area is located in Livermore, Alameda County immediately north of Interstate 580, south of North Canyons Blvd, west of Airway Blvd and east of Doolan Road. The site was historically agricultural land, however due to developments of the interstate and mixed-use development parcels, the Study Area has been significantly altered from its native state. Discing occurs twice a year and has been surrounded by development since 2007. The Study Area has ornamental trees lining the northeastern boundary adjacent to Airway Blvd. The Study Area includes all areas affected by the Project, as well as the sidewalks and the non-annual grassland hill and storm drain to the east of the proposed Project footprint. Additional details of the local setting are below.

4.1 Soils and Topography

The overall topography of the Study Area is relatively flat with slopes of less than 2 to 10 percent. The general slope is from northeast with elevations ranging from approximately 5 to 15 feet above sea level. According to SoilWeb (CSRL 2024) and Web Soil Survey (USDA 1966), the Study Area is underlain by one native soil mapping unit: Diablo clay, very deep 3 to 15 percent slopes. This mapping unit is considered hydric. The parent soil series of all the Study Area's mapping unit is summarized below.

<u>Diablo Series:</u> The Diablo series consists of well drained, slow permeability soils with slow runoff when dry and medium to rapid when soils are moist. These soils formed in residuum weathered from shale, sandstone, and consolidated sediments with minor areas of tuffaceous material. A typical Diablo series soil has dark gray, neutral and mildly alkaline, silty clay upper A horizons, gray and olive gray, calcareous, silty clay lower A horizons, and light olive gray, silty clay AC and C horizons that rest on shale. Diablo soils are on complex, undulating, rolling to steep uplands with slopes of 5 to 50 percent. This soil is used for grazing and for production of dry farmed grain (CSRL 2024, USDA 1966).

4.2 Climate and Hydrology

The Study Area is located at the edge of the coastal fog belt of the Bay Area in the inland region of Livermore, Alameda. The average monthly maximum temperature in the area is 73.2 degrees Fahrenheit, while the average monthly minimum temperature is 47.7 degrees Fahrenheit. Predominantly, precipitation falls as rainfall between October and March with an annual average precipitation of 15.20 inches.

The local watershed is Lower Arroyo Las Positas (HUC 12: 180500040302) and the regional watershed is San Francisco Bay (HUC 8: 18050004). The Study Area is located in the lower portion of the Lower Arroyo Las Positas watershed. There are no blue-line streams in the Study Area (USGS 2024). There are two freshwater emergent wetlands within one mile and vernal pool complexes at approximately 2 miles of the Study Area, however, no resources are located within the Study Area nor connect with the Study Area (USFWS 2024a) and California Aquatic Resources Inventory (CARI; SFEI 2024). Detailed descriptions of aquatic resources are provided in Section 5.1 below.

4.3 Land Use

The majority of the Study Area is undeveloped and marginally landscaped with some disturbances to add a culvert and a storm drain under the interstate on-ramp. Undeveloped areas consist of non-native annual grassland. The landscaped portion includes street trees along Airway Blvd. Detailed land cover type descriptions are included in Section 5.1 below, and all observed plant species are included in Appendix B. Surrounding land uses include mixed-use developments such as gasoline stations, hotels, businesses and roads (Google Earth 2024). Historically, the Study Area was agricultural land.

5.0 ASSESSMENT RESULTS

5.1 Vegetation Communities and Other Land Cover

WRA observed two land cover types within the Study Area: non-native annual grassland and landscaped/ruderal. The edge of the Study Area contains landscaping and hardscaping (i.e., sidewalks) that provide no ecological value. The grasslands are tilled/disked annually, and the site was tilled at the time of the site visit. Land cover types within the Study Area are illustrated in Appendix A – Figure 3. The non-sensitive land cover types in the Study Area include non-native grasslands and landscape/ruderal.

Table 3. Vegetation Communities and Other Land Cover Types

COMMUNITY / LAND COVERS	SENSITIVE STATUS	RARITY RANKING	ACRES WITHIN STUDY AREA
TERRESTRIAL / COMMUNITY LAND COVER			
Non-native annual grassand	none	none	11.09
Landscaped/Ruderal	None	None	0.22

5.1.1 Terrestrial Land Cover

Photo 1. Terrestrial land cover in the Study Area, dominated by non-native grasses and weeds

Non-native annual grassland (*Avena barbata* Semi-natural Herbaceous Stand). CDFW Rank: None. Nearly the entire Study Area is non-native annual grassland composed of mainly wild oat grassland with substantial cover of yellow sweetclover (Melilotus indicus), ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), Italian ryegrass (*Festuca perennis*), and Mediterranean barley (*Hordeum marinum*). Non-native forbs include field bindweed (Convolvulus arvensis), Italian thistle (*Carduus pycnocephalus*), field mustard (*Hirschfeldia incana*) and curly dock (*Rumex crispus*). This community is not considered sensitive by Alameda County, CDFW, or any other regulatory entity.

Landscaped/Ruderal (no alliance). CDFW Rank: None. The northeastern corner of the Study Area consists of a row of street trees likely planted to create scenic value. These landscape trees are all within the public right-of-way along Airway Blvd and are the same species, Bradford pear (*Pyrus calleryana*). Although, street trees are protected by the Livermore Municipal Ordinance, this community is not considered sensitive by Alameda County, CDFW, or any other regulatory entity,

5.1.2 Aquatic Resources

No sensitive aquatic resources were found within the Study Area. A broad swale runs through the center of the property, terminating at the three-foot culvert. At the time of the site visit, the entire site was disked and tilled with vegetation lying flat mostly everywhere except the deepest areas of the swale. Several areas were sampled following the methods for delineating wetlands outlined in Section 3.1.2. Vegetation was dominated by yellow sweetclover, hood canary grass, and brome, all upland plants. Soils were black (10YR 3/1) heavy clays that contained no redoximorphic features or depletions at two location and less than 5% redoximorphic features within 8 inches of the surface at the third sample site; therefore, the swale's substrate does not meet the criteria for hydric soils. Likewise, there were no indicators of saturation or inundation to meet the wetland hydrology criteria. The presence of non-hydrophytic vegetation, non-hydric soils and no hydrology leads to the conclusion that there are no aquatic resources within the Study Area.

5.2 Special-status Species

5.2.1 Special-status Plants

Based upon a review of the resource databases listed in Section 3.0, 14 special-status plant species have been documented in the vicinity of the Study Area. Figure 3 below depicts special-status species observed within a 5-mile radius of the Study Area. The Study Area is unlikely or has no potential to support 10 of these species for the following reasons:

- Hydrologic conditions (e.g. tidal, riverine) necessary to support the special-status plant species are not present in the Study Area;
- Edaphic (soil) conditions (e.g. volcanic, serpentine) necessary to support the special-status plant species are not present in the Study Area;
- Unique pH conditions (e.g. acidic conditions) necessary to support the special-status plant species are not present in the Study Area;
- Associated vegetation communities (e.g. forest, woodland, scrub, vernal pools) necessary to support the special-status plant species are not present in the Study Area;
- The Study Area is geographically isolated from the documented range of the special-status plant species; and/or
- The land use history (e.g., petro chemical and residential development) of the Study Area has resulted in habitat conversion and/or has a degree of disturbance to preclude the colonization and establishment of special-status species.

Three special-status plant species that could be present within the site with moderate to high potential were not observed during the June 18, 2024, site visit. All of these species germinate and bolt in late spring, and bloom in the summer into fall. Likewise, they are annuals that are tolerant of disturbance (e.g., tilling) and, because they bloom in summer, can tolerate competitive pressure from non-native annual herbs (e.g., wild oats (*Avena barbata*). These species are detailed below:

Table 4. Potential Special-status Plants

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS	POTENTIAL HABITAT IN THE STUDY AREA
FORMALLY LISTED PLANTS (FESA, CESA, CNPPA)			
Deinandra bacigalupii	Livermore tarplant	SE, Rank 1B.1, G1S1, *A1	The Study Area contains grassland habitat with moderately alkaline clay soils. The species is also tolerant to disturbance.
OTHER SPECIAL-STATUS PLANTS (CEQA, OTHER)			
Centromadia parryi* ssp. *congdonii	Cangdon's tarplant	Rank 1B.1, G3S2, *A2	The Study Area contains moderate alkali conditions, the presence of associated species, and a seed source within close proximity within the direction of the prevailing winds.
Extriplex joaquinana	San Joaquin spearscale	Rank 1B.2, G2S2, *A2	The Study Area contains moderate alkali conditions, the presence of associated species, and a seed source within close proximity within the direction of the prevailing winds.

Livermore tarplant (*Deinandra bacigalupii*). State Endangered, CNPS Rank 1B.1. Moderate Potential. Livermore tarplant is annual forb in the sunflower family (Asteraceae) that blooms from June through October. It typically occurs in alkaline herbaceous communities and scalds within meadow and seep habitat at elevations ranging from 485 to 600 feet (CNPS 2018, CDFW 2018, Baldwin et al. 2012). Observed associated species include ripgut brome (*Bromus diandrus*), soft chess (*B. hordeaceus*), Mediterranean barley (*Hordeum marinum*), salt grass (*Distichlis spicata*), iodine bush (*Allenrolfea occidentalis*), common spikeweed (*Centromadia pungens*), brittlescale (*Atriplex depressa*), sand spurry (*Spergularia* spp.), alkali heath (*Frankenia salina*), yellow tarweed (*Holocarpha virgata*), and three-ray tarweed (*Deinandra lobbii*) (CDFW 2018).

The Study Area contains moderately alkaline clay soil. The most recent occurrence of the species is 6 miles northeast of the Study Area near Springtown Village (CCH2 2024). Livermore tarplant has relative tolerance to disturbance; however, it frequently occurs in strongly alkali conditions, with extended saturation. Therefore, the population near Springtown Village is likely in better soil conditions. However, there is moderate potential for the species to occur within the Study Area.

Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*). CNPS Rank 1B.1. Moderate Potential. Congdon's tarplant is an annual forb in the sunflower family (Asteraceae) that blooms from June to November. It typically occurs in alkaline grassy areas on the edge of brackish marsh in valley and foothill grassland habitat at elevations ranging from 1 to 750 feet (CDFW 2018, CNPS 2018). Observed associated species include common tarplant (*Centromadia pungens* ssp. *pungens*), alkali heath (*Frankenia salina*), salt grass (*Distichlis spicata*), Italian rye grass (*Festuca perennis*), Mediterranean barley (*Hordeum marinum*), foxtail barley (*Hordeum murinum*), stinkwort (*Dittrichia graveolens*), yellow star thistle (*Centaurea solstitialis*), Italian thistle (*Carduus pycnocephalus*), bull thistle (*Cirsium vulgare*), and Bermuda grass (*Cynodon dactylon*) (CDFW 2018, personal observations 2008-2013).

The Study Area contains moderately alkaline clay soils with species associated with Congdon's tarplant. Due to the species' relative tolerance to disturbance and the presence of a seed source within 3 miles west and within the direction of prevailing winds there is moderate potential for the species to occur within the Study Area (CCH2 2024).

San Joaquin spearscale (*Extriplex joaquinana*). CNPS Rank 1B.2. Moderate Potential. San Joaquin spearscale is an annual herb in the goosefoot family (Chenopodiaceae) that blooms from April to October. It typically occurs in seasonal alkali sink scrub and wetlands in chenopod scrub, alkali meadow, and valley and foothill grassland habitat at elevations ranging from 0 to 2,740 feet (CDFW 2018, CNPS 2018). Observed associated species include salt grass (*Distichlis spicata*), alkali heath (*Frankenia salina*), Mediterranean barley (*Hordeum marinum*), Italian rye grass (*Festuca perennis*), bird's-foot trefoil (*Lotus corniculatus*), docks (*Rumex crispus, R. pulcher*), tarplants (*Centromadia parryi, C. pungens*), pickleweed (*Salicornia pacifica*), and fat hen (*Atriplex prostrata*) (CDFW 2018, personal observations 2010-2012).

The Study Area contains grasslands with moderately alkaline clay soil. Due to the species' relative tolerance to disturbance and the presence of a seed source within 3 miles west and within the direction of prevailing winds there is high potential for the species to occur within the Study Area (CCH2 2024). San Joaquin spearscale has a moderate potential to occur within the Study Area.

5.2.2 Special-status Wildlife

Of the 48 special-status wildlife species documented in the vicinity of the Study Area, most are excluded from the Study Area based on a lack of habitat features. Features not found within the Study Area that are required to support special-status wildlife species include:

- Vernal pools
- Perennial aquatic habitat (e.g. streams, rivers or ponds)
- Tidal marsh areas
- Broad-leafed woodland
- Cismontane woodland
- Serpentine soils to support host plants
- Sandy beaches or alkaline flats
- Presence of specific host plants
- Caves, mine shafts, or abandoned buildings

The absence of such habitat features eliminates components critical to the survival or movement of most special-status species found in the vicinity. For instance, California red-legged frog (*Rana draytonii,* CRLF), northwestern pond turtle (*Actinemys marmota*; NWPT), foothill-yellow legged frog (*Rana boylii*, FYLF) and tricolored blackbird (*Agelaius tricolor*) are known to occur in the open spaces in the vicinity. However, suitable aquatic habitat such as streams, ponds, and emergent wetlands and associated movement corridors connecting the Study Area to source populations are absent due to development, precluding these species from inhabiting or dispersing through the Study Area. Furthermore, no hydrologic connectivity is present to suitable FYLF habitats nearby. Tricolored blackbirds may occasionally be seen flying over the Study Area, though no nesting habitat or significant foraging resources are supported, therefore these species have no potential or are unlikely to occur within the Study Area. Given the Study Area's relative proximity to sensitive habitats on the San Francisco Bay, many species documented nearby are additionally obligates to tidal marsh habitats which are not present on or in the immediate vicinity of the Study Area. Federally listed species that are unlikely to occur within the site are further described below, for completeness.

One special-status species has potential to occur in the immediate vicinity of or in portions of the Study Area: crotch's bumble bee (*Bombus crotchii*), see Table 5. This species is discussed in greater detail below. In addition, non-listed native birds protected by MBTA and CDFG can also be present within the site.

Table 5. Potential Special-status Wildlife

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS	POTENTIAL HABITAT IN THE STUDY AREA
SPECIAL-STATUS WILDLIFE (CEQA, OTHER)			
Bombus crotchii	Crotch's bumble bee	State Candidate	**Moderate Potential.** The Study Area contains suitable foraging habitat including yellow-star thistle (*Centaurea solstitalis*), Italian thistle (*Carduus pycnocephalus*) and mustards.

Crotch bumble bee (*Bombus crotchii*), State candidate. Crotch bumble bee occurs primarily in central and southern California, from coastal areas inland to the foothills (Williams et al. 2014). This species is now largely absent from the Central Valley, although it was historically common in this region (Hatfield et al. 2015). Crotch bumble bee occurs in grassland and scrub habitats, and has also been documented in agricultural areas. Like other bumble bee species, Crotch bumble bee is a social species with an annual life cycle. Queens emerge from hibernation in the late winter/early spring to establish a new colony. The colony produces workers throughout the spring and summer, and reproductives (i.e. drones and queens) in the early fall. Nests are built in pre-existing cavities. They are commonly found underground, in abandoned rodent burrows, or aboveground in grass tufts, rock piles, abandoned bird nests, or tree cavities. Crotch bumble bee feeds on pollen and nectar during all life stages; preferred host species include (but are not limited to) milkweeds (*Asclepias* spp.), chaenactis (*Chaenactis* spp.), clarkias (*Clarkia* spp.), larkspurs (*Delphinium* spp.), buckwheats (*Eriogonum* spp.), lupines (*Lupinus* spp.), medicks (*Medicago* spp.), bladderpod (*Peritoma arborea*), phacelias (*Phacelia* spp.), poppies (*Eschscholzia* spp.), sages (*Salvia* spp.), and thistles (*Centaurea* spp.). Queens overwinter in hibernacula; little is known about habitat requirements for hibernacula; bare ground, leaf litter and/or duff, and pre-existing cavities may provide overwintering habitat.

Major threats to Crotch bumble bee include agricultural intensification and rapid urbanization (Hatfield et al. 2015). Additionally, Crotch bumble bee has a narrow climatic range compared to most bumble bee species, and may be threatened by increasing aridity and global climate change (NatureServe 2022). In general, bumble bees are threatened by a combination of factors including pesticide use, resource competition with non-native bees, and pathogen spillover from managed pollinators (Goulson 2010, Cameron et al. 2011).

The Study Area is within the known range of the species and contains suitable foraging habitat and overwintering habitat for Crotch's bumble bee (Photo 1). Rodent burrows provide suitable ground nesting sites, however, tilling and disking frequency could preclude the species from nesting. Foraging plants available include Italian thistle (Carduus pycnocephalus), yellow star thistle (*Centaurea solstitalis*), black mustard (*Brassica nigra*), and field mustard (*Hirschfeldia incana*). Therefore, there is moderate potential for Crotch's bumble bee presence at the Study Area.

General nesting birds. Nearly all habitats have the potential to seasonally support nesting birds that are protected by the MBTA and CFGC. Trees along the perimeter of the Study Area and the unmowed swale and fringe of the Study Area supporting annual grasses and forbs are examples of these habitats. Direct removal of a nest or disturbance in the vicinity of an active nest that could result in nest abandonment would be considered take under the MBTA and CFGC.

SPECIAL-STATUS SPECIES – UNLIKELY POTENTIAL

Burrowing owl (*Athene cunicularia*; BUOW). CDFW Species of Special Concern; USFWS Bird of Conservation Concern. Burrowing owl occurs as a year-round resident and winter visitor in much of California's lowlands, inhabiting open areas with sparse or non-existent tree or shrub canopies. Typical habitat is annual or perennial grassland, although human-modified areas such as agricultural lands and airports are also used (Poulin et al. 1993). This species is dependent on burrowing mammals to provide the burrows that are characteristically used for shelter and nesting, and in northern California is typically found in close association with California ground squirrels (*Spermophilus beecheyi*). Manmade substrates such as pipes or debris piles may also be occupied in place of burrows. Prey consists of insects and small vertebrates. Breeding typically takes place from March to July.

The Study Area is disced twice annually for weed and fire control. On the June 18, 2024, visit, several ground squirrel burrows were observed along the perimeter of the Study Area. The squirrel burrows were inspected for sign of BUOW including white-wash, pellets, or feathers. No BUOW or indications of use were noted, which is consistent with the site visit conducted in20216 Furthermore, the Study Area is relatively small, therefore unlikely to support the abundance of prey required to sustain breeding BUOW. A CNDDB record of nesting burrowing owl was documented within 1-mile south of the Study Area in 2006. Adjacent contiguous natural and agricultural lands provide higher quality and quantity of habitat than is available within the Study Area. Therefore, the species is unlikely to forage or nest within the Study Area.

California tiger salamander (*Ambystoma californiense*; CTS), Federal Threatened Species, State Threatened Species. California tiger salamander is restricted to grasslands and low-elevation foothill regions in California (generally under 1500 feet) where it uses seasonal aquatic habitats for breeding. CTS breed in natural ephemeral pools, or ponds that mimic ephemeral pools (stock ponds that go dry) and occupy substantial areas surrounding the breeding pool as adults. CTS spend most of their time in the grasslands surrounding breeding pools. They survive hot, dry summers by living underground in burrows (such as those created by ground squirrels and other mammals and deep cracks or holes in the ground) where the soil atmosphere remains near the water saturation point. During wet periods, the salamanders may emerge from refugia and feed in the surrounding grasslands.

The Study Area does not contain any aquatic features that could support CTS breeding. Multiple occurrences of CTS have been documented in the vicinity including one occurrence where 2 adults were observed crossing roads adjacent to the Study Area in 1992. Since this occurrence, the location of that occurrence has been developed and significant development has occurred in the areas surrounding the Study Area on all sides from 2002 until 2007. While it is possible that the Study Area once supported CTS upland habitat, the site has been completely isolated for nearly 20-years from adjacent habitats and is disced twice per year for weed and fire control. A vestigial population of California ground squirrels occurs with burrows concentrated along the perimeter of the site, however the extent, frequency and duration of disturbance of the site coupled with its completely isolated nature precludes any potential for CTS to occur within the Study Area.

Golden eagle (*Aquila chrysaetos*), Federal Eagle Protection Act, CDFW Fully Protected Species, USFWS Bird of Conservation Concern. Golden eagles are large raptors that occur in open and semi-open areas from sea level to high elevation. Typical occupied habitats include grasslands, shrublands, deserts, woodlands, and coniferous forests. Breeding activity occurs broadly from January through August, and in California is usually initiated from January to March. The large stick nests of this species are reused across years and may be maintained throughout the year. Nests are most often placed on the ledges of steep cliffs, but nesting also occurs in trees and on tall manmade structures (e.g., utility towers) (Kochert et al. 2002). Golden eagles forage over wide areas, feeding primarily on medium-sized mammals (e.g., ground squirrels and rabbits), large birds, and carrion.

A golden eagle nest was recorded in the CNDDB in 1991-1992 approximately 4.4 miles to the northwest of the Study Area (CDFW 2018), however the nest was unsuccessful for unknown reasons. While golden eagles may occasionally fly over or opportunistically forage within the Study Area, no appropriate nesting habitat is available on or in the immediate vicinity of the site. Furthermore, the Study Area is bounded by highly developed areas and sees regular disturbance via discing for weed and fire control, making it unlikely to be visited by golden eagles. While it is possible that eagles may be occasionally observed in the immediate vicinity, much higher quality foraging habitat is present to the north of the Study Area, and they have no nesting habitat at the site. Therefore, they are unlikely to occur within the Study Area.

White-tailed kite (*Elanus leucurus*). CDFW Fully Protected Species. White-tailed kite is resident in open to semi-open habitats throughout the lower elevations of California, including grasslands, savannahs, woodlands, agricultural areas and wetlands. Vegetative structure and prey availability seem to be more important habitat elements than associations with specific plants or vegetative communities (Dunk 1995). Nests are constructed mostly of twigs and placed in trees, often at habitat edges. Nest trees are highly variable in size, structure, and immediate surroundings, ranging from shrubs to trees greater than 150 feet tall (Dunk 1995). This species preys upon a variety of small mammals, as well as other vertebrates and invertebrates.

White-tailed kite fledglings were observed and recorded in the CNDDB in 2009 approximately 4.75 miles northwest of the Study Area. The wide-range and relative commonality of this species along urban-rural interfaces suggest white-tailed kite could opportunistically forage within the Study Area. However, the Study Area is surrounded by development and high amounts of disturbance due to vehicular traffic and collisions with the landscape trees at the perimeter or the Study Area. In addition, the twice-annual discing of the site means disturbance of the area is likely too high to encourage nearby nesting. White-tailed kites are unlikely to nest or occur within the Study Area.

5.3 Wildlife Corridors and Native Wildlife Nursery Sites

Wildlife movement between suitable habitat areas can occur via open space areas lacking substantial barriers. The terms “landscape linkage” and “wildlife corridor” are often used when referring to these areas. The key to a functioning corridor or linkage is that it connects two larger habitat blocks, also referred to as core habitat areas (Beier and Loe 1992; Soulé and Terbough 1999). It is useful to think of a “landscape linkage” as being valuable in a regional planning context, a broad scale mapping of natural habitat that functions to join two larger habitat blocks. The term “wildlife corridor” is useful in the context of smaller, local area planning, where wildlife movement may be facilitated by specific local biological habitats or passages and/or may be rested by barriers to movement. Above all, wildlife corridors must link two areas of core habitat and should not direct wildlife to developed areas or areas that are otherwise void of core habitat (Hilty et al. 2019).

The Study Area is not within a designated wildlife corridor, an essential habitat connectivity unit, and contains low terrestrial permeability (CalTrans 2010; CDFW 2019). The site is located within a much larger tract of mixed-development land within ISNP of Livermore. While common wildlife species such as birds presumably utilize the site to some degree for movement at a local scale, the Study Area itself does not provide corridor functions beyond providing a similar agricultural and developed land parcel as surrounding areas. Within the ISNP it is categorized as general commercial land use surrounded by business park land use and has no functional connection to surrounding habitats (City of Livermore 2020).

The Study Area is at the south boundary of Conservation Zone 4 of the East Alameda County Conservation Strategy (EACCS), according to Chapter 3 Conservation Strategy CZ 4 is outside of the critical habitat for CTS, CRLF and vernal pool fairy shrimp (*Brachinecta lynchi*). However, it is within the non-listed general species mitigation zone, therefore migratory birds and bats need to be considered under CEQA. Since the Project plans are not impacting trees and ground disturbing activity will adhere to the mitigation measures in Section 7.0 to reduce impacts to nesting birds and special-status plants, the impacts are negligible.

6.0 ANALYTICAL METHODOLOGY AND SIGNIFICANCE THRESHOLD CRITERIA

Pursuant to Appendix G, Section IV of the State CEQA Guidelines, a project would have a significant impact on biological resources if it would:

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

These thresholds were utilized in completing the analysis of potential project impacts for CEQA purposes. For the purposes of this analysis, a “substantial adverse effect” is generally interpreted to mean that a potential impact could directly or indirectly affect the resiliency or presence of a local biological community or species population. Potential impacts to natural processes that support biological communities and special-status species populations that can produce similar effects are also considered potentially significant. Impacts to individuals of a species or small areas of existing biological communities may be considered less than significant if those impacts are speculative, beneficial, de minimis, and/or would not affect the resiliency of a local population.

7.0 IMPACTS AND MITIGATION EVALUATION

Using the CEQA analysis methodology outlined in Section 6.2 above, the following section describes potential significant impacts to sensitive resources within the Project Area as well as suggested mitigation measures which are expected to reduce impacts to less than significant.

7.1 Special-status Species

This section analyzes the Project's potential impacts and mitigation for special-status species in reference to the significance threshold outlined in CEQA Appendix G, Part IV (a):

> *Does the project have the potential to 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 CDFW or U.S. Fish and Wildlife Service?*

Potential impacts and mitigation for potentially significant impacts are discussed below

7.1.1 Special-status Plant Species

The Project involves permanent and temporary impacts to approximately 5.22 acres of non-native grassland that was determined to have moderate potential to support, Congdon's tarplant, Livermore tarplant, and San Joaquin spearscale. The proposed Project's construction activities due to construction of concrete medians, bioswales, and grading for base rock and asphalt and landscaping could result in the direct removal of special-status plant species and suitable habitat if they are present within the Study Area, which would be considered a significant impact.

> **Potential Impact BIO-1**: The proposed Project could result in direct and permanent impacts of approximately 5.22 acres to special-status plant species, if present, from ground-disturbing activities associated with grubbing, grading, and concrete. There is also the indirect loss of occupied habitat, if present.

To reduce potential impacts to special-status plants to a less-than-significant level, the following measure shall be implemented:

> **Mitigation Measure BIO-1**: Special-status plants
>
> Prior to any vegetation removal or ground-disturbing activities, a focused survey shall be conducted to determine the presence of special-status plant species with potential to occur within the Project disturbance footprint. Surveys shall be conducted in accordance with the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG 2009). These guidelines require rare plant surveys to be conducted at the proper time of year when rare or endangered species are both "evident" and identifiable. Field surveys shall be scheduled to coincide with known blooming periods, and/or during periods of physiological development that are necessary to identify the plant species of concern. If no special-status plant species are found, then the project will not have any impacts to the species and no additional mitigation measures are necessary. If any of the species are found on-site and cannot be avoided, the following measures shall be required:
>
> - If the survey determines that special-status plant species are present within or adjacent to the proposed Project site, direct and indirect impacts of the project on

the species shall be avoided where feasible through the establishment of activity exclusion zones, where no ground-disturbing activities shall take place, including construction of new facilities, construction staging, or other temporary work areas. Activity exclusion zones for special-status plant species shall be established prior to construction activities around each occupied habitat site, the boundaries of which shall be clearly marked with standard orange plastic construction exclusion fencing or its equivalent. The establishment of activity exclusion zones shall not be required if no construction-related disturbances would occur within 250 feet of the occupied habitat site.

- If exclusion zones and avoidance of impacts on special-status species within the Project disturbance footprint are not feasible, then the loss of individuals or occupied habitat of special-status plants shall be compensated using the habitat mitigation rations impacts on habitat for the species as written below as prescribed by the EACCS and obtain incidental take permit from CDFW for state listed species. Before the implementation of compensation measures, the Project Applicant shall provide detailed information to the CDFW and lead agency on the quality of preserved habitat, location of the preserved occurrences, provisions for protecting and managing the areas, the responsible parties involved, and other pertinent information that demonstrates the feasibility of the compensation.
- Compensation recommendations from the EACCS are as follows:
  - Temporary effects to State and federally listed species, such as Livermore tarplant at 1.1:1
  - Congdon's tarplant at 5:1 or above through coordination with relevant regulatory agencies

Implementation of these mitigation measures will reduce potential impacts to special-status plant species to a level that is less than significant by identifying the presence or absence of the species and if present avoiding the existing individuals

7.1.2 Special-status Wildlife Species

Crotch's bumble bee

Project activities such as grubbing, vegetation removal, grading, and impermeable surface installation will directly remove 5.22 acres of potentially suitable foraging and nesting habitat. Project landscaping will temporarily impact potential Crotch's bumble bee foraging habitat. If the species is present, impacts to Crotch's bumble bees or their occupied habitats would considered a potentially **significant impact** under CEQA,

Potential Impact BIO-2: If Crotch bumble bee is present, the Project will result in permanent impacts to foraging and nesting habitat for the species, if as a result of conversion of grassland to hardscape and installation or ornamental landscaping.

To reduce potential impacts to Crotch bumble bee to a less-than-significant level, the following measures shall be implemented:

Mitigation Measure BIO-2: Prior to start of construction, a qualified biologist shall conduct a survey for Crotch bumble bee during the flight season May to August. If Crotch bumble bee is not present, no further mitigation measures are recommended. If the species is present the following measures can be implemented:

- If CBB is observed, or if this project is going to construction before a pre-construction survey can be done, presence of CBB shall be assumed and the following shall be performed
    - Mow or remove flowering resources in the early Spring to prevent foraging bees from being attracted to the site.
    - A qualified biological monitor for CBB shall be present during construction activities. The monitor shall conduct a preconstruction nesting survey following the CDFW 2023 Survey Considerations and if any nests are encountered, a buffer of 10 feet will be established until the end of the nesting season.
    - Prior to construction the biological monitor shall conduct a worker environmental awareness program training (WEAP).
    - If any bumble bees are observed in the Project Area, all work shall stop until the bee can be identified as not CBB, or if CBB, moves off-site.

Implementation of these mitigation measures will reduce potential impacts to Crotch bumble bee to a level that is less than significant.

<u>Nesting birds</u>

Project plans have the potential to result in direct or indirect impacts including nest abandonment to nesting birds protected by the MBTA and CFGC, which would be considered a **potentially significant impact** under CEQA.

> **Potential Impact BIO-3:** Project activities such as tree removal, grubbing, grading and increased noise, dust and physical encroachment could result in direct and indirect impacts to nesting birds.

To reduce potential impacts to nesting birds to a less-than-significant level, the following measures shall be implemented:

> **Mitigation Measure BIO-3:**
>
> <u>Nesting bird Season: February 1 through August 31</u>
>
> If ground disturbance or removal of vegetation occurs between February 1 and August 31, pre-construction surveys shall be performed by a qualified biologist no more than 14 days prior to commencement of such activities to determine the presence and location of nesting bird species. If active nests are present, establishment of temporary protective nesting season buffers will avoid direct mortality of these birds, nests, or young. The appropriate buffer distance is dependent on the species, surrounding vegetation, and topography and can be determined by following *Nesting Bird Buffer* guidelines (PGE 2015) as appropriate to prevent nest abandonment and direct mortality during construction.

Non-nesting Season: September 1 through January 31

Ground disturbance and removal of vegetation within the Study Area does not require pre-construction surveys if performed between September 1 and January 31.

Implementation of these mitigation measures would reduce potential impacts to nesting birds to a level that is less than significant.

7.2 Sensitive Natural Communities and Land Cover Types

This section addresses the question:

> *b) Does 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 CDFW or U.S. Fish and Wildlife Service;*

No sensitive land cover types were found within the Study Area, **no impacts** are anticipated.

7.3 Aquatic Resources

This section analyzes the Project's potential impacts and mitigation for wetlands and other areas presumed or determined to be within the jurisdiction of the Corps or BCDC in reference to the significance threshold outlined in CEQA Appendix G, Part IV (c):

> *c) Does the Project have the potential to have a substantial adverse effect on state or 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;*

No sensitive aquatic resources were found within the Study Area, **no impacts** are anticipated.

7.4 Wildlife Corridors and Native Wildlife Nursery Sites

This section analyzes the Project's potential impacts and mitigation for habitat corridors and linkages in reference to the significance threshold outlined in CEQA Appendix G, Part IV (d):

> *d) Does the Project have the potential to 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 wildlife corridors or native wildlife nursery sites were found within the Study Area, **no impacts** are anticipated.

7.5 Local Policies and Ordinances

This section analyzes the Project's potential impacts and mitigation based on conflicts with local policies and ordinances in reference to the significance threshold outlined in CEQA Appendix G, Part IV (e):

e) Does the Project have the potential to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;

Local plans and policies related to biological resources examined in this analysis are:

City of Livermore General Plan

- Vegetation communities (Policy OSC-1.2-P2, OSC-1.2-P4, OSC-1.2-P5, etc.)
- Plant Species (Policy OSC-1-P4, OSC-1.2-P6, OSC-1.2-P8, etc.)
- Wildlife Species (Policy OSC-1-P4, OSC-1.2-P1, OSC-1.2-P6, OSC-1.2-P8, etc.)
- Wildlife Corridors (Policy OSC-1-P1, OSC-1.2-P12, OSC-1.2-P13, etc.)

City of Livermore Isabel Neighborhood Specific Plan

- Vegetation communities (Policy ENV-19, EN-28)
- Plant Species (Policy ENV-21, ENV-22, ENV-23, ENV-24)
- Wildlife Species (Policy ENV-21, ENV-23, ENV-24, ENV-25, ENV-27)
- Wildlife Corridors (Policy ENV-23)

The Project entirely avoids sensitive land cover types, sensitive biological communities, and wildlife corridors as they are not present within the Study Area. The Project is therefore consistent with the City of Livermore General Plan and Isabel Neighborhood Specific Plan policies regarding protecting natural biological communities, aquatic resources and wildlife corridors and **no impact** will occur related to these local policies during project components.

The Project has potential to impact special status species with grading activities, installation of hardscape and landscaping features. However, the Project will remain complaint with the general Plan and INSP by following the **Mitigation Measures BIO-1 to BIO-3** of Section 7.1 of this report and the general avoidance measures of the INSP, P-ENV-22, and the avoidance measures of EACCS, GEN-01 to GEN-15, listed below (City of Livermore 2009; City of Livermore 2020):

- *Cleaning construction equipment and vehicles in a designated wash area prior to entering and exiting the construction site.*
- *Minimizing surface disturbance to the greatest extent feasible to complete the work.*
- *Using native, non-invasive species or non-persistent hybrids in erosion control plantings to stabilize site conditions and prevent invasive plant species from colonizing.*
- *Using weed free imported erosion control materials (or rice straw) in upland areas.)*
- *Employees and contractors performing construction activities will receive environmental se nsitivity training. Training will include review of environmental laws and Avoidance and Mi nimization Measures (AMMs) that must be followed by all personnel to reduce or avoid effe cts on covered species during construction activities.*
- *Environmental tailboard trainings will take place on an asneeded basis in the field. The en vironmental tailboard trainings will include a brief review of the biology of the covered spe cies and guidelines that must be followed by all personnel to reduce or avoid negative effe cts to these species during construction activities. Directors, Managers, Superintendents, an*

d the crew foremen and forewomen will be responsible for ensuring that crewmembers co mply with the guidelines.

- *Contracts with contractors, construction management firms, and subcontractors will obliga te all contractors to comply with these requirements, AMMs.*
- *The following will not be allowed at or near work sites for covered activities: trash dumpin g, firearms, open fires (such as barbecues) not required by the activity, hunting, and pets (e xcept for safety in remote locations).*
- *Vehicles and equipment will be parked on pavement, existing roads, and previously disturb ed areas to the extent practicable. Off-road vehicle travel will be minimized.*
- *Vehicles will not exceed a speed limit of 15 mph on unpaved roads within natural land-cover types, or during off-road travel.*
- *Vehicles shall be washed only at approved areas. No washing of vehicles shall occur at job sites.*
- *To discourage the introduction and establishment of invasive plant species, seed mixtures/ straw used within natural vegetation will be either rice straw or weed-free straw.*
- *Pipes, culverts and similar materials greater than four inches in diameter, will be stored so as to prevent covered wildlife species from using these as temporary refuges, and these m aterials will be inspected each morning for the presence of animals prior to being moved.*
- *Erosion control measures will be implemented to reduce sedimentation in wetland habitat occupied by covered animal and plant species when activities are the source of potential er osion problems. Plastic monofilament netting (erosion control matting) or similar material containing netting shall not be used at the project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.*
- *Stockpiling of material will occur such that direct effects to covered species are avoided. St ockpiling of material in riparian areas will occur outside of the top of bank, and preferably outside of the outer riparian dripline and will not exceed 30 days.*
- *Grading will be restricted to the minimum area necessary.*
- *Prior to ground disturbing activities in sensitive habitats, project construction boundaries a nd access areas will be flagged and temporarily fenced during construction to reduce the p otential for vehicles and equipment to stray into adjacent habitats.*

One tree will be removed during the Project, located in the southwestern portion of the Project Area in the existing parking lot. This tree does not fall under any protected categories described in the City of Livermore Tree Ordinance. Therefore, **no impact** will occur to street trees and the Project will remain compliant with the City of Livermore Tree Ordinance Chapter 12.20 *Street Trees and Tree Preservation* Article I. There are 12 "protected trees" within the Study Area, under definition 3 of Article II of the Tree Ordinance, however no work is anticipated near the protected trees and therefore there is also no conflict with Article II. Habitat Conservation Plans.

This section analyzes the Project's potential impacts and mitigation based on conflicts with any adopted local, regional, and state habitat conservation plans in reference to the significance threshold outlined in CEQA Appendix G, Part IV (f):

f) Does the Project have the potential to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Due to local growth trends of the City of Livermore, there is no HCP for the region, rather there is the EACCS. The EACS serves as a guideline for mitigation and avoidance measures to reduce impacts to special status species and sensitive natural communities, but does not allow take as an HCP does. The Project will remain compliant with the EACCS goals and objectives by following **Mitigation Measure BIO-1** to **Mitigation Measure BIO-3** written in Section 7.1, in addition to the general avoidance measures of the INSP-ENV-22 and the EACCS avoidance measures GEN-01 to GEN-15 listed in Section 7.5.

8.0 REFERENCES

Beier, P., and S. Loe. 1992. A checklist for evaluating impacts to wildlife movement corridors. Wildlife Society Bulletin 20(4):434–440.

Bumble Bee Watch. 2024. Bumble Bee Maps. Xerces Partners. Available at: https://www.bumblebeewatch.org/maps/?type=1-2&project=&user=&status=2&month=&year=&sex=&species=12&county=&state=18&page=1. Most recently accessed: July 2024.California Department of Fish and Game (CDFG). 1994. A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607. Environmental Services Division, California Department of Fish and Wildlife, Sacramento, California.

California Department of Fish and Wildlife (CDFW). 2019. *Terrestrial Habitat Connectivity*. Areas of Conservation Concern (ACE). Biogeographic Information and Observation System (BIOS). Biogeographic Data Branch. Sacramento, California. Online at: https://wildlife.ca.gov/Data/BIOS; most recently accessed: July 2024.

California Department of Fish and Wildlife (CDFW). 2024a. California Natural Community List. Biogeographic Data Branch. Vegetation Classification and Mapping Program, Sacramento, California.

California Department of Fish and Wildlife (CDFW). 2024b. California Natural Diversity Database. Biogeographic Data Branch, Vegetation Classification and Mapping Program, Sacramento, California. Available online at: https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data; most recently accessed: June 2024.

California Department of Fish and Wildlife (CDFW). 2024c. Biogeographic Information and Observation System. Biogeographic Data Branch. Sacramento, California. Online at: https://wildlife.ca.gov/Data/BIOS; most recently accessed: July 2024.

California Department of Fish and Wildlife, and California Department of Transportation. 2020. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. California Department of Fish and Wildlife, Sacramento, CA.

California Department of Transportation (CalTrans). 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration. Available online at:

https://www.wildlife.ca.gov/Conservation/Planning/Connectivity/CEHC. Most recently accessed: October 2020.

California Native Plant Society (CNPS). 2024. A Manual of California Vegetation, Online Edition. Available online at: http://vegetation.cnps.org. Most recently accessed: July 2024.

California Native Plant Society (CNPS). 2024. Rare Plant Inventory (online edition, v9.5). Sacramento, California. Online at: http://rareplants.cnps.org/; most recently accessed: July 2024.

California Soil Resource Lab (CSRL). 2024. SoilWeb. Online at: http://casoilresource.lawr.ucdavis.edu/; most recently accessed: July 2024.

Cameron, S. A., Lozier, J. D., Strange, J. P., Koch, J. B., Cordes, N., Solter, L. F., & Griswold, T. L. 2011. Patterns of widespread decline in North American bumble bees. Proceedings of the National Academy of Sciences, 108(2), 662-667.

City of Livermore. 2009. East Alameda County Conservation Strategy (EACCS). Available online at: https://www.eastalco-conservation.org/documents.html. Most recently accessed: July 2024.

City of Livermore. 2020. Isabel Neighborhood Specific Plan. Available online at: https://www.livermoreca.gov/departments/community-development/planning/specific-plans/isabel-neighborhood-specific-plan. Most recently accessed: July 2024.

City of Livermore. 2003-2025. General Plan. Available online at: https://www.livermoreca.gov/departments/community-development/planning/2003-2025-general-plan#!/. Most recently accessed: July 2024.

Consortium of California Herbaria 1 (CCH1). 2024. CCH1: Featuring California Vascular Plant Data from the Consortium of California Herbaria and Other Sources. Data provided by the Consortium of California Herbaria. Available online at: http://ucjeps.berkeley.edu/consortium/; most recently accessed: July 2024.

Consortium of California Herbaria 2 (CCH2). 2024. CCH2 Portal. Online at: http://cch2.org/portal/index.php; most recently accessed: July 2024.

Cornell Lab of Ornithology. 2024. eBird: An online database of bird distribution and abundance. Ithaca, NY. Available online at: http://www.ebird.org. Most recently accessed: June 2024.Environmental Laboratory. 1987. Corp of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Technical Report Y-87-1, Vicksburg, Mississippi.

Google Earth. 2024. Aerial Imagery 1993-2024. Most recently accessed: July 2024.

Goulson, D. 2010. Bumblebees: behaviour, ecology, and conservation. Oxford University Press on Demand.

Hatfield, R., Jepsen, S., Thorp, R., Richardson, L. & Colla, S. 2015. Bombus crotchii. The IUCN Red List of Threatened Species 2015: e.T44937582A46440211. https://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937582A46440211.en. Accessed on 09 January 2023.

Hilty, J. A., W. Z. Lidicker Jr, and A. M. Merenlender. 2019. Corridor Ecology: Linking Landscapes for Biodiversity Conservation. Second Edition. Island Press.

Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. State of California, The Resources Agency, Department of Fish and Game, Sacramento, CA.Lake, D [compiler]. 2024. Rare, Unusual, and Significant Plants of Alameda and Contra Costa Counties (web application). Berkeley, California: East Bay Chapter of the California Native Plant Society. Online at: https://rareplants.ebcnps.org/; most recently accessed: July 2024.

Lichvar, R. W., and S. McColley. 2008. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. A Delineation Manual. ERDC/CRREL TR-08-12. Cold Regions Research and Engineering Laboratory. U.S. Army Engineer Research and Development Center. Page 84. Cold Regions Research and Engineering Laboratory U.S. Army Engineer Research and Development Center, ERDC/CRREL TR-08-12, Hanover, New Hampshire.

Livermore Municipal Code. 2024. Chapter 12.20 Street Trees and Tree Preservation. Available online at: https://www.codepublishing.com/CA/Livermore/?Livermore12/Livermore1220.html&?f. Most recently accessed: July 2024.Mersel, M. K., and R. Lichvar. 2014. A guide to ordinary high water mark (OHWM) delineation for non-perennial streams in the western mountains, valleys, and coast region of the United States. Cold Regions Research and Engineering Laboratory (US).

National Marine Fisheries Service (NMFS). 2024. Essential Fish Habitat Mapper. Available online at: https://www.habitat.noaa.gov/apps/efhmapper/. Most recently accessed: June 2024.

Nationwide Environmental Title Research (NETR). 2020. Historic Aerials. Available online at: https://historicaerials.com/viewer. Most recently accessed: October 2020.

NatureServe. 2024. NatureServe Conservation Status. Available online at: http://explorer.natureserve.org/ranking.htm. Most recently accessed: July 2024.

San Francisco Estuary Institute (SFEI). 2024. California Aquatic Resource Inventory (CARI) version 0.3. Available at: https://www.ecoatlas.org/. Most recently accessed: July2023.

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A Manual of California Vegetation, 2nd Edition, Second edition. California Native Plant Society in collaboration with California Department of Fish and Game, Sacramento, CA.

Shuford, W. D., and T. Gardali, eds. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Soulé, M. E., and J. Terbough. 1999. Conserving nature at regional and continental scales - a scientific program for North America. BioScience 49(10):809–817.

Stebbins, R. C. 2003. A Field Guide to Western Reptiles and Amphibians, Third edition. Houghton Mifflin Company, Boston, MA and New York, NY.

Thomson, R. C., A. N. Wright, and H. B. Shaffer. 2016. California amphibian and reptile species of special concern. Co-published by the California Department of Fish and Wildlife and University of California Press, Oakland, California.

U.S. Army Corps of Engineers (Corps). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Page 135. U.S. Army Engineer Research and Development Center, ERDC/EL TR-08-28, Vicksburg, Mississippi.

U.S. Army Corps of Engineers (Corps). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Cost Region (Version 2.0). May.

U.S. Department of Agriculture (USDA). 2024. Web Soil Survey. Soil Survey Staff, Natural Resources Conservation Service. Available online at: https://websoilsurvey.nrcs.usda.gov/app/; most recently accessed: July 2024.

U.S. Department of Agriculture (USDA). 2024. National List of Hydric Soils. Natural Resources Conservation Service. Available online at: https://www.nrcs.usda.gov/publications/query-by-state.html; most recently accessed: July 2024.

U.S. Fish and Wildlife Service (USFWS). 2024a. National Wetlands Inventory. Available online at: http://www.fws.gov/nwi. Most recently accessed: June 2024.

U.S. Fish and Wildlife Service (USFWS). 2024b. Information for Planning and Consultation. Available online at: https://ecos.fws.gov/ipac/. Most recently accessed: June 2024.

Western Bat Working Group (WBWG). 2024. Western Species Accounts. Available online at: http://wbwg.org/western-bat-species/. Most recently accessed: July 2024.

Western Regional Climate Center. 2010. Livermore, California (044997). Accessible online at: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca4997. Most recently accessed: July 2024.

Williams, P.H., R.W. Thorp, L.L. Richardson, and S.R. Colla. 2014. Bumble bees of North America: an Identification Guide. Princeton University Press. 208 pp.

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX A. FIGURES

Path: L:\Acad 2000 Files\26000\26166-1\GIS\ArcMap\26166-1Base.aprx Layout Name:Location

Sources: National Geographic, WRA | Prepared By: kobylarz, 7/8/2024

Figure 1. Study Area Regional Location Map

Parkwest Casino 580
Biological and Wetland Assessment
Livermore, California

0 1 2 Miles

N

wra Environmental Consultants

Path: L:\Acad 2000 Files\26000\26166-1\GIS\ArcMap\26166-1Base.aprx Layout Name: Land Cover Types

Sources: USDA NAIP 2022, WRA | Prepared By: kobylarz, 7/8/2024

Figure 2. Land Cover Types in the Study Area

Parkwest Casino 580
Biological and Wetland Assessment
Livermore, California

0 125 250 Feet

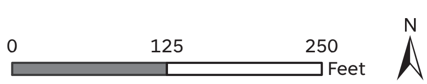
N

wra Environmental Consultants

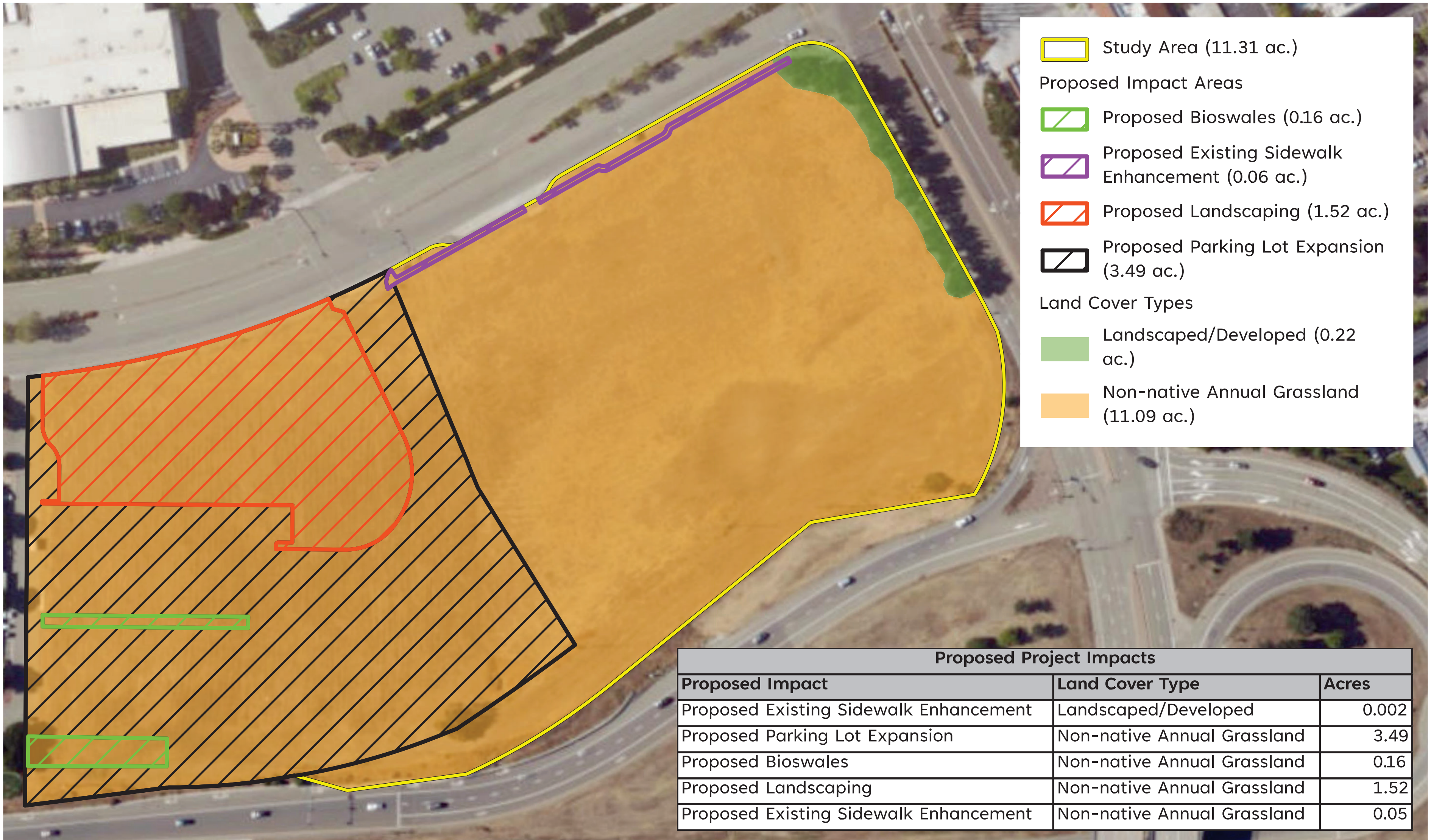
Sources: USDA NAIP Imagery 2022, USDA NRCS SSURGO, WRA | Prepared By: kobylarz, 7/11/2024

Figure 3. Soil Types within the Study Area

Parkwest Casino 580
Biological and Wetland Assessment
Livermore, California



wra Environmental Consultants



Proposed Project Impacts		
Proposed Impact	Land Cover Type	Acres
Proposed Existing Sidewalk Enhancement	Landscaped/Developed	0.002
Proposed Parking Lot Expansion	Non-native Annual Grassland	3.49
Proposed Bioswales	Non-native Annual Grassland	0.16
Proposed Landscaping	Non-native Annual Grassland	1.52
Proposed Existing Sidewalk Enhancement	Non-native Annual Grassland	0.05

Path: L:\Acad 2000 Files\26000\26166-1\GIS\ArcMap\26166-1Base.aprx Layout Name: Impacts

Sources: USDA NAIP 2022, WRA | Prepared By: kobylarz, 8/6/2024

Figure 4. Proposed Project Impacts

Parkwest Casino 580
Biological and Wetland Assessment
Livermore, California

wra Environmental Consultants

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX B. SPECIES OBSERVED IN AND AROUND THE STUDY AREA

THIS PAGE INTENTIONALLY LEFT BLANK.

Plant Species Observed within the Study Area During the Biological and Wetland Assessment on June 18, 2024

Scientific Name	Common Name	Origin	Form	Rarity Status[1]	CAL-IPC Status[2]	Wetland Status[3]	Alameda Status[4]
Carduus pycnocephalus	Italian thistle	Non-native	Annual	-	Moderate	-	-
Centaurea solstitalis	Yellow star thistle	Non-native	Annual	-	High	-	-
Brassica nigra	Black mustard	Non-native	Annual	-	Moderate	-	-
Hirschfeldia incana	Field mustard	Non-native	Perennial	-	Moderate	-	-
Convolvulus arvensis	Field bindweed	Non-native	Perennial	-	-	-	-
Melilotus indicus	indian sweetclover	Non-native	Annual	-	-	FACU	-
Avena barbata	Slender oat	Non-native	Annual	-	Moderate	-	-
Hordeum murinum	foxtail barley	Non-native	Annual	-	Moderate	FACU	-
Phalaris paradoxa	Hood canarygrass	Non-native	Annual	-	-	FAC	-
Polygonum aviculare	prostrate knotweed	Non-native	Annual/perennial	-	-	FAC	-
Rumex crispus	Curly dock	Non-native	Perennial	-	Limited	FAC	-
Trifolium hirtum	Rose clover	Non-native	Annual	-	Limited	-	-
Anthemis sp.	chamomile	Non-ntive	Annual	-	-	-	-
Pyrus calleryana	Bradford pear	Non-native	Tree	-	-	-	-
Baccharis pilularis	Coyote brush	Native	Shrub	-	-	-	-
Dittrichia graveolens	stinkwort	Non-native	Annual	-	Moderate	-	-
Bellardia trixago	Mediterranean lineseed	Non-native	Annual	-	Limited	-	-

Note: All species identified using the *Jepson eFlora* [Jepson Flora Project (eds.) 2024]; nomenclature follows *Jepson eFlora* [Jepson Flora Project (eds.) 2024] or Rare Plant Inventory (CNPS 2024). Sp.: "species", intended to indicate that the observer was confident in the identity of the genus but uncertain which species.

*Special-status only at native occurrences. The Study/Project Area does not contain a native occurrence of this species.

[1] **California Native Plant Society. 2024. Rare Plant Inventory (online edition, v9.5). Sacramento, California. Online at: http://rareplants.cnps.org/; most recently accessed: July 2024.**

FE:	Federal Endangered
FT:	Federal Threatened
SE:	State Endangered
ST:	State Threatened
SR:	State Rare
Rank 1A:	Plants presumed extinct in California
Rank 1B:	Plants rare, threatened, or endangered in California and elsewhere
Rank 2:	Plants rare, threatened, or endangered in California, but more common elsewhere

Rank 3:	Plants about which we need more information – a review list
Rank 4:	Plants of limited distribution – a watch list

[2] **California Invasive Plant Council. 2024. California Invasive Plant Inventory Database. California Invasive Plant Council, Berkeley, CA. Online at: http://www.cal-ipc.org/paf/; most recently accessed: July 2024.**

High:	Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.
Moderate:	Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited-moderate distribution ecologically
Limited:	Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically
Assessed:	Assessed by Cal-IPC and determined to not be an existing current threat

[3] **U.S. Army Corps of Engineers. 2022. National Wetland Plant List, version 3.6. Engineer Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH. Online at: http://wetland-plants.sec.usace.army.mil/**

OBL:	Almost always found in wetlands
FACW:	Usually found in wetlands
FAC:	Equally found in wetlands and uplands
FACU:	Usually not found in wetlands
UPL:	Almost never found in wetlands
NL:	Not listed, assumed almost never found in wetlands
NI:	No information; not factored during wetland delineation

[4] **Lake, D [compiler]. 2024. Rare, Unusual, and Significant Plants of Alameda and Contra Costa Counties (web application). Berkeley, California: East Bay Chapter of the California Native Plant Society. Online at: https://rareplants.ebcnps.org/; most recently accessed: July 2024.**

A1:	Locally Rare Species. Species occurring in two or fewer regions in Alameda and Contra Costa counties
A1x:	Locally Rare Species. Species presumed extirpated from Alameda and Contra Costa counties
A1?:	Locally Rare Species. Species possibly occurring in Alameda and Contra Costa counties. Identification or location is uncertain
A2:	Locally Rare Species. Plants occurring in three to five regions or are otherwise threatened in Alameda and Contra Costa counties.
B:	High Priority Watch List. Plants occurring in six to nine regions in Alameda and Contra Costa counties.
C:	Second Priority Watch List. Plants occurring in ten to fifteen regions in Alameda and Contra Costa counties.
*:	Ranks preceded by an asterisk (e.g. "*A1") also have a statewide rarity ranking
#:	Ornamental plantings are not considered locally rare. The individuals in the Project Area are ornamental plantings

Wildlife Species Observed Within and Around the Study Area

SCIENTIFIC NAME	COMMON NAME	STATUS[1a]
	BIRDS	
Ardea alba	Great egret (fly over)	none
Corvus brachyrhynchos	American crow	none
Columba livia	Rock dove	none
	MAMMALS	
Odocoileus hemionus hemionus	Black tailed deer	none
Otospermophilus beecheyi	California ground squirrel	none
	Tree squirrel	none
	INVERTEBRATES	
Bombus vosnesenskii	Yellow-faced bumble bee	none
[1a]California Department Fish and Wildlife. California National Diversity Database. 2024.		

THIS PAGE INTENTIONALLY LEFT BLANK.

APPENDIX C. SPECIAL-STATUS SPECIES POTENTIAL TABLE

THIS PAGE INTENTIONALLY LEFT BLANK.

Appendix C. Potential for Special Status Plant and Wildlife Species to Occur within the Study Area. List Compiled from the California Department of Fish and Wildlife Natural Diversity Database (CDFW 2024), U.S. Fish and Wildlife Service Information for Planning and Consultation Species Lists (USFWS 2024), and California Native Plant Society Rare Plant Inventory (CNPS 2024) search of the Livermore, Dublin, Altamont, diablo, Tassajara, Bryon Hot Springs, Niles, La Costa Valley, and Mendenhall Springs U.S. Geological Survey 7.5' quadrangles.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
		PLANTS		
Santa Clara thorn-mint *Acanthomintha lanceolata*	Rank 4.2	Chaparral (often serpentine), cismontane woodland, coastal scrub. Elevation ranges from 260 to 3935 feet (80 to 1200 meters). Blooms Mar-Jun.	**No Potential.** No suitable habitat is present within the Study Area,	No further actions are recommended.
large-flowered fiddleneck *Amsinckia grandiflora*	FE, SE, Rank 1B.1	Cismontane woodland, valley and foothill grassland. Elevation ranges from 885 to 1805 feet (270 to 550 meters). Blooms (Mar)Apr-May.	No Potential. No suitable habitat is present within the Study Area.	No further actions are recommended.
Slender silver moss *Anomobryum julaceum*	Rank 4.2	Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest. Moss which grows on damp rocks and soil; acidic substrates. Usually seen on roadcuts. 100-1000 m.	**No Potential.** No suitable habitat is present within the Study Area, there is no moss growing on damp rocks for the species to propagate.	No further actions are recommended.
Mt. Diablo manzanita *Arctostaphylos auriculata*	Rank 1B.3	Chaparral, cismontane Woodland in canyons and on slopes of sandstone. 180-565 m.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Contra Costa manzanita *Arctostaphylos manzanita* ssp. *laevigata*	Rank 1B.2	Chaparral and rocky slopes at around 150-610 m.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California androsace *Androsace elongata* ssp. *acuta*	Rank 4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland. Elevation ranges from 490 to 4280 feet (150 to 1305 meters). Blooms Mar-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
alkali milk-vetch *Astragalus tener* var. *tener*	Rank 1B.2	Playas, valley and foothill grassland (adobe clay), vernal pools. Elevation ranges from 5 to 195 feet (1 to 60 meters). Blooms Mar-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
heartscale *Atriplex cordulata* var. *cordulata*	Rank 1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland (sandy). Elevation ranges from 0 to 1835 feet (0 to 560 meters). Blooms Apr-Oct.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
crownscale *Atriplex coronata* var. *coronata*	Rank 4.2	Chenopod scrub, valley and foothill grassland, vernal pools. Elevation ranges from 5 to 1935 feet (1 to 590 meters). Blooms Mar-Oct.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
brittlescale *Atriplex depressa*	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools. Elevation ranges from 5 to 1050 feet (1 to 320 meters). Blooms Apr-Oct.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
lesser saltscale *Atriplex minuscula*	Rank 1B.1	Chenopod scrub, playas, valley and foothill grassland. Elevation ranges from 50 to 655 feet (15 to 200 meters). Blooms May-Oct.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
big-scale balsamroot Balsamorhiza macrolepis	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 150 to 5100 feet (45 to 1555 meters). Blooms Mar-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
big tarplant *Blepharizonia plumosa*	Rank 1B.1	Valley and foothill grassland. Elevation ranges from 100 to 1655 feet (30 to 505 meters). Blooms Jul-Oct.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Mt. Diablo fairy-lantern *Calochortus pulchellus*	Rank 1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. Elevation ranges from 100 to 2755 feet (30 to 840 meters). Blooms Apr-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Oakland star-tulip *Calochortus umbellatus*	Rank 4.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Elevation ranges from 330 to 2295 feet (100 to 700 meters). Blooms Mar-May.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Congdon's tarplant *Centromadia parryi ssp. congdonii*	Rank 1B.1	Valley and foothill grassland (alkaline). Elevation ranges from 0 to 755 feet (0 to 230 meters). Blooms (Apr)May-Oct(Nov).	**Moderate Potential.** The Study Area contains moderate alkali conditions, the presence of associated species, and a seed source within close proximity within the direction of the prevailing winds.	See recommended mitigation measures in Section 7.1.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
hispid salty bird's-beak *Chloropyron molle ssp. hispidum*	Rank 1B.1	Meadows and seeps, playas, valley and foothill grassland. Elevation ranges from 5 to 510 feet (1 to 155 meters). Blooms Jun-Sep.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
palmate-bracted bird's-beak *Chloropyron palmatum*	FE, SE, Rank 1B.1	Chenopod scrub, valley and foothill grassland. Elevation ranges from 15 to 510 feet (5 to 155 meters). Blooms May-Oct.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Santa Clara red ribbons *Clarkia concinna* ssp. *automixa*	Rank 4.3	Chaparral, cismontane woodland. Elevation ranges from 295 to 4920 feet (90 to 1500 meters). Blooms (Apr)May-Jun(Jul).	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
small-flowered morning-glory *Convolvulus simulans*	Rank 4.2	Chaparral (openings), coastal scrub, valley and foothill grassland. Elevation ranges from 100 to 2430 feet (30 to 740 meters). Blooms Mar-Jul.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Livermore tarplant *Deinandra bacigalupii*	SE, Rank 1B.1	Meadows and seeps (alkaline). Elevation ranges from 490 to 605 feet (150 to 185 meters). Blooms Jun-Oct.	**Moderate Potential.** The Study Area contains grassland habitat with moderately alkaline clay soils. The species is also tolerant to disturbance.	See recommended mitigation measures in Section 7.1.
Hospital Canyon larkspur *Delphinium californicum* ssp. *interius*	Rank 1B.2	Chaparral (openings), cismontane woodland (mesic), coastal scrub. Elevation ranges from 640 to 3595 feet (195 to 1095 meters). Blooms Apr-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
recurved larkspur *Delphinium recurvatum*	Rank 1B.2	Chenopod scrub, cismontane woodland, valley and foothill grassland. Elevation ranges from 10 to 2590 feet (3 to 790 meters). Blooms Mar-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Mt. Diablo buckwheat *Eriogonum truncatum*	Rank 1B.1	Chaparral, coastal scrub, valley and foothill grassland. Dry, exposed clay or sandy substrates. 105-350 m.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
bay buckwheat *Eriogonum umbellatum* var. *bahiiforme*	Rank 4.2	Cismontane woodland, lower montane coniferous forest. Elevation ranges from 2295 to 7220 feet (700 to 2200 meters). Blooms Jul-Sep.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Jepson's woolly sunflower *Eriophyllum jepsonii*	Rank 4.3	Chaparral, cismontane woodland, coastal scrub. Elevation ranges from 655 to 3365 feet (200 to 1025 meters). Blooms Apr-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Jepson's coyote-thistle *Eryngium jepsonii*	Rank 1B.2	Valley and foothill grassland, vernal pools. Elevation ranges from 10 to 985 feet (3 to 300 meters). Blooms Apr-Aug.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
diamond-petaled California poppy *Eschscholzia rhombipetala*	Rank 1B.1	Valley and foothill grassland (alkaline, clay). Elevation ranges from 0 to 3200 feet (0 to 975 meters). Blooms Mar-Apr.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Joaquin spearscale *Extriplex joaquinana*	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland. Elevation ranges from 5 to 2740 feet (1 to 835 meters). Blooms Apr-Oct.	**Moderate Potential.** The Study Area contains moderate alkali conditions, the presence of associated species, and a seed source within close proximity within the direction of the prevailing winds.	See recommended mitigation measures in Section 7.1.
stinkbells *Fritillaria agrestis*	Rank 4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland. Elevation ranges from 35 to 5100 feet (10 to 1555 meters). Blooms Mar-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
fragrant fritillary *Fritillaria liliacea*	Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Elevation ranges from 10 to 1345 feet (3 to 410 meters). Blooms Feb-Apr.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
phlox-leaf serpentine bedstraw *Galium andrewsii* ssp. *gatense*	Rank 4.2	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation ranges from 490 to 4755 feet (150 to 1450 meters). Blooms Apr-Jul.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Diablo helianthella *Helianthella castanea*	Rank 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Elevation ranges from 195 to 4265 feet (60 to 1300 meters). Blooms Mar-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
hogwallow starfish *Hesperevax caulescens*	Rank 4.2	Valley and foothill grassland (mesic clay), vernal pools (shallow). Elevation ranges from 0 to 1655 feet (0 to 505 meters). Blooms Mar-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Brewer's western flax *Hesperolinon breweri*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 100 to 3100 feet (30 to 945 meters). Blooms May-Jul.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Ferris' goldfields *Lasthenia ferrisiae*	Rank 4.2	Vernal pools (alkaline, clay). Elevation ranges from 65 to 2295 feet (20 to 700 meters). Blooms Feb-May.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
legenere *Legenere limosa*	Rank 1B.1	Vernal pools. Elevation ranges from 5 to 2885 feet (1 to 880 meters). Blooms Apr-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
serpentine leptosiphon *Leptosiphon ambiguus*	Rank 4.2	Cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 395 to 3710 feet (120 to 1130 meters). Blooms Mar-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
bristly leptosiphon *Leptosiphon aureus*	Rank 4.2	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Elevation ranges from 180 to 4920 feet (55 to 1500 meters). Blooms Apr-Jul.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Mt. Hamilton coreopsis *Leptosyne hamiltonii*	Rank 1B.2	Cismontane woodland (rocky). Elevation ranges from 1805 to 4265 feet (550 to 1300 meters). Blooms Mar-May.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Hall’s bushmallow *Malacothamnus hallii*	Rank 1B.2	Chaparral and coastal scrub, with some populations on serpentine. Elevations from 10-735 m.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
woodland woollythreads *Monolopia gracilens*	Rank 1B.2	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, north coast coniferous forest (openings), valley and foothill grassland. Elevation ranges from 330 to 3935 feet (100 to 1200 meters). Blooms (Feb)Mar-Jul.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
prostrate vernal pool navarretia *Navarretia prostrata*	Rank 1B.2	Coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pools. Elevation ranges from 10 to 3970 feet (3 to 1210 meters). Blooms Apr-Jul.	**No Potential.** Although some suitable soils present within the Study Area, there is no aquatic resources that would create vernal pools, therefore no suitable habitat is present.	No further actions are recommended.
Mt. Diablo phacelia *Phacelia phaceliodes*	Rank 1B.2, A2*	Chaparral and cismontane woodland adjacent to trails, on rock outcrops and talus slopes; sometimes on serpentine. Elevations from 605-1345 m.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Michael's rein orchid *Piperia michaelii*	Rank 4.2	Chaparral, cismontane woodland, closed-cone coniferous forest, coastal bluff scrub, coastal scrub, lower montane coniferous forest. Elevation ranges from 10 to 3000 feet (3 to 915 meters). Blooms Apr-Aug.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
hairless popcornflower *Plagiobothrys glaber*	Rank 1A	Marshes and swamps (coastal salt), meadows and seeps (alkaline). Elevation ranges from 50 to 590 feet (15 to 180 meters). Blooms Mar-May.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Oregon polemonium *Polemonium carneum*	Rank 2B.2	Coastal prairie, coastal scrub, lower montane coniferous forest. Elevation ranges from 0 to 6005 feet (0 to 1830 meters). Blooms Apr-Sep.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
California alkali grass *Puccinellia simplex*	Rank 1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland, vernal pools. Elevation ranges from 5 to 3050 feet (2 to 930 meters). Blooms Mar-May.	**No Potential.** Although some suitable soils present within the Study Area, there is no aquatic resources that would create vernal pools, therefore no suitable habitat is present.	No further actions are recommended.
chaparral harebell *Ravenella exigua*	Rank 1B.2	Chaparral (rocky, usually serpentine). Elevation ranges from 900 to 4100 feet (275 to 1250 meters). Blooms May-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
chaparral ragwort *Senecio aphanactis*	Rank 2B.2	Chaparral, cismontane woodland, coastal scrub. Elevation ranges from 50 to 2625 feet (15 to 800 meters). Blooms Jan-Apr(May).	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
long-styled sand-spurrey *Spergularia macrotheca* var. *longistyla*	Rank 1B.2	Marshes and swamps, meadows and seeps. Elevation ranges from 0 to 835 feet (0 to 255 meters). Blooms Feb-May.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
most beautiful jewelflower *Streptanthus albidus* ssp. *peramoenus*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation ranges from 310 to 3280 feet (95 to 1000 meters). Blooms (Mar)Apr-Sep(Oct).	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Mt. Diablo jewelflower *Streptanthus hispidus*	Rank 1B.3	Valley and foothill grassland, chaparral where talus or rocky outcrops are present at elevations from 245-975 m.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
northern slender pondweed *Stuckenia filiformis* ssp. *alpina*	Rank 2B.2	Marshes and swamps (shallow freshwater). Elevation ranges from 985 to 7055 feet (300 to 2150 meters). Blooms May-Jul.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
California seablite *Suaeda californica*	FE, Rank 1B.1	Marshes and swamps (coastal salt). Elevation ranges from 0 to 50 feet (0 to 15 meters). Blooms Jul-Oct.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
saline clover *Trifolium hydrophilum*	Rank 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation ranges from 0 to 985 feet (0 to 300 meters). Blooms Apr-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
caper-fruited tropidocarpum *Tropidocarpum capparideum*	Rank 1B.1	Valley and foothill grassland (alkaline hills). Elevation ranges from 5 to 1495 feet (1 to 455 meters). Blooms Mar-Apr.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
oval-leaved viburnum *Viburnum ellipticum*	Rank 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation ranges from 705 to 4595 feet (215 to 1400 meters). Blooms May-Jun.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
WILDLIFE				

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
MAMMALS				
Townsend's big-eared bat *Corynorhinus townsendii*	SSC, WBWG High	Associated with a wide variety of habitats from deserts to higher-elevation mixed and coniferous forests. Females form maternity colonies in buildings, caves and mines, and males roost singly or in small groups. Foraging typically occurs at edge habitats near wooded areas, e.g. along streams.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Berkeley kangaroo rat *Dipodomys heermanni berkeleyenis*	SCC	Open grassy hilltops, ridgetops and open spaces in chaparral and blue oak/digger pine woodlands. Needs fine, deep, well-drained soil for burrowing.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
hoary bat *Lasiurus cinereus*	WBWG Medium	Prefers open forested habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths.	**No Potential.** There is no suitable roosting or foraging habitat for the species.	No further actions are recommended.
Yuma myotis *Myotis yumanensis*	WBWG Medium	Known for its ability to survive in urbanized environments. Also found in heavily forested settings. Day roosts in buildings, trees, mines, caves, bridges and rock crevices. Night roosts associated with man-made structures.	**No Potential.** There is no suitable roosting or foraging habitat for the species.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	SSC	Forest habitats of moderate canopy and moderate to dense understory. Also in chaparral habitats. Constructs nests of shredded grass, leaves, and other material. May be limited by availability of nest-building materials.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
American badger *Taxidea taxus*	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST, RP	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
BIRDS				
Cooper's hawk *Accipiter cooperii*	DFG:WL not SSC or BCC	Occurs year-round throughout much of California. Favors a variety of forest and woodland habitats, including in towns and urban areas with suitable tree cover. Nests in trees. Preys on birds.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
sharp-shinned hawk *Accipiter striatus*	DFG:WL	Year-round resident and winter visitor in California. Breeds in forest habitats, usually containing conifers; wintering birds may occur in more open areas. Likely a sparse breeder in southern California. Preys on birds.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
grasshopper sparrow *Ammodramus savannarum*	SSC	Summer resident. Breeds in open grasslands in lowlands and foothills, generally with low- to moderate-height grasses and scattered shrubs. Well-hidden nests are placed on the ground.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
golden eagle *Aquila chrysaetos*	SFP	Occurs year-round in rolling foothills, mountain areas, sage-juniper flats, and deserts. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees, usually within otherwise open areas.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
great blue heron *Ardea herodias*	none (breeding sites protected by CDFW); CDF sensitive	Year-round resident. Nests colonially or semi-colonially in tall trees and on cliffs, also sequested terrestrial substrates. Breeding sites usually in close proximity to foraging areas: marshes, lake margins, tidal flats, and rivers. Forages primarily on fishes and other aquatic prey, also smaller terrestrial vertebrates.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
burrowing owl *Athene cunicularia*	SSC	Year-round resident and winter visitor. Occurs in open, dry grasslands and scrub habitats with low-growing vegetation, perches and abundant mammal burrows. Preys upon insects and small vertebrates. Nests and roosts in old mammal burrows, most commonly those of ground squirrels.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
ferruginous hawk *Buteo regalis*	BCC	Winter visitor to open habitats, including grasslands, sagebrush flats, scrub, and low foothills surrounding valleys. Preys on mammals. Does not breed in California.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Swainson's hawk *Buteo swainsoni*	ST, BCC	Summer resident in California's Central Valley and limited portions of the southern California interior. Nests in tree groves and isolated trees in riparian and agricultural areas, including near buildings. Forages in grasslands and scrub habitats as well as agricultural fields, especially alfalfa. Preys on arthropods year-round as well as smaller vertebrates during the breeding season.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
northern harrier *Circus hudsonius (cyaneus)*	SSC	Year-round resident and winter visitor. Found in open habitats including grasslands, prairies, marshes and agricultural areas. Nests on the ground in dense vegetation, typically near water or otherwise moist areas. Preys on small vertebrates.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
white-tailed kite *Elanus leucurus*	SFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
California horned lark *Eremophila alpestris actia*	DFG:WL not SSC or BCC	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
prairie falcon *Falco mexicanus*	BCC	Year-round resident and winter visitor. Inhabits dry, open terrains, including foothills and valleys. Breeding sites located on steep cliffs. Forages widely.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
American peregrine falcon *Falco peregrinus anatum*	SFP, BCC	Year-round resident and winter visitor. Occurs in a wide variety of habitats, though often associated with coasts, bays, marshes and other bodies of water. Nests on protected cliffs and also on man-made structures including buildings and bridges. Preys on birds, especially waterbirds. Forages widely.	**No Potential.** No suitable nesting habitat is present within the Study Area.	No further actions are recommended.
bald eagle *Haliaeetus leucocephalus*	SE, SFP, BCC	Occurs year-round in California, but primarily a winter visitor; breeding population is growing. Nests in large trees in the vicinity of larger lakes, reservoirs and rivers. Wintering habitat somewhat more variable but usually features large concentrations of waterfowl or fish.	**No Potential.** No suitable nesting habitat is present within the Study Area.	No further actions are recommended.
loggerhead shrike *Lanius ludovicianus*	SSC, BCC	Year-round resident in open woodland, grassland, savannah and scrub. Prefers areas with sparse shrubs, trees, posts, and other suitable perches for foraging. Preys upon large insects and small vertebrates. Nests are well-concealed in densely-foliaged shrubs or trees.	**No Potential.** No suitable foraging or nesting habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California black rail *Laterallus jamaicensis coturniculus*	ST, SFP	Year-round resident in marshes (saline to freshwater) with dense vegetation within four inches of the ground. Prefers larger, undisturbed marshes that have an extensive upper zone and are close to a major water source. Extremely secretive and cryptic.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Alameda song sparrow *Melospiza melodia pusillula*	BCC, SSC	Year-round resident of salt marshes bordering the south arm of San Francisco Bay. Inhabits primarily pickleweed marshes; nests placed in marsh vegetation, typically shrubs such as gumplant.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
REPTILES & AMPHIBIANS				
Blainville's (Coast) horned lizard *Phrynosoma blainvillii (coronatum)*	SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Prefers friable, rocky, or shallow sandy soils for burial; open areas for sunning; bushes for cover; and an abundant supply of ants and other insects.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
foothill yellow-legged frog - central coast DPS *Rana boylii pop. 4*	FT, SE	Found in or adjacent to rocky streams in a variety of habitats. Prefers partly-shaded, shallow streams and riffles with a rocky substrate; requires at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis. Feeds on both aquatic and terrestrial invertebrates.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
California red-legged frog *Rana draytonii*	FT, SSC, RP	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Disperses through upland habitats after rains.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
western spadefoot *Spea (=Scaphiopus) hammondii*	SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Shallow temporary pools formed by winter rains are essential for breeding and egg-laying.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Joaquin whipsnake *Masticophis flagellum ruddocki*	SSC	Found in valley grassland and saltbush scrub in the San Joaquin Valley in open, dry habitats with little or no tree cover. Requires mammal burrows for refuge and breeding sites.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Inhabits chaparral and foothill-hardwood habitats in the eastern Bay Area. Prefers south-facing slopes and ravines with rock outcroppings where shrubs form a vegetative mosaic with oak trees and grasses and small mammal burrows provide basking and refuge.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
California tiger salamander *Ambystoma californiense*	FT, ST, RP	Populations in Santa Barbara and Sonoma counties currently listed as endangered; threatened in remainder of range. Inhabits grassland, oak woodland, and open ruderal habitats. Adults are fossorial and utilize mammal burrows and other subterranean refugia. Breeding occurs in vernal pools and other seasonal water features.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
FISH				

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
steelhead - central CA coast DPS *Oncorhynchus mykiss irideus*	FT	Occurs from the Russian River south to Soquel Creek and Pajaro River. Also in San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
INVERTEBRATES				
obscure bumblebee *Bombus caliginosus*	none (Special Animals List)	Obscure bumble inhabits coastal meadows and open grassy prairies. Nests may be located underground or above ground in old bird or rodent nests, rock piles, tree cavities, and tufts of grass.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
Crotch bumblebee *Bombus crotchii*	SC	Range largely restricted to California, favoring grassland and scrub habitats. Typical of bumble bees, nests are usually constructed underground.	**Moderate Potential.** The Study Area contains suitable foraging habitat including yellow-star thistle (*Centaurea solstitalis*), Italian thistle (*Carduus pycnocephalus*) and mustards.	See recommended mitigation measures in Section 7.1

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
western bumble bee *Bombus occidentalis*	SC	Formerly common throughout much of western North America; populations from southern British Columbia to central California have nearly disappeared (Xerces 2015). Occurs in a wide variety of habitat types. Nests are constructed annually in pre-existing cavities, usually on the ground (e.g. mammal burrows). Many plant species are visited and pollinated.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
longhorn fairy shrimp *Branchinecta longiantenna*	FE, RP	Endemic to the eastern margin of the central coast mountains in seasonally astatic grassland vernal pools. Inhabit small, clear-water depressions in sandstone and clear-to-turbid clay/grass-bottomed pools in shallow swales.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
vernal pool fairy shrimp *Branchinecta lynchi*	FT, RP	Endemic to the grasslands of the Central Valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.
midvalley fairy shrimp *Branchinecta mesovallensis*	SSC	Known only from the Central Valley, primarily its central portions. Typically inhabits short-lived, grass-bottomed vernal pools and other seasonal water features.	**No Potential.** No suitable habitat is present within the Study Area. Outside of known species range.	No further actions are recommended.

SCIENTIFIC NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Antioch efferian robberfly *Efferia antiochi*	SSC	Known only from Antioch, Fresno, and Scout Island in the San Joaquin River.	**No Potential.** No suitable habitat is present within the Study Area.	No further actions are recommended.

Rank 1A:	Plants presumed extinct in California
Rank 1B:	Plants rare, threatened, or endangered in California and elsewhere
Rank 2:	Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3:	Plants about which we need more information – a review list
Rank 4:	Plants of limited distribution – a watch list
BGEPA:	Bald and Golden Eagle Protection Act Species
FC:	Federal Candidate for Listing
FE:	Federal Endangered
FT:	Federal Threatened
SC:	State Candidate for Listing
SE:	State Endangered
SFP:	State Fully Protected Animal
SR:	State Rare
SSC:	State Species of Concern
ST:	State Threatened
RP:	Recovery Plan
WBWG:	Western Bat Working Group

Potential for Occurrence:

No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

Unlikely. 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.

Present. Species was observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.

APPENDIX C

TRANSPORTATION IMPACT ANALYSIS REPORT

Traffic Impact Analysis Report

Parkwest Casino 580 Expansion

Livermore, California

August 31, 2023

Revised: September 6, 2024

Revised: October 29, 2024

Revised: November 6, 2024

TJKM

Contents

Tables

Figures

Appendices

EXECUTIVE SUMMARY

This report summarizes the results of the Traffic Impact Analysis (TIA) for the proposed gambling and on-site parking expansion of the Parkwest Casino 580 located at 968 N. Canyons Parkway in Livermore California. The project proposes to expand its facilities by providing six additional gambling table, and increasing the space for the bar, restaurant, and stage area within the existing footprint of the building. The project will also increase its parking facilities by developing the area east of the building and providing a total of 361 parking stalls, which includes existing and proposed facilities.

In addition to the foregoing, the project proposes expanded services at the proposed facilities, including: (i) increasing its hours of operations to 24 hours per day and 7 days per week; (ii) increasing the number of players per table to 10 seated layers and 10 standing or "backline betters"; (iii) increasing the maximum single bet to $1,000.00; and (iv) the playing of any game not prohibited by Section 330 of the Penal Code of the state, with the written consent of the Chief of Police.

This report provides the intersection level of service (LOS) and Vehicle Miles Traveled (VMT) related to the project. Additionally, the report also includes evaluations and recommendations concerning project site access and on-site circulation for vehicles, bicycles, and pedestrians.

To evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed project, three study intersections were evaluated during the weekday morning (a.m.) peak hour and evening (p.m.) peak hour under four study scenarios. The study intersections were evaluated under *No Project* and *Plus Project* scenarios for Existing and Cumulative conditions. For the purpose of this analysis, potential traffic operational effects from the proposed project are identified based on established operational thresholds described in the report.

Project Trip Generation

The proposed casino expansion is expected to generate approximately 26 weekday a.m. peak hour trips (14 in, 12 out), 25 weekday p.m. peak hour trips (4 in, 21 out), and 304 new daily trips.

Existing Conditions

Under this scenario, all of the study intersections operate within applicable jurisdictional Level of Service (LOS) standards during the a.m. and p.m. peak hour.

Existing plus Project Conditions

Under this scenario, all of the study intersections continue to operate within applicable jurisdictional LOS standards during the a.m. and p.m. peak hour.

Existing plus Project Queueing Analysis

The project is not expected to increase the queues that exceed storage lengths at existing turn lanes. The existing storage length of the westbound left-turn lane at N. Canyons Parkway/Waxie Driveway is sufficient for the additional trips that will use the new parking lot.

Cumulative Conditions

Under this scenario, all of the study intersections continue to operate within applicable jurisdictional LOS standards during the a.m. and p.m. peak hours.

Cumulative Plus Project Conditions

Under this scenario, all of the study intersections continue to operate within applicable jurisdictional LOS standards during the a.m. and p.m. peak hours.

Cumulative Plus Project Queueing Analysis

The project is not expected to increase the queues that exceed storage lengths at exclusive turn lanes. The storage length for the westbound left-turn lane at N. Canyons Parkway/Waxie Driveway is sufficient for the additional trips that will use the new parking lot in the cumulative scenario.

Site Access and On-Site Circulation

The proposed vehicular access to the project site is via the existing driveways on Doolan Road, N. Canyons Parkway and the new driveway at N. Canyons Parkway/Waxie Driveway. Pedestrians and bicyclists can use the existing multimodal network to access the project site. The parking aisles are wide enough to allow for two-way circulation. Based on a preliminary review of the project site plan, the site access and on-site circulation is considered adequate.

Pedestrian Impacts

The project does not conflict with existing and planned pedestrian facilities; therefore, the impact to pedestrian facilities is ***less than significant***.

Bicycle Impacts

As part of the proposed project, the Class II bicycle facility along the southern frontage of N. Canyons Parkway will be updated to a Class IV separated bikeway. The project does not conflict with existing and planned bicycle facilities; therefore, the impact to bicycle facilities is ***less than significant***.

Transit Impacts

The project site is within walking distance to two Tri-Valley Wheels bus stops that provide local and regional access. Impacts to transit service are expected to be ***less than significant.***

Parking

The project will be supplying 361 parking spaces to satisfy the demand of 352 parking spaces during peak operating hours, which leaves a surplus of 9 stalls.

Vehicle Miles Traveled

TJKM analyzed the casino project as retail. Since the project will be generating 304 new daily trips, the equivalent retail square footage would be 8,053 square feet. Based on OPR's recommendations, the VMT impact is expected to be ***less than significant*** since the retail square footage is below 50,000 square feet, which is considered as local serving retail.

1.0 INTRODUCTION

This report summarizes the results of the Traffic Impact Analysis (TIA) for the proposed gambling and on-site parking expansion of the Parkwest Casino 580 located at 968 N. Canyons Parkway in Livermore California.

1.1 Project Description

The project proposes to expand its facilities by providing six additional gambling tables, increasing the space for the bar, restaurant, and stage area within the existing footprint of the building. The project will also increase its parking facilities by developing the area east of the building and providing a total of 361 parking stalls, which includes existing and proposed facilities.

In addition to the foregoing, the project proposes expanded services at the proposed facilities, including: (i) increasing its hours of operations to 24 hours per day and 7 days per week; (ii) increasing the number of players per table to 10 seated layers and 10 standing or “backline betters”; (iii) increasing the maximum single bet to $1,000.00; and (iv) the playing of any game not prohibited by Section 330 of the Penal Code of the state, with the written consent of the Chief of Police.

The existing casino and parking facility is currently located at the southeast corner of Doolan Road/N. Canyons Parkway. The proposed parking expansion will be located at the southwest corner of N. Canyons Parkway/Waxie Driveway, adjacent to the existing casino facility. The casino entrances will remain the same, except for the south leg of the N. Canyons Parkway/Waxie Driveway intersection, which will be constructed with the parking expansion and become the main entrance to the main parking area.

The following section discusses the TIA Purpose, study intersections, and analysis scenarios.

1.2 Project Purpose

The purpose of the Traffic Impact Analysis is to evaluate the impacts on the transportation infrastructure due to the addition of the traffic from the proposed project. The report also includes evaluations and recommendations concerning project site access and on-site circulation for vehicles, bicycles, and pedestrians, queuing analysis at the study intersections, and parking supply.

1.3 Study Intersections

TJKM evaluated traffic conditions at three study intersections during the a.m. and p.m. peak hours for a typical weekday. The study intersections were selected in consultation with City of Livermore staff. The peak periods were between 7:00 a.m. – 9:00 a.m. and 4:00 p.m. – 6:00 p.m. The study intersections and associated traffic controls are as follows:

1. N. Canyons Parkway/Doolan Road
2. N. Canyons Parkway/Waxie Driveway
3. N. Canyons Parkway/Airway Boulevard

Note: All intersections are owned and operated by the City of Livermore.

Figure 1 illustrates the study intersections and the vicinity map of the proposed project. **Figure 2** shows the proposed project site plan.

1.4 Analysis Scenarios

This study addresses the following four traffic scenarios:

- **Existing Conditions** – This scenario evaluates the study intersections based on existing traffic volumes, lane geometry, and traffic controls.
- **Existing plus Project Conditions** – This scenario is identical to Existing Conditions, but with the addition of traffic from the proposed project.
- **Cumulative Conditions** – This analysis scenario evaluates future transportation conditions based on forecasted travel volumes without the project.
- **Cumulative plus Project Conditions** – This scenario is identical to Cumulative Conditions but with the addition of traffic from the proposed project.

Figure 1: Vicinity Map

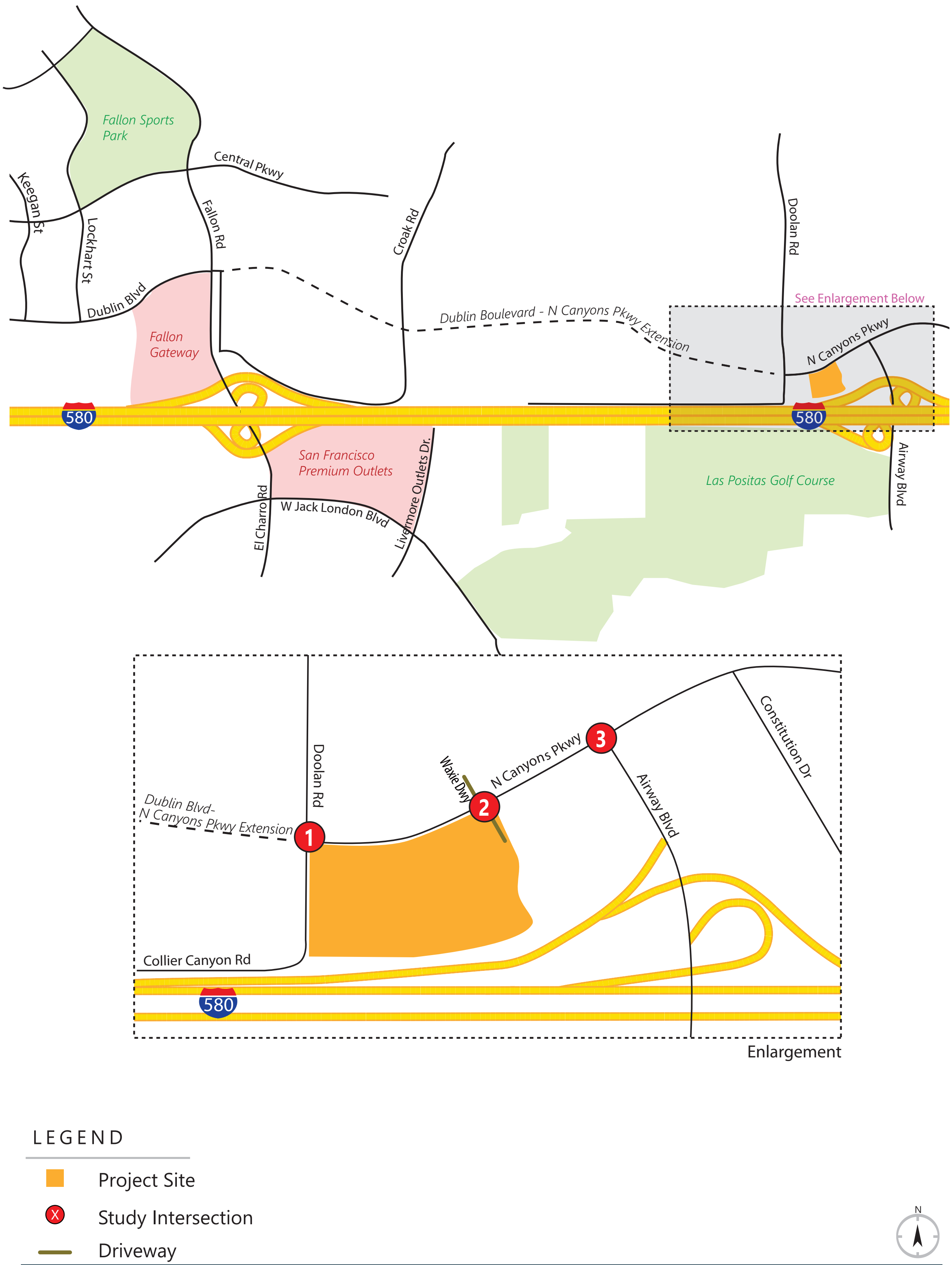
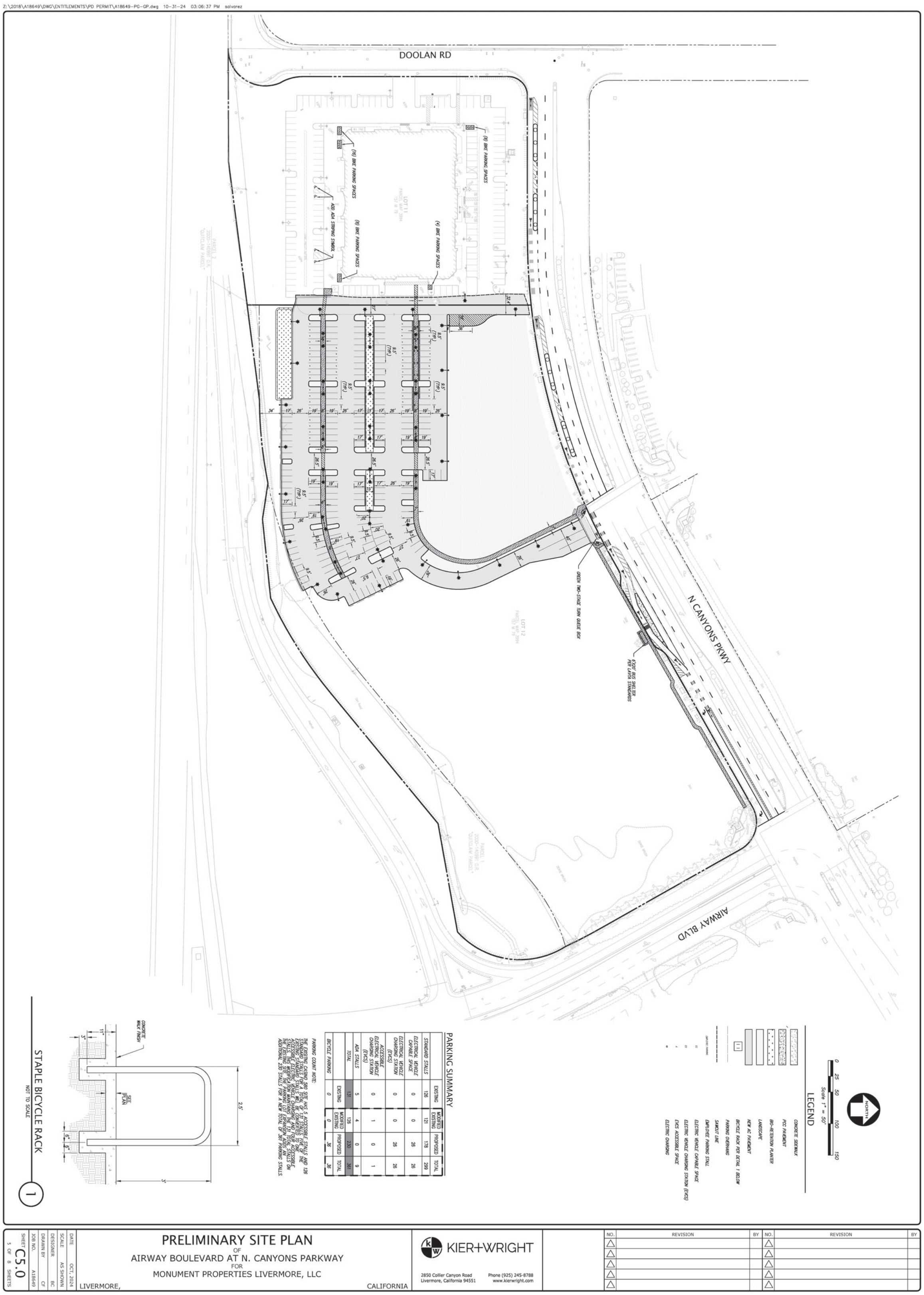


Figure 2: Site Plan



2.0 STUDY METHODOLOGY

Traffic impacts related to the proposed project were evaluated for both compliance with applicable regulatory documents and environmental significance as defined in the California Environmental Quality Act (CEQA). In Accordance with the *Technical Advisory* published by the Governor's Office of Planning and Research (OPR), a qualitative and quantitative VMT analysis forms the basis of the CEQA analysis for the proposed project. As of July1, 2020, intersection level of service (LOS) can no longer be used to determine significant impacts for CEQA purposes. However, an LOS analysis was conducted to determine consistency with City of Livermore plans and standards.

2.1 Level of Service Analysis Methodology & Standards

Level of Service (LOS) is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. The LOS generally describes these conditions in terms of such factors as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The operational LOS are given letter designations from A to F, with A representing the best operating conditions (free-flow) and F the worst (severely-congested flow with high delays). Intersections generally are the capacity-controlling locations with respect to traffic operations on arterial and collector streets. The operating conditions at all of the study intersections were analyzed using the 2000 Highway Capacity Manual (HCM) Operations Methodology contained in Synchro Software. The methodology is described in detail in **Appendix A**.

Signalized Intersections

Although level of service is no longer used for identifying impacts under CEQA, level of service analysis is still used for determining consistency with adopted agency plans and standards. Where standards refer to significant environmental impacts, this analysis instead identifies these as significant inconsistencies with adopted plans.

In brief, the LOS standard for signalized intersections in the City of Livermore is mid-level LOS D or better (average control delay equal to or less than 45.0 seconds per vehicle) with and without the project. For signalized intersections located near freeway interchanges (N. Canyons Parkway/Airway Boulevard), the LOS standard is LOS E or better. The signalized intersection experiences a significant inconsistency if:

- The project traffic added to existing conditions would result in the level of service deteriorating below the level of service threshold for signalized intersections i.e., delay greater than 45.0 seconds per vehicle or deteriorates to LOS F.
- For intersections already operating at an unacceptable LOS without the project, it is considered a significant impact if the project related traffic increases the average intersection delay by more than 5.0 seconds.

Unsignalized Intersections

The level of service standard for unsignalized intersections is delay less than or equal to 90.0 seconds. Unsignalized intersections experiences a significant inconsistency if:

- The project traffic added to existing conditions would result in the delay being greater than 90.0 seconds.

2.2 CEQA Requirements

CEQA Requirements for VMT Evaluations

Section 15064.3 describes the requirements and significance thresholds for assessing transportation impacts based on vehicle miles traveled (VMT) that apply statewide. As described in Section 15064.3:

- Land use projects: Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.
- Transportation projects: Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

The following criteria are not subject to CEQA significance criteria but should be addressed as appropriate in the findings of the traffic study:

- The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
- The project conflicts with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
- If the project substantially increases hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- The project results in inadequate emergency access
- If the project site design does not have adequate parking or circulation capacity to accommodate the anticipated demand
- If the project would result in inadequate internal circulation to accommodate project traffic.

2.3 Vehicle Miles Traveled

SB 743, which was signed into law by Governor Brown in 2013 and codified in Public Resources Code 21099, tasked OPR with establishing new criteria for determining the significance of transportation impacts under CEQA. SB 743 requires the new criteria to "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." SB 743 changes the way that public agencies evaluate the transportation impacts of projects under CEQA, recognizing that roadway congestion, while an inconvenience to drivers, is not itself an environmental impact (see Pub. Resource Code, § 21099, subd. (b)(2)). In December 2018, OPR circulated its most recent *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR) that provides recommendations and describes various options for assessing VMT for transportation analysis purposes. "Vehicle miles traveled" refers to the amount and distance of automobile travel "attributable to a project". Other relevant considerations may include the effects of the project on transit or non-motorized travel. The VMT analysis options described by OPR are primarily tailored towards single-use development residential, office or office projects, not mixed use projects and not athletic facility projects. OPR recommends the following methodology and criteria for specific land uses:

- For residential projects, OPR recommends that VMT impacts be considered potentially significant if a residential project is expected to generate VMT per Capita (i.e., VMT per resident) at a rate that exceeds 85 percent of a regional average.
- For office projects, OPR recommends that VMT impacts be considered potentially significant if an office project is expected to generate VMT per Employee at a rate that exceeds 85 percent of a regional average.
- For retail projects, OPR recommends that VMT impacts be considered potentially significant if a project results in a net increase in total VMT. This approach takes into account the likelihood that retail developments may lead to increases or decreases in VMT, depending on previously existing retail travel patterns. This approach may also be used for other types of projects with customer components.
- OPR also indicates that local serving retail (projects smaller than 50,000 square feet) may be presumed to have a less than significant VMT impact.
- OPR does not provide specific guidance on evaluating other land use types, such as casinos, except to say that other land uses could choose to use the method applicable to the land use with the most similarity to the proposed project. With consultation with the City of Livermore, TJKM utilized retail.
- For mixed-use projects, OPR describes several options that include (1) evaluating each land use separately; or (2) evaluating mixed-use projects based on the method applicable to the dominant land use. Evaluating each land use separately would potentially fail to measure the positive effects of mixed-use projects in reducing VMT.

OPR also recommends exempting some project types from VMT analysis based on the likelihood that such projects will generate low rates of VMT:

- OPR recommends that projects generating less than 110 trips per day generally may be assumed to cause a less than significant transportation impact.
- OPR notes that residential and office projects that located in areas with low VMT, and that incorporate similar features, will tend to exhibit similar low VMT, and can be screened out.

- OPR states that residential, retail, office and mixed-use projects near transit stations or major transit stops should be screened out based on the likelihood that such projects will have a less than significant impact on VMT.

If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered: a lead agency may evaluate the project's vehicle miles travelled qualitatively.

A lead agency may use models to estimate a project's vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence. In consultation with the City of Livermore, the Alameda County Transportation Commission (ACTC) VMT Tool was used. Detailed analysis is provided in Chapter 7 of this report.

3.0 EXISTING CONDITIONS

This section describes existing conditions in the immediate project site vicinity, including roadway facilities, bicycle and pedestrian facilities, and available transit service. In addition, existing traffic volumes and operations are presented for the study intersections, including the results of LOS calculations.

3.1 Existing Setting and Roadway System

Access to the proposed project is provided via N. Canyons Parkway and Doolan Road.

N. Canyons Parkway is primarily a four-lane, divided east-west major street in the City of Livermore, extending from Doolan Road to Collier Canyon Road. N. Canyons Parkway provides access to primarily commercial and retail land uses. The speed limit along N. Canyons Parkway is 40 miles per hour (mph).

Doolan Road is a two-lane, undivided rural road in Livermore and unincorporated Alameda County, extending from Collier Canyon Road to its northern terminus in unincorporated Alameda County. The speed limit along Doolan Road is 35 mph.

3.2 Existing Pedestrian Facilities

Walkability is defined as the ability to travel easily and safely between various origins and destinations without having to rely on automobiles or other motorized travel. The ideal "walkable" community includes wide sidewalks, a mix of land uses such as residential, employment, and shopping opportunities, a limited number of conflict points with vehicle traffic, easy access to transit facilities and services and a network of pedestrian facilities. Pedestrian facilities are comprised of crosswalks, sidewalks, pedestrian signals, and off-street paths, which provide safe and convenient routes for pedestrians to access the destinations such as institutions, businesses, public transportation, and recreation facilities. Along N. Canyons Parkway, the width of the sidewalk is approximately 10 feet. All of the study intersections have marked crosswalks and signalized intersections are equipped with pedestrian push buttons and pedestrian signal heads.

At the intersection of N. Canyons Parkway/Airway Boulevard, there are ADA compliant curb-ramps. On the southern portion of N. Canyons Parkway between Airway Boulevard and Doolan Road, there are currently no sidewalks.

The existing pedestrian facilities in the study area are shown in **Figure 3**.

3.3 Existing Bicycle Facilities

The 2018 City of Livermore Bicycle, Pedestrian, & Trails Active Transportation Plan outlines goals and objectives to improve the current active transportation system that includes walking and biking. The various bicycle facilities throughout the city are described below. Existing bicycle facilities in the project vicinity are illustrated in **Figure 3.** In addition to the four classes of bicycle facilities, Alameda County Transportation Commission (Alameda CTC), has adopted a set of sub-classifications for each classification.

- **Class I Shared-Use Path**: Class I bikeways are a completely separate right-of-way designed for the exclusive use of cyclists and pedestrians, with minimal crossings for motorists. These paths are often located along creeks, canals, and rail lines. There are no existing Class I facilities in the project area. Class I facilities can also be sub-classified into the following:

- Class IA for paved paths,
- Class IB for unpaved paths.

- **Class II Bike Lanes**: Class II bike lanes use special lane markings, pavement legends, and signage. Bike lanes provide designated street space for bicyclists, typically adjacent to outer vehicle travel lanes. Buffered bike lanes increase separation through painted buffers between vehicle lanes and/or parking, and green paint at conflict zones (e.g., driveways or intersections). Class II Bike Lanes are available on both sides of N. Canyons Parkway. Class II facilities can be sub-classified into the following:
    - Class IIA – conventional bicycle lanes, consisting of a single strip to delineate the lane,
    - Class IIB – with a striped buffer or with green conflict markings in the bicycle lane,
    - Class IIC – climbing bicycle lanes, which have a dedicated bicycle lane in the uphill direction and a Class III facility in the downhill direction,
    - Class IID – contraflow bicycle lanes.
- **Class III Bike Routes**: Bike routes provide enhanced mixed-traffic conditions for bicyclists through signage, sharrow striping, and or traffic calming treatments, and provide continuity to a bikeway network. Bike routes are typically designated along gaps between bike trails or bike lanes, or along low-volume, low-speed streets. Bicycle Boulevards further enhance bike routes by encouraging slower speeds and discouraging non-local vehicle traffic using traffic diverters, chicanes, traffic circles, and speed tables. There are no existing Class III facilities in the project area. Class III facilities can also be sub-classified into the following:
    - Class IIIA – for signage only routes,
    - Class IIIB – for wide curb or shoulder lanes, that may or may not include signage,
    - Class IIIC – for routes with shared lane markings i.e., sharrows, or other pavement markings, and may also include signage,
    - Class IIID – for routes with green-backed sharrows,
    - Class IIIE – for bicycle boulevards, which are signed and typical located on roadways with low volumes.
- **Class IV Bikeway**: Bikeways are also known as cycle tracks or separated bikeways, are set aside for the exclusive use of bicycles and physically separated from vehicle traffic. Separated bikeways were adopted by Caltrans in 2015. Separation may include grade separation, flexible posts, physical barriers, or on-street parking. There are no existing Class IV facilities in the project area. Class IV facilities can be sub-classified into the following:
    - Class IVA – for one-way separated bikeways,
    - Class IVB – for two-way separated bikeways,

3.4 Existing Transit Facilities

Tri-Valley Wheels provides transit service throughout Dublin, Pleasanton, Livermore, and unincorporated Alameda County. The main transit center in Livermore is the Livermore Transit Center, located in Downtown Livermore. From the Transit Center, riders can connect to Dublin/Pleasanton BART, Lawrence Livermore Lab, Las Positas College as well as local destinations. **Table 1** summarizes the existing Wheels service in the project vicinity. **Figure 4** illustrates the existing transit facilities.

Table 1: Existing Tri-Valley Wheels Transit Service

Route	From	To	Weekdays		Weekends	
			Operating Hours	Headway (minutes)	Operating Hours	Headway (minutes)
30R	West Dublin BART	East/Vasco & LLNL	5:06 a.m. – 10:45 p.m.	30-60	5:09 a.m. – 10:42 p.m.	60

Source: Tri-Valley Wheels Website

Figure 3: Existing Pedestrian and Bicycle Facilities

Figure 4: Existing Transit Facilities

3.5 Existing Peak Hour Traffic Volumes And Lane Configurations

The existing operations of the study intersections were evaluated for the highest one-hour volumes during weekday morning and evening peak periods. Due to the COVID-19 Pandemic and shelter-in-place orders, the ability to collect accurate new traffic counts is limited. Where available, turning movement counts conducted during the Draft EIR of the Dublin Boulevard/N. Canyons Parkway extension were used. New counts were conducted at one study intersections (N. Canyons Parkway/Waxie Driveway) where recent counts were unavailable, plus one proxy intersection that had been previously counted to use as a baseline count reference. Turning movement volumes at the new intersection were then adjusted based on the change in traffic between pre-Covid and during Covid at the proxy intersection of N. Canyons Parkway/Airway Boulevard (intersection #3). New turning movement counts for vehicles, bicycles, and pedestrians were conducted during the weekday a.m. peak period (7:00-9:00 a.m.) and p.m. peak period (4:00-6:00 p.m.) at these study intersections in February 2021. **Appendix B** includes all data sheets for the collected vehicle, bicycle, and pedestrian counts. **Figure 5** illustrates the existing lane geometry, traffic controls, and peak hour volumes for the a.m. and p.m. peak hours at the study intersections.

3.6 Intersection Level of Service Analysis – Existing Conditions

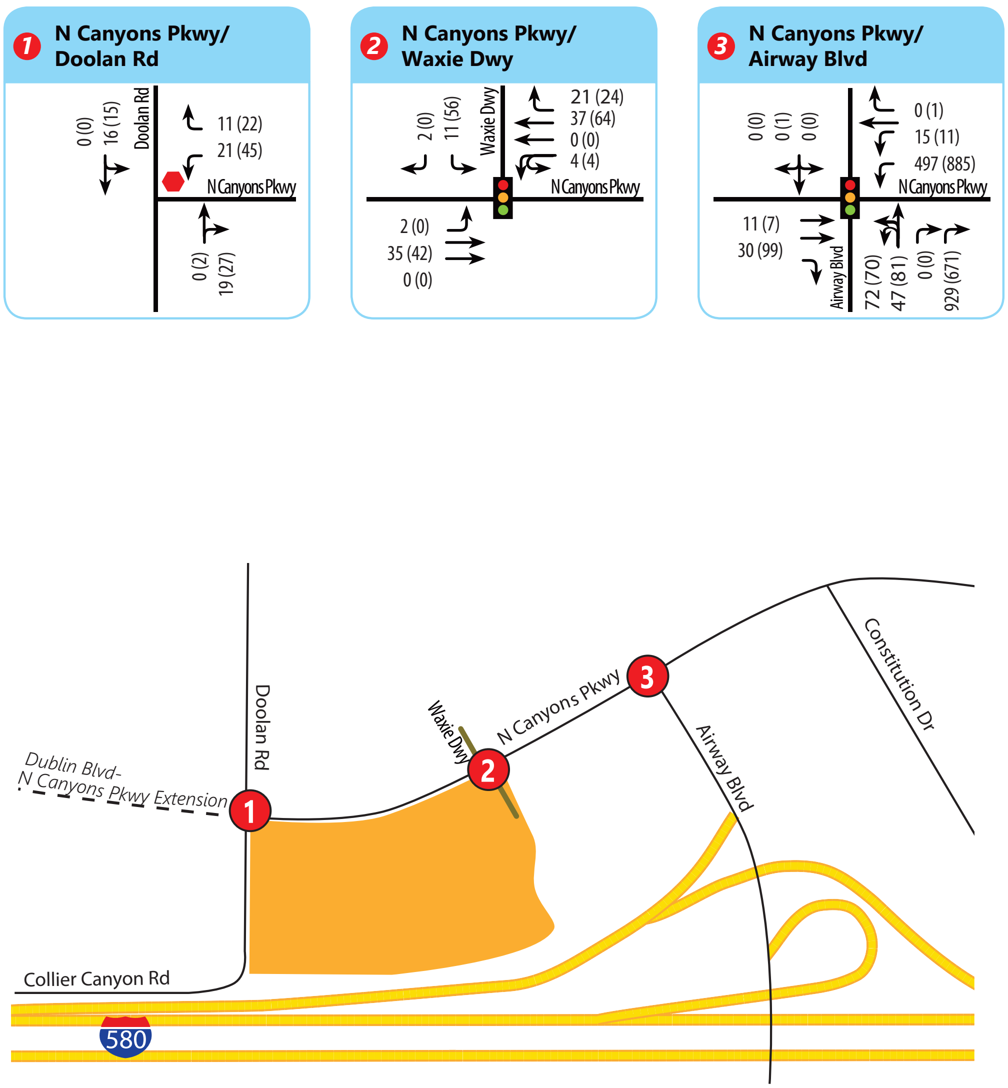
Existing intersection lane configurations, signal timings, and turning movement volumes are used to calculate the level of service for the study intersections during each peak hour. **Table 2** below summarizes peak hour LOS at the study intersections under Existing Conditions. Under this scenario, all of the study intersections operate at the applicable jurisdictional service levels of service for both the a.m. and p.m. peak hour. LOS worksheets are provided in **Appendix C**.

Table 2: Intersection Level of Service Analysis – Existing Conditions

#	Intersection	Control	Peak Hour[1]	Existing Conditions Delay[2]	Existing Conditions LOS[3]
1	N. Canyons Pkwy/Doolan Road	One-Way Stop	AM	9.0	A
			PM	9.2	A
2	N. Canyons Pkwy/Waxie Dwy-Future Casino Parking	Signal	AM	6.9	A
			PM	11.3	B
3	N. Canyons Pkwy/Airway Blvd	Signal	AM	31.1	C
			PM	24.0	C

Notes:
1. AM – morning peak hour, PM – evening peak hour
2. Delay – Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop – controlled intersections.
3. LOS – Level of Service. **Bold** indicates unacceptable LOS and Delay.

Figure 5: Existing Conditions Lane Geometry, Traffic Controls, and Peak Hour Volumes



LEGEND

Project Site

Study Intersection

Project Access

Stop Sign

Traffic Signal

XX AM Peak Hour Volumes

(XX) PM Peak Hour Volumes

N

4.0 EXISTING PLUS PROJECT CONDITIONS

The impacts of the proposed project on the transportation system are discussed in this chapter. First, the method used to estimate the amount of traffic generated by the project is described. Then, the results of the level of service calculations for Existing plus Project Conditions are presented. (Existing plus Project Conditions are defined as Existing Conditions plus traffic generated by the proposed project). A comparison of intersections under Existing plus Project Conditions and Existing Conditions is presented and the impacts of the project on the study intersections are discussed.

The amount of traffic added to the roadway system by the proposed development is estimated using a three-step process.

- Trip Generation – Estimates the amount of traffic added to the roadway network,
- Trip Distribution – Estimates the direction of travel to and from the project site,
- Trip Assignment – The new trips are assigned to specific street segments and intersection turning movements.

4.1 Project Trip Generation

TJKM developed estimated project trip generation for the proposed casino expansion based on employee and player entry/exit data that the Casino collected over three months (data is attached in **Appendix B**). The data collected includes players, those at the casino tables, and backline bettors. The data was collected based on entry and exit tracking, ensuring no one using the casino tables or simply moving around was overlooked. This approach accounted for everyone entering and exiting, including employee shift changes. Although the Casino attracts large amounts of patrons over a 24-hour period, most of the peak hour traffic is generated by employees at shift breaks. Based on the data and increases in parking and gambling tables, the project is expected to generate 26 new trips (14 in, 12 out) in the a.m. peak hour, 25 new trips (4 in, 21 out) in the p.m. peak hour, and 304 new daily trips.

4.2 Project Trip Distribution and Assignment

Trip distribution is a process that determines in what proportion vehicles would be expected to travel between the project site and various destinations outside the project study area and also determines the various routes that vehicles would take from the project site to each destination using the calculated trip distribution.

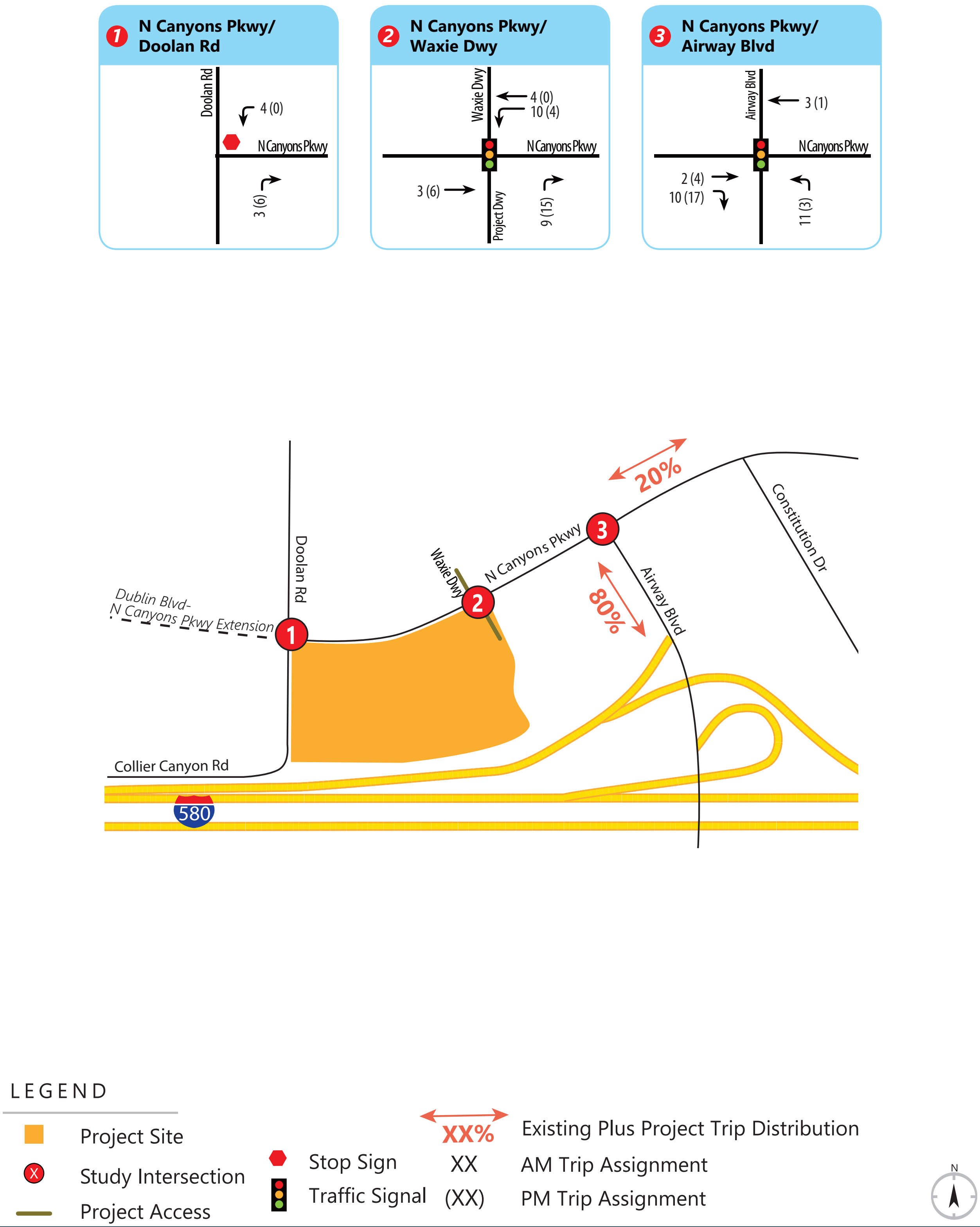
Trip distribution assumptions for the proposed casino expansion and parking lot project were developed based on the existing travel patterns and TJKM's knowledge of the study area.

The distribution assumptions are as follows**:**

- 20 percent to/from N. Canyons Parkway east of Airway Boulevard
- 80 percent to/from Airway Boulevard south of N. Canyons Parkway

Figure 6 illustrates the trip distribution percentages and trip assignment project volumes developed for the proposed project. The assigned project trips were then added to traffic volumes under Existing Conditions to generate Existing plus Project Conditions traffic volumes.

Figure 6: Project Trip Distribution and Assignment



4.3 Intersection Level of Service Analysis – Existing plus Project Conditions

The intersection LOS analysis results for Existing plus Project Conditions are summarized in **Table 3**. Detailed calculation sheets for Existing plus Project Conditions are contained in **Appendix D**. All study intersections are expected to continue operating within the applicable jurisdictional standards in both the a.m. and p.m. peak hour. The results for Existing Conditions are included for comparison purposes.

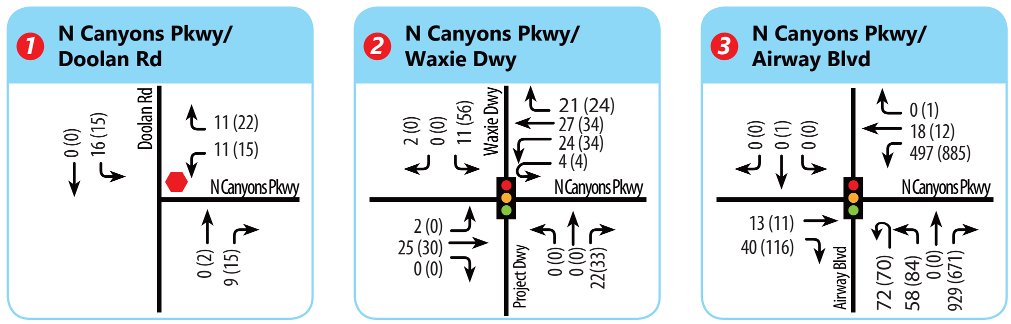
Figure 7 displays projected peak hour turning movement volumes at all of the study intersections for Existing plus Project Conditions.

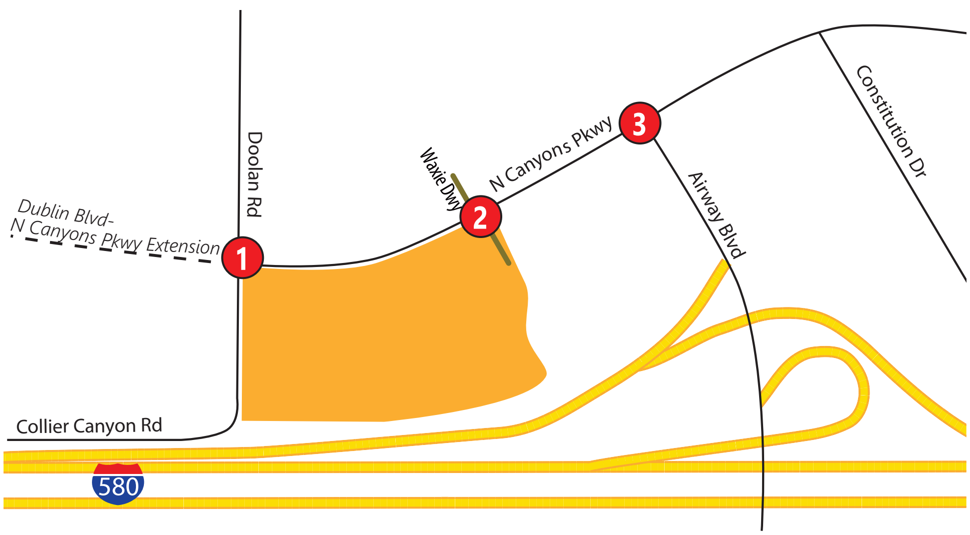
Table 3: Intersection Level of Service Analysis – Existing plus Project Conditions

#	*Study Intersections*	*Control*	*Peak Hour*[1]	*Existing Conditions*		*Existing Plus Project Conditions*	
				Delay[2]	*LOS*[3]	*Delay*[2]	*LOS*[3]
1	N. Canyons Pkwy/Doolan Road	One-Way Stop	AM	9.0	A	8.9	A
			PM	9.2	A	8.9	A
2	N. Canyons Pkwy/Waxie Dwy-Future Casino Parking	Signal	AM	6.9	A	7.2	A
			PM	11.3	B	8.9	A
3	N. Canyons Pkwy/Airway Blvd	Signal	AM	31.1	C	30.7	C
			PM	24.0	C	24.1	C

Notes:
1. AM – morning peak hour, PM – evening peak hour
2. Delay – Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop – controlled intersections.
3. LOS – Level of Service. **Bold** indicates unacceptable Level of Service.
It should be noted that some of the intersections are estimated to show a decrease in intersection delay due to the addition of project trips to non-critical turn movements. That is, more vehicles would be using the intersection during the peak hour but on non-critical lanes and movements, so the average delay per vehicle decreases.

Figure 7: Existing Plus Project Volumes





LEGEND

- Project Site
- Study Intersection
- Project Access
- Stop Sign
- Traffic Signal
- XX AM Peak Hour Volumes
- (XX) PM Peak Hour Volumes

N

4.4 Queuing Analysis – Existing Plus Project Conditions

TJKM conducted a vehicle queueing and storage analysis for exclusive left and right turn pockets at the study intersections for Existing and Existing plus Project Conditions. The 95th percentile queues were analyzed using Synchro 10.0 software. Detailed calculations are included in the LOS appendices corresponding to each analysis scenario. **Table 4** summarizes the 95th percentile queue lengths at selected study intersections under Existing and Existing plus Project scenarios.

Table 4: 95th Percentile Queues at Study Intersections

#	Intersection	Lane Group	Storage Length	Existing		Existing plus Project Conditions		Change	
				AM	PM	AM	PM	AM	PM
2	N. Canyons Pkwy/Waxie Dwy	EBL	215	0	0	0	0	0	0
		WBL	145	10	10	20	30	10	20
		WBR	90	0	0	0	0	0	0
		NBR	50	N/A	N/A	0	0	0	0
		SBL	-	10	30	10	30	0	0
		SBR	-	0	0	0	0	0	0
3	N. Canyons Pkwy/Airway Blvd	EBR	230	0	40	0	50	0	10
		WBL	300	220	**450**	220	**460**	0	10
		WBR	195	0	0	0	0	0	0
		NBLT	550	130	170	140	170	10	0
		NBR	-	20	30	20	30	0	0

Notes: Storage length and 95th percentile queue is expressed in feet per lane
AM – morning peak hour, PM – evening peak hour
1 vehicle = 25 feet
Bold indicates queue lengths exceeding capacity

It should be noted that there are two westbound left-turn lanes at N. Canyons Parkway/Airway Boulevard. One of the lanes is a trap lane that extends upstream to N. Canyons Parkway/Constitution Drive, and there is an additional lane near the intersection. Project traffic is expected to use the northbound left-turn at N. Canyons Parkway/Airway Boulevard, but impacts are minimal.

The existing storage length of the westbound left-turn lane at N. Canyons Parkway/Waxie Driveway is sufficient for the additional trips that will use the new parking lot. This is because there is very light commute peak traffic generated by the Casino.

4.5 Signal Warrant Analysis

Traffic signal warrants are a series of standards that provide guidelines for determining if a traffic signal is appropriate. Signal warrant analyses are typically conducted at intersections of uncontrolled major streets and stop sign-controlled minor streets. If one or more signal warrants are met, signalization of the intersection may be appropriate. However, a signal should not be installed if none of the warrants are met, since the installation of signals would increase delays on the previously uncontrolled major street, and may increase the occurrence of particular types of accidents.

As stated in the 2014 edition of the Manual on Uniform Traffic Control Devices (MUTCD), "An engineering study of traffic conditions, pedestrian characteristics, and physical characteristics of the location shall be performed to determine whether installation of a traffic control signal is justified at a particular location. The investigation of the need for a traffic control signal shall include an analysis of the applicable factors contained in the following traffic signal warrants and other factors related to existing operation and safety at the study location."

This analysis focused on the peak hour warrant. The MUTCD states that, "This (peak hour) signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time." So the peak hour warrant is being used in this impact analysis study as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed the peak hour warrant are considered (for the purposes of this impact analysis) to be likely to meet one or more of the other signal warrants (such as the four-hour or eight-hour warrants). This peak hour analysis is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction.

A peak hour signal warrant analysis was conducted for the intersection of N. Canyons Parkway/Doolan Road for Existing and Existing plus Project Conditions. The results of the peak hour warrant analysis are summarized in **Table 5**. The results show that the study intersection does not meet the MUTCD peak hour warrant during the a.m. and p.m. peak period in Existing or Existing plus Project conditions. Peak hour signal warrant analysis work sheets are provided in **Appendix E.**

Table 5: Peak Hour Warrant Analysis

Intersection	***Control***	***Existing Conditions***		***Existing Plus Project Conditions***	
		Meets AM Peak Hour?	***Meets PM Peak Hour?***	***Meets AM Peak Hour?***	***Meets PM Peak Hour?***
N. Canyons Parkway/Doolan Road	One-Way Stop	No	No	No	No

5.0 CUMULATIVE CONDITIONS

This chapter presents the results of the level of service calculations under Cumulative Conditions without the project. Level of service analysis at the study intersections were conducted for Cumulative Conditions to establish a base to evaluate the impacts due to the addition of traffic from the proposed project. Cumulative volumes for the study intersections were referenced from the *Dublin Boulevard – North Canyons Parkway Extension Project Draft EIR* (2019) and include the additional traffic that will travel through N. Canyons Parkway/Dublin Boulevard. The following assumptions were made for Cumulative Conditions analysis:

- Completion of the Dublin Boulevard/N. Canyons Parkway connection,
- Signalization of Dublin Boulevard-N. Canyons Parkway/Doolan Road
- Intersection improvements to N. Canyons Parkway/Airway Boulevard
    - Shifting the median of the northbound approach of Airway Boulevard one lane to the west reducing the southbound lanes from three to two and increasing the number of northbound lanes.
    - Converting the northbound approach to have one left-turn lane, one shared left/through lane, and two right-turn lanes.
    - Converting the westbound approach to have two left-turn lanes, one through lane, one shared through/right-turn lane.

Figure 8 illustrates the Cumulative Conditions lane geometry, traffic controls, and volumes.

5.1 Intersections Level of Service Analysis – Cumulative Conditions

The intersection LOS analysis results for Cumulative Conditions without the proposed project are summarized in **Table 6**. Detailed calculation sheets for Cumulative Baseline Conditions are contained in **Appendix F**.

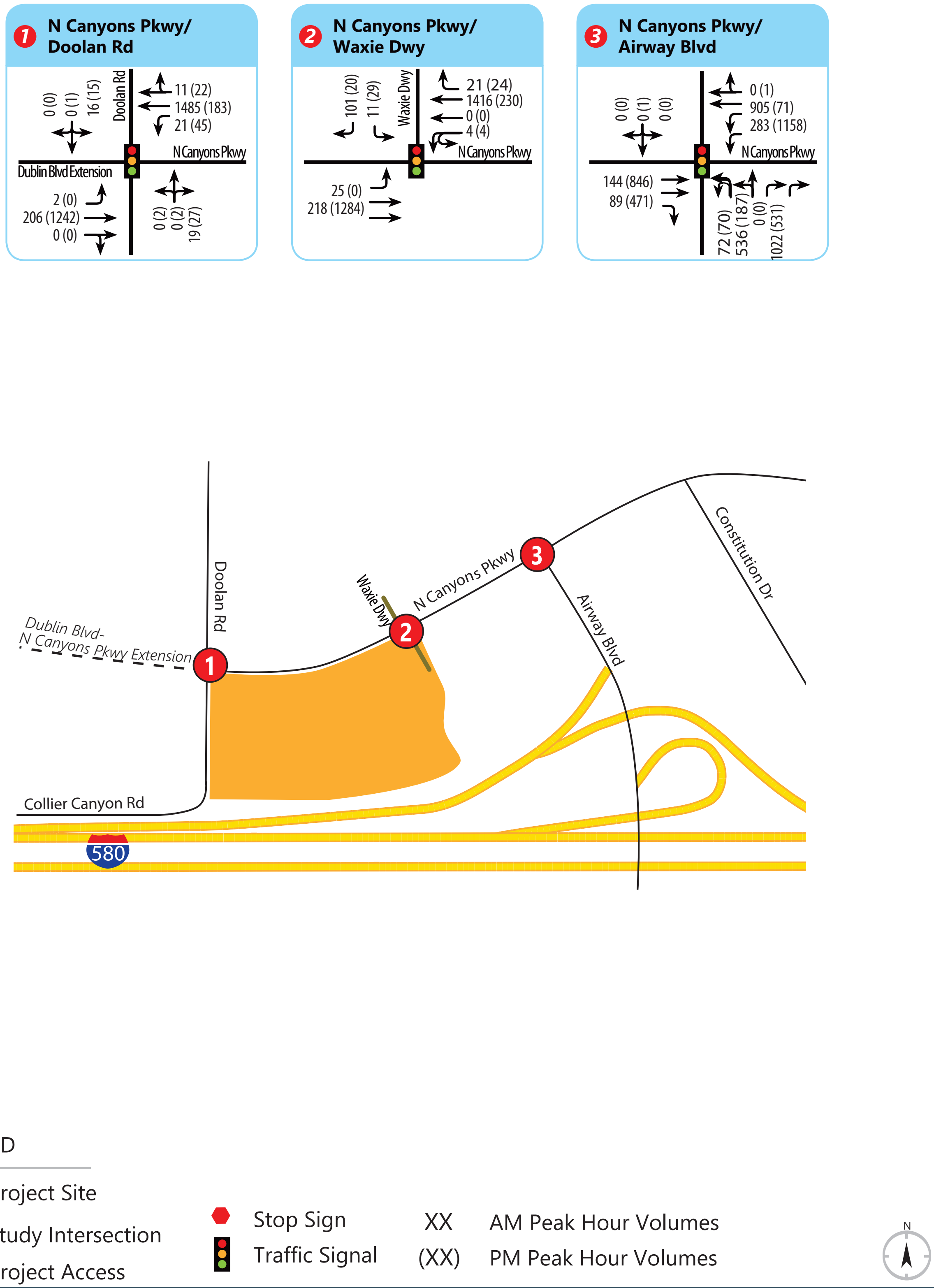
All of the study intersections are projected to operate within the applicable jurisdictional standards during the a.m. and p.m. peak hours.

Table 6: Intersection Level of Service Analysis – Cumulative Conditions

#	*Study Intersections*	*Control*	*Peak Hour[1]*	*Cumulative Conditions*	
				Delay[2]	*LOS[3]*
1	N. Canyons Pkwy/Doolan Road	Signal	AM	3.1	A
			PM	6.4	A
2	N. Canyons Pkwy/Waxie Dwy-Future Casino Parking	Signal	AM	7.4	A
			PM	5.1	A
3	N. Canyons Pkwy/Airway Blvd	Signal	AM	23.2	C
			PM	62.2	E

Notes:
1. AM – morning peak hour, PM – evening peak hour
2. Delay – Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop – controlled intersections.
3. LOS – Level of Service. **Bold** indicates unacceptable LOS and Delay.

Figure 8: Cumulative Lane Geometry, Traffic Controls and Volumes



6.0 CUMULATIVE PLUS PROJECT CONDITIONS

This scenario is identical to Cumulative Conditions, with the addition or projected traffic from the proposed development. Trip generation is identical to Existing plus Project Conditions. Trip distribution and assignment are slightly modified since the Dublin Boulevard/N. Canyons Parkway connection was assumed to be completed in the cumulative scenario. The modified trip distribution is summarized below:

- 20 percent to/from N. Canyons Parkway east of Airway Boulevard
- 65 percent to/from Airway Boulevard south of N. Canyons Parkway
- 15 percent to/from Dublin Boulevard west of Doolan Road

Figure 9 shows the project trip distribution and assignment for the cumulative scenario. **Figure 10** shows the Cumulative plus Project volumes.

6.1 Intersection Level of Service Analysis – Cumulative Plus Project Conditions

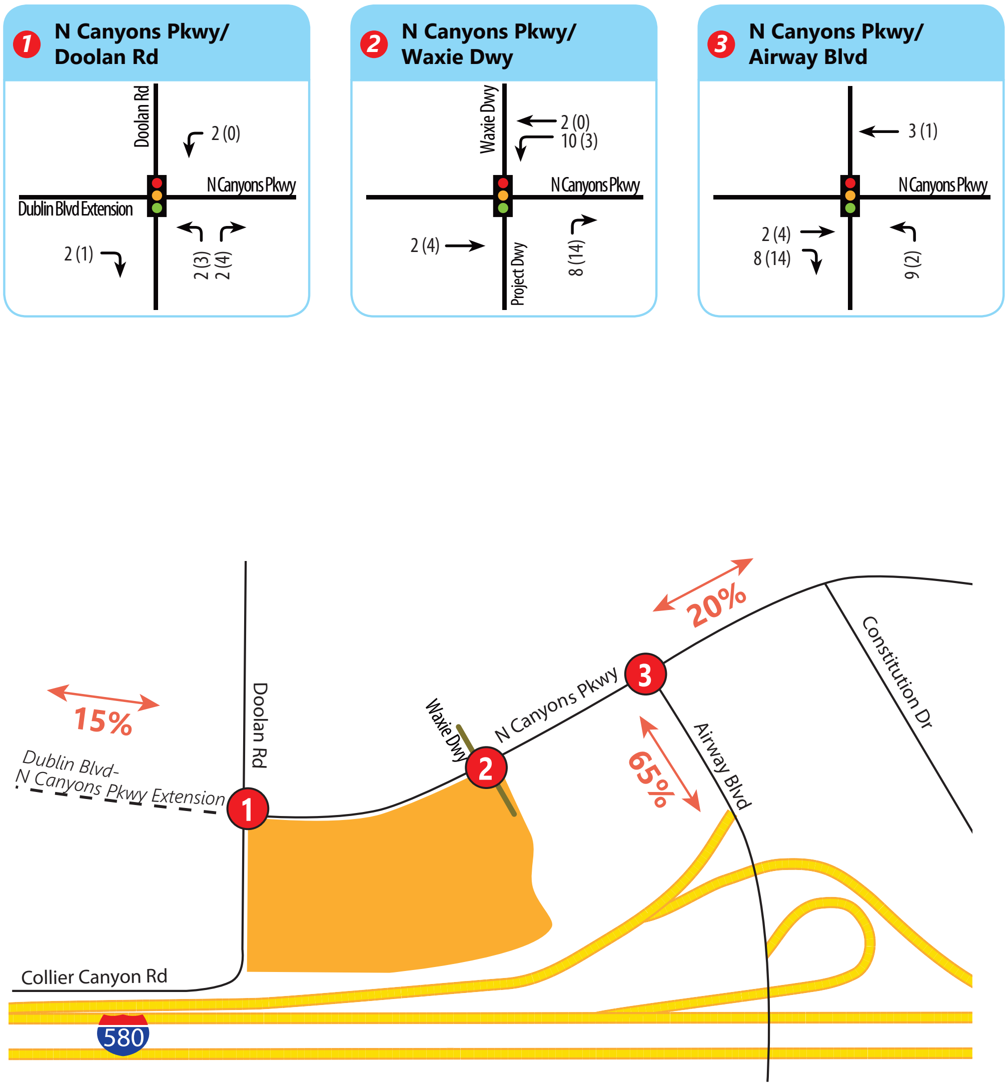
The intersection LOS analysis results for Cumulative plus Project Conditions are summarized in **Table 7**. Detailed calculation sheets for Cumulative plus Project Conditions are contained in **Appendix G**. With the addition of project trips to Cumulative Conditions, all of the study intersections are projected to operate within the applicable jurisdictional standards during the a.m. and p.m. peak.

Table 7: Intersection Level of Service Analysis – Cumulative plus Project Conditions

#	Study Intersections	Control	Peak Hour[1]	Cumulative Conditions		Cumulative Plus Project Conditions	
				Delay[2]	LOS[3]	Delay[2]	LOS[3]
1	N. Canyons Pkwy/Doolan Road	Signal	AM	3.1	A	2.7	A
			PM	6.4	A	4.7	A
2	N. Canyons Pkwy/Waxie Dwy-Future Casino Parking	Signal	AM	7.4	A	7.8	A
			PM	5.1	A	6.9	A
3	N. Canyons Pkwy/Airway Blvd	Signal	AM	23.2	C	23.4	C
			PM	62.2	E	63.6	E

Notes:
1. AM – morning peak hour, PM – evening peak hour
2. Delay – Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop – controlled intersections.
3. LOS – Level of Service. **Bold** indicates unacceptable Level of Service.
It should be noted that some of the intersections are estimated to show a decrease in intersection delay due to the addition of project trips to non-critical turn movements. That is, more vehicles would be using the intersection during the peak hour but on non-critical lanes and movements, so the average delay per vehicle decreases.

Figure 9: Cumulative Project Trip Distribution and Assignment



LEGEND

Project Site

Study Intersection

Project Access

Stop Sign

Traffic Signal

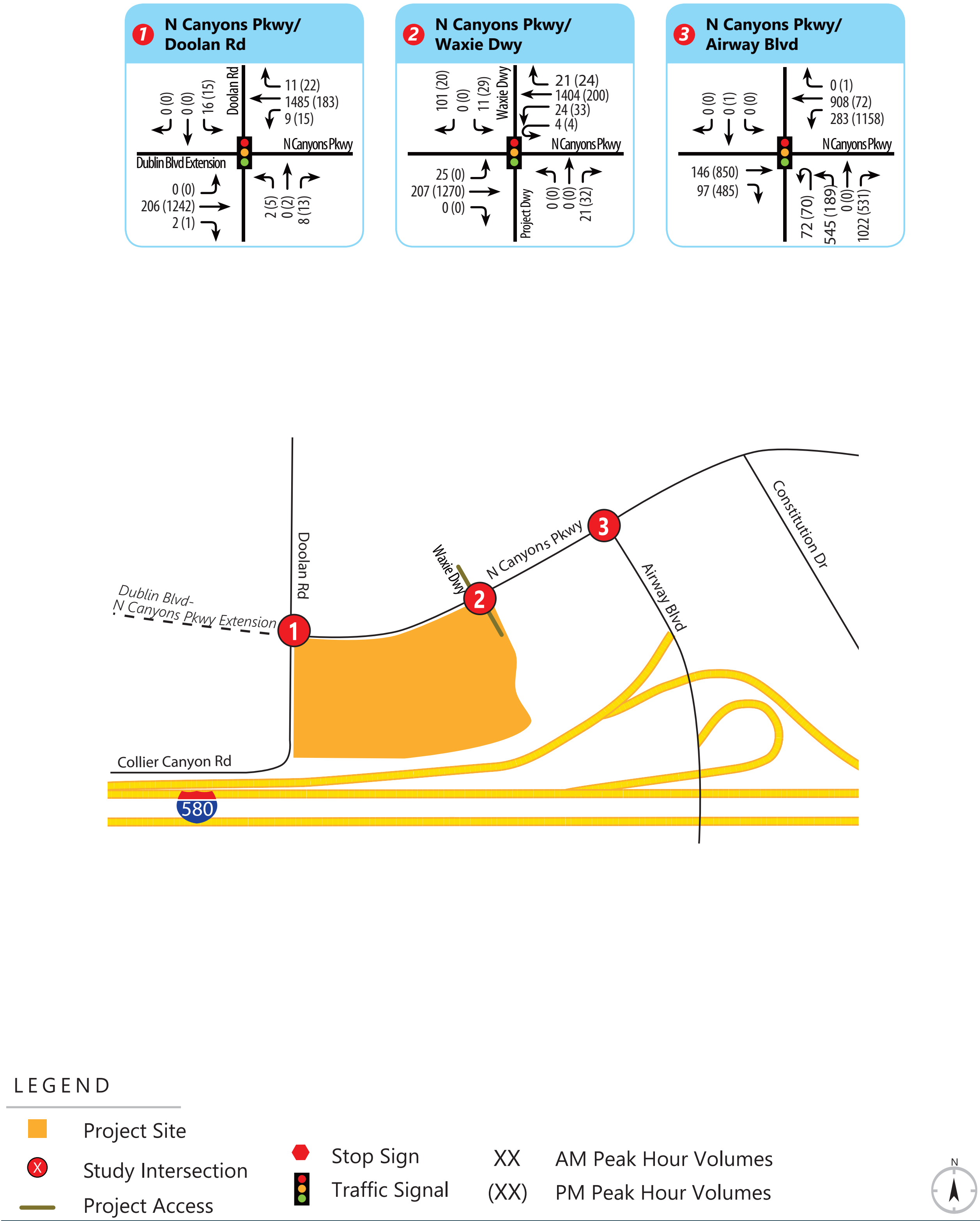
XX% Trip Distribution

XX AM Trip Assignment

(XX) PM Trip Assignment

N

Figure 10: Cumulative Plus Project Volumes



6.2 Queueing Analysis – Cumulative plus Project Conditions

TJKM conducted a vehicle queueing and storage analysis for exclusive left and right turn pockets at the study intersections for Cumulative and Cumulative plus Project Conditions. The 95th percentile queues were analyzed using Synchro 10.0 software. Detailed calculations are included in the LOS appendices corresponding to each analysis scenario. **Table 8** summarizes the 95th percentile queue lengths at the study intersections under Cumulative and Cumulative plus Project scenarios.

Table 8: 95th Percentile Queues at Study Intersections

#	Intersection	Lane Group	Storage Length	Cumulative		Cumulative plus Project Conditions		Change	
				AM	PM	AM	PM	AM	PM
1	N. Canyons Pkwy/Doolan Rd	EBL	150	0	0	0	0	0	0
		WBL	135	20	40	10	20	-10	-20
		NBLTR	-	0	20	0	20	0	0
		SBLTR	-	20	20	20	20	0	0
2	N. Canyons Pkwy/Waxie Dwy	EBL	215	30	0	30	0	0	0
		WBL	145	10	10	30	30	20	20
		WBR	90	0	0	0	0	0	0
		NBR	50	N/A	N/A	0	0	0	0
		SBL	-	20	30	20	30	0	0
		SBR	-	40	0	0	0	-40	0
3	N. Canyons Pkwy/Airway Blvd	EBR	230	40	**330**	40	**340**	0	10
		WBL	300	160	**750**	160	**750**	0	0
		NBL	550	290	210	290	210	0	0
		NBR	-	30	30	30	30	0	0

Notes: Storage length and 95th percentile queue is expressed in feet per lane
AM – morning peak hour, PM – evening peak hour
1 vehicle = 25 feet
Bold indicates queue lengths exceeding capacity

It should be noted that there are two westbound left-turn lanes at N. Canyons Parkway/Airway Boulevard. One of the lanes is a trap lane that extends upstream to N. Canyons Parkway/Constitution Drive, and there is an additional lane near the intersection. Although the queues exceed the storage lane, project traffic is not expected to use this movement. Project traffic is expected to use the northbound left-turn at N. Canyons Parkway/Airway Boulevard, but impacts are minimal. The queue for the eastbound right-turn at N. Canyons Parkway/Airway Boulevard is projected to increase by 10 feet with the project, which is less than one car length (20-25 feet).

The existing storage length of the westbound left-turn lane at N. Canyons Parkway/Waxie Driveway is sufficient for the additional trips that will use the new parking lot. This is because there is very light commute peak traffic generated by the Casino.

7.0 ADDITIONAL ANALYSES

The following sections provide additional analyses of other transportation issues associated with the project site, including:

- Parking Analysis
- Site access and onsite circulation;
- Pedestrian, Bicycle, and Transit Impacts
- Vehicle Miles Traveled (VMT) Analysis

Unlike the LOS impact methodology, the analyses in these sections is based on professional judgment in accordance with the standards and methods employed by traffic engineers. Although operational issues are not considered CEQA impacts, they do describe traffic conditions that are relevant to the project environment.

7.1 Parking Analysis

On many occasions, the number of customers of Casino 580 exceeds the capacity of the existing parking lot. Employees are often instructed to park on the west side of Doolan Ride or the north side of Collier Canyon Road. To mitigate this, the project will be developing a portion of the area east of the existing facility to accommodate the overflow and the planned expansion of the gambling facilities.

As noted elsewhere, TJKM conducted a 2020 Parking Study Update[1] for Parkwest Casino 580 to evaluate future parking requirements. The parking study is located in **Appendix H**. Because the 2020 parking study could be considered out of date, a new parking analysis was conducted in March 2023. During this survey, the on- and off-street parking was tabulated once an hour between 10 a.m. and midnight from March 1, 2023, to March 23, 2023. The 2023 counts are summarized in **Table 9**. Overall, it was found that the March 2023 counts were approximately 15 percent lower than the counts reported in the 2020 parking study. For example, during the latest survey, there was only one hour when the demand exceeded 200 vehicles; in the earlier study there were observations of demand exceeding 220 vehicles. The earlier counts were conducted between October 2018 and November 2019. With this information, TJKM utilized the earlier counts as the basis for establishing parking demand for the expanded facility. The proposed expansion of the Parkwest Casino 580 facility provides for additional gambling tables and also provides an increase in space for the bar and restaurant and for the stage area that provides an internal venue for periodic entertainment of the gamblers. These facilities are all intended for use by gambling patrons and are not for the use of outsiders. Therefore, the increase in attendance at the facility is expected to be directly proportional to the increase in gambling tables. The facility is currently allowed to occupy 10 gambling tables at a time. The facility intends to increase the legally usable gambling tables from 10 to 16.

1 *The 2020 Parking Study assumed that the future parking supply would consist of 352 parking spaces. Post 2020, the proposed parking supply was revised to 361 spaces.*

Given the current peak parking demand of 220 vehicles, this amounts to 22 parked vehicles per active gambling table, which includes gamblers and the Parkwest Casino 580 support staff. The 22 stall parking demand represents roughly double the number of actual people at each table. It should be noted that the earlier counts described in Appendix H assumed three of the six new card tables would be designated for VIP only use, accommodating fewer players than the non-VIP tables. For this updated study, all six tables were considered to operate as non-VIP tables. This approach provides a more conservative analysis to the number of players per table and the parking demand. To project future demand for the six added gambling tables, TJKM considers six tables each generating demand for 22 parking stalls. The total added demand is 6 x 22 = 132 parking spaces. When added to the peak demand of 220 stalls, this yields a combined demand of 352 parking stalls. It should be emphasized that this is a very conservative number which should be exceeded less than one-half percent of the hours of operation. Based on the site plan, the circulation aisles, parking stall widths and depths satisfy City of Livermore requirements. In addition, 36 bicycle spaces are provided.

Table 9: Maximum Number of Parked Vehicles and Peak Times, March 2023

M	T	W	Th	F	Sa	Su
		1 178 vehicles 9pm to 10pm	**2** 186 vehicles 9pm to 10pm	**3** 190 vehicles 9pm to 10pm	**4** 191 vehicles 9pm to 10pm	**5** 168 vehicles 3pm to 4pm
6 153 vehicles 8pm to 9pm	**7** 168 vehicles 1pm to 2pm 2pm to 3pm	**8** 178 vehicles 3pm to 4pm	**9** 175 vehicles 2pm to 3pm 4pm to 5pm	**10** 205 vehicles 9pm to 10pm	**11** 180 vehicles 3pm to 4pm 9pm to 10pm	**12** 157 vehicles 3pm to 4pm
13 144 vehicles 3pm to 4pm	**14** 168 vehicles 7pm to 8pm	**15** 184 vehicles 9pm to 10pm	**16** 165 vehicles 9pm to 10pm	**17** 169 vehicles 10pm to 11pm	**18** 182 vehicles 9pm to 10pm	**19** 182 vehicles 2pm to 3pm
20 143 vehicles 3pm to 4pm	**21** 154 vehicles 3pm to 4pm	**22** 165 vehicles 9pm to 10pm	**23** -	**24** -	**25** -	**26** -
27 -	**28** -	**29** -	**30** -	**31** -		

7.2 Site Access and On-Site Circulation

Site Access

The proposed vehicular access to the project site will be the existing driveways on Doolan Road and N. Canyons Parkway. Also, once the parking lot is constructed, customers will be able to use the signalized intersection N. Canyons Parkway/Waxie Driveway as an entry or exit. Sight distance for vehicles exiting the driveways appears to be adequate. Pedestrians and bicyclists can use the existing multimodal network to access the project site.

On-Site Circulation

In terms of external access, the project conceptual plan (dated October 29, 2020) shows the driveways that the proposed project would use. The driveways do not have any turning restrictions, with the exception of the driveway on N. Canyons Parkway between Doolan Road and Waxie Driveway, which will be right-in/right-out only. All driveways appear to accommodate two-way travel. The circulation aisles will provide enough space for two-way circulation.

7.3 Pedestrian, Bicycle, and Transit impacts

Pedestrian Access

There are no existing sidewalks along the project frontage on N. Canyons Parkway. There is existing street lighting along N. Canyons Parkway and within the project site that appear to be adequate. The proposed project does not conflict with existing and planned pedestrian facilities; therefore, the impact to pedestrian facilities is ***less than significant***.

Bicycle Access

In terms of bicycle access to the project site, there are currently Class II bicycle facilities along N. Canyons Parkway and Airway Boulevard. As part of the proposed project (as illustrated in **Figure 2**), the Class II bicycle facility along the southern frontage of N. Canyons Parkway will be updated to a Class IV separated bikeway. The project does not conflict with existing and planned bicycle facilities; therefore, the impact to bicycle facilities is ***less than significant***

Transit Access

The project site is located within walking distance to two Tri-Valley Wheels bus stops that are located along N. Canyons Parkway. Tri-Valley Wheels provides local and regional access. The existing pedestrian facilities in the project vicinity provide adequate connectivity for pedestrians to the transit stops. Impacts to transit service are expected to be ***less than significant.***

7.4 Vehicles Miles Traveled (VMT)

As previously mentioned, TJKM analyzed the casino project as retail. Based on OPR recommendations, VMT impacts attributable to the project may be considered potentially significant if:

- the project results in an net increase in total VMT; or
- The project is considered a regionally serving retail project larger than 50,000 square feet.

Since the casino expansion will be generating 304 new daily trips, the equivalent retail square footage would be 8,053 square feet (ITE Land Use Code 820, where the rate is 37.75 trips/1000 square feet). Since the retail square footage is below OPR's threshold of 50,000 square feet, the project can be considered as local serving retail. Therefore, the VMT impact is expected to be ***less than significant***.

The proposed on-site bicycle parking spaces and separated bike lane along the south side of N. Canyons Parkway that will be implemented with the expansion can further mitigate potential VMT impacts.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Project Trip Generation

The proposed casino expansion is expected to generate approximately 26 weekday a.m. peak hour trips (14 in, 12 out), 25 weekday p.m. peak hour trips (4 in, 21 out), and 304 new daily trips.

Existing Conditions

Under this scenario, all of the study intersections operate within applicable jurisdictional Level of Service (LOS) standards during the a.m. and p.m. peak hour.

Existing plus Project Conditions

Under this scenario, all of the study intersections continue to operate within applicable jurisdictional LOS standards during the a.m. and p.m. peak hour.

Existing plus Project Queueing Analysis

The project is not expected to increase the queues that exceed storage lengths at existing turn lanes. The existing storage length of the westbound left-turn lane at N. Canyons Parkway/Waxie Driveway is sufficient for the additional trips that will use the new parking lot.

Cumulative Conditions

Under this scenario, all of the study intersections continue to operate within applicable jurisdictional LOS standards during the a.m. and p.m. peak hours.

Cumulative Plus Project Conditions

Under this scenario, all of the study intersections continue to operate within applicable jurisdictional LOS standards during the a.m. and p.m. peak hours.

Cumulative Plus Project Queueing Analysis

The project is not expected to increase the queues that exceed storage lengths at exclusive turn lanes. The storage length for the westbound left-turn lane at N. Canyons Parkway/Waxie Driveway is sufficient for the additional trips that will use the new parking lot in the cumulative scenario.

Site Access and On-Site Circulation

The proposed vehicular access to the project site is via the existing driveways on Doolan Road, N. Canyons Parkway and the new driveway at N. Canyons Parkway/Waxie Driveway. Pedestrians and bicyclists can use the existing multimodal network to access the project site. The parking aisles are wide enough to allow for two-way circulation. Based on a preliminary review of the project site plan, the site access and on-site circulation is considered adequate.

Pedestrian Impacts

The project does not conflict with existing and planned pedestrian facilities; therefore, the impact to pedestrian facilities is ***less than significant***.

Bicycle Impacts

As part of the proposed project, the Class II bicycle facility along the southern frontage of N. Canyons Parkway will be updated to a Class IV separated bikeway. The project does not conflict with existing and planned bicycle facilities; therefore, the impact to bicycle facilities is ***less than significant***.

Transit Impacts

The project site is within walking distance to two Tri-Valley Wheels bus stops that provide local and regional access. Impacts to transit service are expected to be ***less than significant.***

Parking

The project will be supplying 361 parking spaces to satisfy the demand of 352 parking spaces during peak operating hours, which leaves a surplus of 9 stalls.

Vehicle Miles Traveled

TJKM analyzed the casino project as retail. Since the project will be generating 304 new daily trips, the equivalent retail square footage would be 8,053 square feet. Based on OPR's recommendations, the VMT impact is expected to be ***less than significant*** since the retail square footage is below 50,000 square feet, which is considered as local serving retail.

Appendix A – Level of Service Methodology

APPENDIX A

LEVEL OF SERVICE

The description and procedures for calculating capacity and level of service are found in Transportation Research Board, *Highway Capacity Manual 2000*. *Highway Capacity Manual 2000* represents the latest research on capacity and quality of service for transportation facilities.

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six levels of service are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with level-of-service A representing the best operating conditions and level-of-service F the worst. Each level of service represents a range of operating conditions and the driver's perception of these conditions. Safety is not included in the measures that establish service levels.

A general description of service levels for various types of facilities is shown in Table A-I.

Table A-I

Level of Service Description

Facility Type	**Uninterrupted Flow**	**Interrupted Flow**
	Freeways Multi-lane Highways Two-lane Highways Urban Streets	Signalized Intersections Unsignalized Intersections Two-way Stop Control All-way Stop Control
LOS		
A	Free-flow	Very low delay.
B	Stable flow. Presence of other users noticeable.	Low delay.
C	Stable flow. Comfort and convenience starts to decline.	Acceptable delay.
D	High density stable flow.	Tolerable delay.
E	Unstable flow.	Limit of acceptable delay.
F	Forced or breakdown flow.	Unacceptable delay

Source: *Highway Capacity Manual 2000*

Urban Streets

The term “urban streets” refers to urban arterials and collectors, including those in downtown areas.

Arterial streets are roads that primarily serve longer through trips. However, providing access to abutting commercial and residential land uses is also an important function of arterials.

Collector streets provide both land access and traffic circulation within residential, commercial and industrial areas. Their access function is more important than that of arterials, and unlike arterials their operation is not always dominated by traffic signals.

Downtown streets are signalized facilities that often resemble arterials. They not only move through traffic but also provide access to local businesses for passenger cars, transit buses, and trucks. Pedestrian conflicts and lane obstructions created by stopping or standing buses, trucks and parking vehicles that cause turbulence in the traffic flow are typical of downtown streets.

The speed of vehicles on urban streets is influenced by three main factors, street environment, interaction among vehicles and traffic control. As a result, these factors also affect quality of service.

The street environment includes the geometric characteristics of the facility, the character of roadside activity and adjacent land uses. Thus, the environment reflects the number and width of lanes, type of median, driveway density, spacing between signalized intersections, existence of parking, level of pedestrian activity and speed limit.

The interaction among vehicles is determined by traffic density, the proportion of trucks and buses, and turning movements. This interaction affects the operation of vehicles at intersections and, to a lesser extent, between signals.

Traffic control (including signals and signs) forces a portion of all vehicles to slow or stop. The delays and speed changes caused by traffic control devices reduce vehicle speeds, however, such controls are needed to establish right-of-way.

The average travel speed for through vehicles along an urban street is the determinant of the operating level of service. The travel speed along a segment, section or entire length of an urban street is dependent on the running speed between signalized intersections and the amount of control delay incurred at signalized intersections.

Level-of-service A describes primarily free-flow operations. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal.

Level-of-service B describes reasonably unimpeded operations. The ability to maneuver within the traffic stream is only slightly restricted, and control delays at signalized intersections are not significant.

Level-of-service C describes stable operations, however, ability to maneuver and change lanes in midblock location may be more restricted than at level-of-service B. Longer queues, adverse signal coordination, or both may contribute to lower travel speeds.

Level-of-service D borders on a range in which in which small increases in flow may cause substantial increases in delay and decreases in travel speed. Level-of-service D may be due to adverse signal progression, inappropriate signal timing, high volumes, or a combination of these factors.

Level-of-service E is characterized by significant delays and lower travel speeds. Such operations are caused by a combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.

Level-of-service F is characterized by urban street flow at extremely low speeds. Intersection congestion is likely at critical signalized locations, with high delays, high volumes, and extensive queuing.

The methodology to determine level of service stratifies urban streets into four classifications. The classifications are complex, and are related to functional and design categories. Table A-II describes the functional and design categories, while Table A-III relates these to the urban street classification.

Once classified, the urban street is divided into segments for analysis. An urban street segment is a one-way section of street encompassing a series of blocks or links terminating at a signalized intersection. Adjacent segments of urban streets may be combined to form larger street sections, provided that the segments have similar demand flows and characteristics.

Levels of service are related to the average travel speed of vehicles along the urban street segment or section.

Travel times for existing conditions are obtained by field measurements. The maximum-car technique is used. The vehicle is driven at the posted speed limit unless impeded by actual traffic conditions. In the maximum-car technique, a safe level of vehicular operation is maintained by observing proper following distances and by changing speeds at reasonable rates of acceleration and deceleration. The maximum-car technique provides the best base for measuring traffic performance.

An observer records the travel time and locations and duration of delay. The beginning and ending points are the centers of intersections. Delays include times waiting in queues at signalized intersections. The travel speed is determined by dividing the length of the segment by the travel time. Once the travel speed on the arterial is determined, the level of service is found by comparing the speed to the criteria in Table A-IV. Level-of-service criteria vary for the different classifications of urban street, reflecting differences in driver expectations.

description of levels of service for signalized intersections can be found in Table A-V.

Table A-V

Description of Level of Service for Signalized Intersections

Level of Service	Description
A	Very low control delay, up to 10 seconds per vehicle. Progression is extremely favorable, and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.
B	Control delay greater than 10 and up to 20 seconds per vehicle. There is good progression or short cycle lengths or both. More vehicles stop causing higher levels of delay.
C	Control delay greater than 20 and up to 35 seconds per vehicle. Higher delays are caused by fair progression or longer cycle lengths or both. Individual cycle failures may begin to appear. Cycle failure occurs when a given green phase doe not serve queued vehicles, and overflow occurs. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
D	Control delay greater than 35 and up to 55 seconds per vehicle. The influence of congestions becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volumes. Many vehicles stop, the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Control delay greater than 55 and up to 80 seconds per vehicle. The limit of acceptable delay. High delays usually indicate poor progression, long cycle lengths, and high volumes. Individual cycle failures are frequent.
F	Control delay in excess of 80 seconds per vehicle. Unacceptable to most drivers. Oversaturation, arrival flow rates exceed the capacity of the intersection. Many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to higher delay.

Source: *Highway Capacity Manual 2000*

The use of control delay, which may also be referred to as signal delay, was introduced in the 1997 update to the *Highway Capacity Manual*, and represents a departure from previous updates. In the third edition, published in 1985 and the 1994 update to the third edition, delay only included stopped delay. Thus, the level of service criteria listed in Table A-V differs from earlier criteria.

Unsignalized Intersections

The current procedures on unsignalized intersections were first introduced in the 1997 update to the *Highway Capacity Manual* and represent a revision of the methodology published in the 1994 update to the 1985 *Highway Capacity Manual*. The revised procedures use control delay as a measure of effectiveness to determine level of service. Delay is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, *i. e.,* in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Control delay is the increased time of travel for a vehicle approaching and passing through an unsignalized intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection.

Two-Way Stop Controlled Intersections

Two-way stop controlled intersections in which stop signs are used to assign the right-of-way, are the most prevalent type of intersection in the United States. At two-way stop-controlled intersections the stop-controlled approaches are referred as the minor street approaches and can be either public streets or private driveways. The approaches that are not controlled by stop signs are referred to as the major street approaches.

The capacity of movements subject to delay are determined using the "critical gap" method of capacity analysis. Expected average control delay based on movement volume and movement capacity is calculated. A level of service designation is given to the expected control delay for each minor movement. Level of service is not defined for the intersection as a whole. Control delay is the increased time of travel for a vehicle approaching and passing through a stop-controlled intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection. A description of levels of service for two-way stop-controlled intersections is found in Table A-VI.

Table A-VI

Description of Level of Service for Two-Way Stop Controlled Intersections

Level of Service	Description
A	Very low control delay less than 10 seconds per vehicle for each movement subject to delay.
B	Low control delay greater than 10 and up to 15 seconds per vehicle for each movement subject to delay.
C	Acceptable control delay greater than 15 and up to 25 seconds per vehicle for each movement subject to delay.
D	Tolerable control delay greater than 25 and up to 35 seconds per vehicle for each movement subject to delay.
E	Limit of tolerable control delay greater than 35 and up to 50 seconds per vehicle for each movement subject to delay.
F	Unacceptable control delay in excess of 50 seconds per vehicle for each movement subject to delay.

Source: *Highway Capacity Manual 2000*

Appendix B – Existing Traffic Counts and Player/Employee Data

National Data & Surveying Services Intersection Turning Movement Count

Location: Airway Blvd & N Canyons Pkwy
City: Livermore
Control: Signalized

Project ID: 21-080012-001
Date: 2/4/2021

Data - Total

NS/EW Streets:	Airway Blvd				Airway Blvd				N Canyons Pkwy				N Canyons Pkwy				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	0.5	0.5	2	0	0	1	0	0	0	2	1	0	2	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	14	4	31	12	0	0	0	0	0	1	18	0	46	2	0	0	128
7:15 AM	16	1	46	14	0	0	0	0	0	4	13	0	60	6	1	1	162
7:30 AM	21	2	56	22	0	0	0	0	0	1	4	0	49	2	0	0	157
7:45 AM	16	1	94	22	0	0	0	0	0	0	10	0	73	4	1	0	221
8:00 AM	20	1	73	8	0	0	0	0	0	1	5	0	47	0	1	0	156
8:15 AM	11	2	87	10	0	1	0	0	0	3	9	0	57	1	1	0	182
8:30 AM	14	3	108	13	0	0	0	0	0	3	6	0	51	1	0	0	199
8:45 AM	10	0	85	12	1	0	0	0	0	6	9	0	52	6	0	1	182
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	122	14	580	113	1	1	0	0	0	19	74	0	435	22	4	2	1387
APPROACH %'s :	14.72%	1.69%	69.96%	13.63%	50.00%	50.00%	0.00%	0.00%	0.00%	20.43%	79.57%	0.00%	93.95%	4.75%	0.86%	0.43%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	61	7	362	53	0	1	0	0	0	7	30	0	228	6	3	0	758
PEAK HR FACTOR :	0.763	0.583	0.838	0.602	0.000	0.250	0.000	0.000	0.000	0.583	0.750	0.000	0.781	0.375	0.750	0.000	0.857
	0.875				0.250				0.771				0.760				

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	0.5	0.5	2	0	0	1	0	0	0	2	1	0	2	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	10	0	120	16	0	1	0	0	0	4	21	0	130	1	0	1	304
4:15 PM	10	0	122	6	0	7	0	0	0	5	22	0	131	4	1	2	310
4:30 PM	8	1	113	15	0	1	0	0	0	4	14	0	142	2	0	1	301
4:45 PM	10	0	131	27	2	5	0	0	0	4	12	0	144	3	1	0	339
5:00 PM	10	0	123	11	1	2	0	0	0	6	14	0	143	4	0	0	314
5:15 PM	14	0	147	14	0	6	0	0	0	2	16	0	151	2	0	0	352
5:30 PM	12	0	147	14	0	4	0	0	0	5	17	0	146	6	0	0	351
5:45 PM	17	0	189	14	0	2	0	0	0	6	19	0	134	1	0	2	384
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	91	1	1092	117	3	28	0	0	0	36	135	0	1121	23	2	6	2655
APPROACH %'s :	6.99%	0.08%	83.94%	8.99%	9.68%	90.32%	0.00%	0.00%	0.00%	21.05%	78.95%	0.00%	97.31%	2.00%	0.17%	0.52%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	53	0	606	53	1	14	0	0	0	19	66	0	574	13	0	2	1401
PEAK HR FACTOR :	0.779	0.000	0.802	0.946	0.250	0.583	0.000	0.000	0.000	0.792	0.868	0.000	0.950	0.542	0.000	0.250	0.912
	0.809				0.625				0.850				0.962				

Prepared by National Data & Surveying Services

Airway Blvd & N Canyons Pkwy

Peak Hour Turning Movement Count

ID: 21-080012-001
City: Livermore

Day: Thursday
Date: 2/4/2021

PEAK HOURS		COUNT PERIODS
AM	07:45 AM - 08:45 AM	7:00 AM - 09:00 AM
NOON	NONE	NONE
PM	05:00 PM - 06:00 PM	4:00 PM - 06:00 PM

SOUTHBOUND (Airway Blvd)

	Right	Through	Left	U-Turn	Departing
AM	0	1	0	0	10
NOON	0	0	0	0	0
PM	0	14	1	0	0
Lanes	0	1	0	0	

WESTBOUND (N Canyons Pkwy)

	Lanes	PM	NOON	AM
Right	0	0	0	3
Through	1	13	0	6
Left	2	574	0	228
U-Turn	0	2	0	0
Departing		628	0	369

EASTBOUND (N Canyons Pkwy)

	AM	NOON	PM	Lanes
Departing	67	0	66	
U-Turn	0	0	0	0
Left	0	0	0	0
Through	7	0	19	2
Right	30	0	66	1

NORTHBOUND (Airway Blvd)

	Departing	U-Turn	Left	Through	Right
Lanes		0	0.5	0.5	2
PM	707	53	53	0	606
NOON	0	0	0	0	0
AM	312	53	61	7	362

CONTROL

Signalized

	AM	NOON	PM
TEV	758	0	1401
PHF	0.86		0.91

Cars (AM)

Approach	Left	Through	Right
Southbound	0	1	0
Westbound	218	5	3
Eastbound	0	6	25
Northbound	60	9	352

Cars (NOON)

Approach	Left	Through	Right
Southbound	0	0	0
Westbound	0	0	0
Eastbound	0	0	0
Northbound	0	0	0

Cars (PM)

Approach	Left	Through	Right
Southbound	1	14	0
Westbound	571	13	0
Eastbound	0	19	66
Northbound	52	0	600

HT (AM)

Approach	Left	Through	Right
Southbound	0	0	0
Westbound	10	1	0
Eastbound	0	1	5
Northbound	1	1	10

HT (NOON)

Approach	Left	Through	Right
Southbound	0	0	0
Westbound	0	0	0
Eastbound	0	0	0
Northbound	0	0	0

HT (PM)

Approach	Left	Through	Right
Southbound	0	0	0
Westbound	3	0	0
Eastbound	0	0	0
Northbound	1	0	6

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North (westward side)	0	0	2
North (eastward side)	0	0	3
West (upper)	0	0	0
West (lower)	0	0	0
East (upper)	0	0	0
East (lower)	1	0	0
South (westward side)	0	0	1
South (eastward side)	0	0	0
Northwest diagonal	0	0	0
Northeast diagonal	0	0	0
Southwest diagonal	0	0	0
Southeast diagonal	0	0	0

National Data & Surveying Services **Intersection Turning Movement Count**

Location: Waxie Sanitary Supply Dwy & N Canyons Pkwy
City: Livermore
Control: Signalized

Project ID: 21-080012-002
Date: 2/4/2021

Data - Total

NS/EW Streets:	Waxie Sanitary Supply Dwy				Waxie Sanitary Supply Dwy				N Canyons Pkwy				N Canyons Pkwy				
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	0	0	0	0	1	0	1	0	1	3	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	1	0	0	0	0	19	0	0	0	12	4	0	36
7:15 AM	0	0	0	0	2	0	0	0	0	12	0	0	0	15	4	2	35
7:30 AM	0	0	0	0	1	0	0	0	0	5	0	0	0	17	7	0	30
7:45 AM	0	0	0	0	1	0	1	0	1	8	0	0	0	7	13	0	31
8:00 AM	0	0	0	0	0	0	0	0	0	7	0	0	0	12	8	0	27
8:15 AM	0	0	0	0	2	0	0	0	0	9	0	0	0	8	4	0	23
8:30 AM	0	0	0	0	3	0	0	0	0	7	0	0	0	7	8	0	25
8:45 AM	0	0	0	0	3	0	0	0	0	9	0	0	0	9	5	2	28
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	13	0	1	0	1	76	0	0	0	87	53	4	235
APPROACH %'s :					92.86%	0.00%	7.14%	0.00%	1.30%	98.70%	0.00%	0.00%	0.00%	60.42%	36.81%	2.78%	
PEAK HR :	**07:00 AM - 08:00 AM**																TOTAL
PEAK HR VOL :	0	0	0	0	5	0	1	0	1	44	0	0	0	51	28	2	132
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.625	0.000	0.250	0.000	0.250	0.579	0.000	0.000	0.000	0.750	0.538	0.250	0.917
					0.750				0.592				0.844				

	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	0	0	0	0	1	0	1	0	1	3	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	8	0	0	0	0	17	0	0	0	9	3	0	37
4:15 PM	0	0	0	0	0	0	0	0	0	26	0	0	0	11	2	1	40
4:30 PM	0	0	0	0	5	0	0	0	0	13	0	0	0	9	1	0	28
4:45 PM	0	0	0	0	5	0	0	0	0	11	0	0	0	11	2	0	29
5:00 PM	0	0	0	0	11	0	0	0	0	8	0	0	0	13	1	0	33
5:15 PM	0	0	0	0	2	0	0	0	0	16	0	0	0	9	5	2	34
5:30 PM	0	0	0	0	3	0	0	0	0	16	0	0	0	14	3	1	37
5:45 PM	0	0	0	0	7	0	0	0	0	20	0	0	0	13	5	0	45
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	41	0	0	0	0	127	0	0	0	89	22	4	283
APPROACH %'s :					100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	77.39%	19.13%	3.48%	
PEAK HR :	**05:00 PM - 06:00 PM**																TOTAL
PEAK HR VOL :	0	0	0	0	23	0	0	0	0	60	0	0	0	49	14	3	149
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.523	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.875	0.700	0.375	0.828
					0.523				0.750				0.917				

Prepared by National Data & Surveying Services

Waxie Sanitary Supply Dwy & N Canyons Pkwy

Peak Hour Turning Movement Count

ID: 21-080012-002
City: Livermore

Day: Thursday
Date: 2/4/2021

PEAK HOURS	
AM	07:00 AM - 08:00 AM
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS	
AM	7:00 AM - 09:00 AM
NOON	NONE
PM	4:00 PM - 06:00 PM

Waxie Sanitary Supply Dwy — SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	1	0	5	0	29
NOON	0	0	0	0	0
PM	0	0	23	0	14
Lanes	1	0	1	0	

N Canyons Pkwy — EASTBOUND

	AM	NOON	PM	Lanes
Departing	52	0	49	
U-Turn	0	0	0	0
Left	1	0	0	1
Through	44	0	60	3
Right	0	0	0	0

N Canyons Pkwy — WESTBOUND

	Lanes	PM	NOON	AM
Right	1	14	0	28
Through	2	49	0	51
Left	1	0	0	0
U-Turn	0	3	0	2
Departing		86	0	51

Waxie Sanitary Supply Dwy — NORTHBOUND

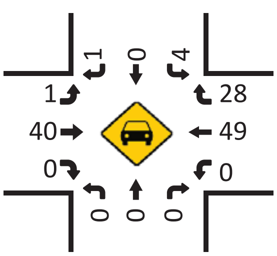
	Departing	U-Turn	Left	Through	Right
Lanes		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

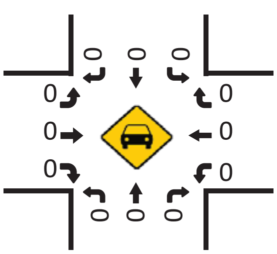
Signalized

	AM	NOON	PM
TEV	132	0	149
PHF	0.92		0.83

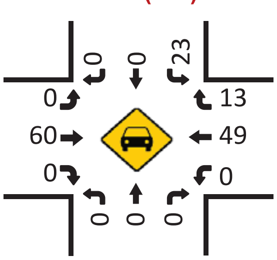
Cars (AM)



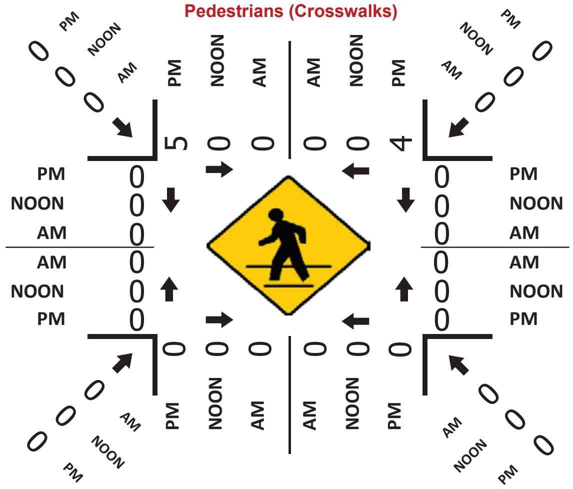
Cars (NOON)



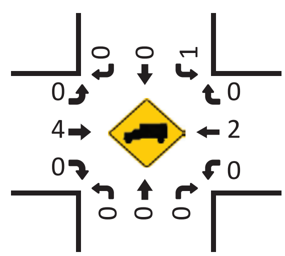
Cars (PM)



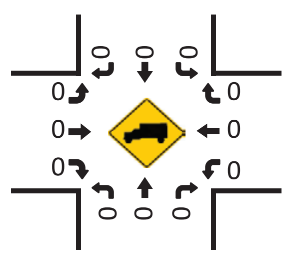
Pedestrians (Crosswalks)



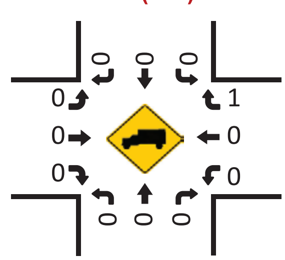
HT (AM)



HT (NOON)



HT (PM)



Employee and Player Data

Player arrival and departures

AM Period

Weekday	Feb 2019 Avg Arrivals	Feb 2019 Avg Departures	Dec 2019 Avg Arrivals	Dec 2019 Avg Departures	Jan 2020 Avg Arrivals	Jan 2020 Avg Departures
0700-0715	0	0	0	1	0	0
0715-0730	0	1	0	1	0	1
0730-0745	0	0	0	0	0	0
0745-0800	0	1	1	1	1	0
0800-0815	0	1	1	0	1	0
0815-0830	1	1	1	0	0	0
0830-0845	1	1	1	0	1	0
0845-0900	1	0	1	1	1	0

Avg Arrivals	Avg Departures
0	0
0	1
0	0
1	1
1	0
1	0
1	0
1	0

1.1 persons/vehicle

players

	Players in	Players Out	Vehicles in	Vehicles Out	Total Vehicles
Peak: 0745-0845	4	1	4	1	5
		split	80%	20%	

employees

	Employees in	Employees Out	Vehicles in	Vehicles Out	Total Vehicles
Peak: 0730-0830	29	30	26	27	54
		split	49%	51%	

Ex. Conditions 10 gambling tables 44% increase
Future conditior 6 additional tables

Additional Players	AM In	AM Out	AM Additional Trips
	2	0	2

Additional Employees	AM In	AM Out	AM Additional Trips
	12	12	24

Total Additional Trips	AM In	AM Out	AM Total Trips
	14	12	26

PM Period

Weekday	Feb 2019 Avg Arrivals	Feb 2019 Avg Departures	Dec 2019 Avg Arrivals	Dec 2019 Avg Departures	Jan 2020 Avg Arrivals	Jan 2020 Avg Departures
1600-1615	3	9	3	6	3	5
1615-1630	3	3	3	6	3	4
1630-1645	3	3	2	6	2	5
1645-1700	3	4	2	8	2	5
1700-1715	3	4	2	5	2	10
1715-1730	3	6	3	10	2	5
1730-1745	3	5	3	4	3	4
1745-1800	3	3	3	2	2	2

Avg Arrivals	Avg Departures
3	7
3	4
3	5
2	6
3	6
3	7
3	4
3	2

	Players in	Players Out	Vehicles in	Vehicles Out	Total Vehicles
Peak: 1630-1730	11	24	10	22	32
		split	31%	69%	

employees

	Employees in	Employees Out	Vehicles in	Vehicles Out	Total Vehicles
Peak: 1600-1700	0	28	0	25	25
		split	0%	100%	

Additional Players	PM In	PM Out	PM Additional Trips
	4	10	14

Additional Employees	AM In	AM Out	AM Additional Trips
	0	11	11

Total Additional Trips	PM In	PM Out	PM Total Trips
	4	21	25

Appendix C – Existing Conditions Intersection Level of Service and Queuing Analysis Work Sheets

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	11	0	19	16	0
Future Volume (Veh/h)	21	11	0	19	16	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	25	13	0	23	19	0
Pedestrians	3		3			1
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	56	16			26	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56	16			26	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			99	
cM capacity (veh/h)	935	1060			1584	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	25	13	23	19
Volume Left	25	0	0	19
Volume Right	0	13	23	0
cSH	935	1060	1700	1584
Volume to Capacity	0.03	0.01	0.01	0.01
Queue Length 95th (ft)	2	1	0	1
Control Delay (s)	9.0	8.4	0.0	7.3
Lane LOS	A	A		A
Approach Delay (s)	8.8		0.0	7.3
Approach LOS	A			

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	2	38	4	40	23	12	2
v/c Ratio	0.00	0.02	0.01	0.03	0.03	0.03	0.00
Control Delay	8.5	5.4	8.2	5.3	1.3	7.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	5.4	8.2	5.3	1.3	7.9	0.0
Queue Length 50th (ft)	0	0	0	0	0	1	0
Queue Length 95th (ft)	3	7	5	7	4	8	0
Internal Link Dist (ft)		662		503			
Turn Bay Length (ft)	215		145		90		
Base Capacity (vph)	1644	3539	1644	3539	1583	1730	1475
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.01	0.00	0.01	0.01	0.01	0.00

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	2	35	0	4	0	37	21	0	0	0	11	0
Future Volume (vph)	2	35	0	4	0	37	21	0	0	0	11	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0			4.0	5.0	5.0				4.0	
Lane Util. Factor	1.00	0.95			1.00	0.95	1.00				1.00	
Frt	1.00	1.00			1.00	1.00	0.85				1.00	
Flt Protected	0.95	1.00			0.95	1.00	1.00				0.95	
Satd. Flow (prot)	1770	3539			1770	3539	1583				1770	
Flt Permitted	0.95	1.00			0.95	1.00	1.00				1.00	
Satd. Flow (perm)	1770	3539			1770	3539	1583				1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	38	0	4	0	40	23	0	0	0	12	0
RTOR Reduction (vph)	0	0	0	0	0	0	21	0	0	0	0	0
Lane Group Flow (vph)	2	38	0	0	4	40	2	0	0	0	12	0
Turn Type	Prot	NA		Prot	Prot	NA	Perm				Perm	
Protected Phases	1	6		5	5	2			8			
Permitted Phases							2	8			4	
Actuated Green, G (s)	0.6	1.0			0.6	1.0	1.0				0.7	
Effective Green, g (s)	0.6	1.0			0.6	1.0	1.0				0.7	
Actuated g/C Ratio	0.04	0.07			0.04	0.07	0.07				0.05	
Clearance Time (s)	4.0	5.0			4.0	5.0	5.0				4.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0				2.0	
Lane Grp Cap (vph)	69	231			69	231	103				85	
v/s Ratio Prot	0.00	0.01			c0.00	c0.01						
v/s Ratio Perm							0.00				c0.01	
v/c Ratio	0.03	0.16			0.06	0.17	0.01				0.14	
Uniform Delay, d1	7.1	6.8			7.1	6.8	6.7				7.0	
Progression Factor	1.00	1.00			1.00	1.00	1.00				1.00	
Incremental Delay, d2	0.1	0.1			0.1	0.1	0.0				0.3	
Delay (s)	7.1	6.9			7.2	6.9	6.7				7.3	
Level of Service	A	A			A	A	A				A	
Approach Delay (s)		6.9				6.8			0.0			7.2
Approach LOS		A				A			A			A

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.13		
Actuated Cycle Length (s)	15.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	2
Future Volume (vph)	2
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.0
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	2
RTOR Reduction (vph)	2
Lane Group Flow (vph)	0
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	0.7
Effective Green, g (s)	0.7
Actuated g/C Ratio	0.05
Clearance Time (s)	4.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	72
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.00
Uniform Delay, d1	7.0
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	7.0
Level of Service	A
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	13	36	592	18	134	1106
v/c Ratio	0.01	0.04	0.77	0.01	0.54	0.62
Control Delay	18.9	0.1	44.9	4.1	48.7	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.9	0.1	44.9	4.1	48.7	2.6
Queue Length 50th (ft)	2	0	192	2	84	0
Queue Length 95th (ft)	8	0	216	9	126	16
Internal Link Dist (ft)	503			527	378	
Turn Bay Length (ft)		230	90			
Base Capacity (vph)	1697	819	833	1418	353	1810
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.04	0.71	0.01	0.38	0.61

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	11	30	497	15	0	72	47	0	929	0	0
Future Volume (vph)	0	11	30	497	15	0	72	47	0	929	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0				4.2	6.0		
Lane Util. Factor		0.95	1.00	0.97	1.00				1.00	0.88		
Frt		1.00	0.85	1.00	1.00				1.00	0.85		
Flt Protected		1.00	1.00	0.95	1.00				0.95	1.00		
Satd. Flow (prot)		3539	1583	3433	1863				1770	2787		
Flt Permitted		1.00	1.00	0.95	1.00				0.95	1.00		
Satd. Flow (perm)		3539	1583	3433	1863				1770	2787		
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	0	13	36	592	18	0	78	56	0	1106	0	0
RTOR Reduction (vph)	0	0	19	0	0	0	0	0	0	702	0	0
Lane Group Flow (vph)	0	13	17	592	18	0	0	0	134	404	0	0
Turn Type		NA	Perm	Prot	NA	Perm		Split	NA	pt+ov		
Protected Phases		2		1	6			8	8	1 8	4	4
Permitted Phases			2			6						
Actuated Green, G (s)		50.4	50.4	23.6	80.0				14.8	42.6		
Effective Green, g (s)		50.4	50.4	23.6	80.0				14.8	38.4		
Actuated g/C Ratio		0.48	0.48	0.22	0.76				0.14	0.37		
Clearance Time (s)		6.0	6.0	6.0	6.0				4.2			
Vehicle Extension (s)		2.0	2.0	2.0	2.0				2.0			
Lane Grp Cap (vph)		1698	759	771	1419				249	1019		
v/s Ratio Prot		0.00		c0.17	0.01				c0.08	0.15		
v/s Ratio Perm			c0.01									
v/c Ratio		0.01	0.02	0.77	0.01				0.54	0.40		
Uniform Delay, d1		14.2	14.4	38.1	3.0				41.9	24.7		
Progression Factor		1.00	1.00	1.00	1.00				1.00	1.00		
Incremental Delay, d2		0.0	0.1	4.2	0.0				1.1	0.1		
Delay (s)		14.3	14.4	42.3	3.0				43.0	24.8		
Level of Service		B	B	D	A				D	C		
Approach Delay (s)		14.4			41.1				26.8			0.0
Approach LOS		B			D				C			A

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	0
Future Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.84
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	45	22	2	27	15	0
Future Volume (Veh/h)	45	22	2	27	15	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	59	29	3	36	20	0
Pedestrians	3		1			
Lane Width (ft)	12.0		12.0			
Walking Speed (ft/s)	3.5		3.5			
Percent Blockage	0		0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	65	24			42	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	65	24			42	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	97			99	
cM capacity (veh/h)	925	1049			1563	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	59	29	39	20
Volume Left	59	0	0	20
Volume Right	0	29	36	0
cSH	925	1049	1700	1563
Volume to Capacity	0.06	0.03	0.02	0.01
Queue Length 95th (ft)	5	2	0	1
Control Delay (s)	9.2	8.5	0.0	7.3
Lane LOS	A	A		A
Approach Delay (s)	8.9		0.0	7.3
Approach LOS	A			

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	WBR	SBL
Lane Group Flow (vph)	51	5	77	29	67
v/c Ratio	0.03	0.01	0.04	0.04	0.12
Control Delay	5.0	11.5	2.8	0.8	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	11.5	2.8	0.8	9.0
Queue Length 50th (ft)	1	0	0	0	1
Queue Length 95th (ft)	10	7	7	3	34
Internal Link Dist (ft)	660		503		
Turn Bay Length (ft)		145		90	
Base Capacity (vph)	3502	1584	3502	1511	1667
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.01	0.00	0.02	0.02	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	42	0	4	0	64	24	0	0	0	56	0
Future Volume (vph)	0	42	0	4	0	64	24	0	0	0	56	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			4.0	5.0	5.0				4.0	
Lane Util. Factor		0.95			1.00	0.95	1.00				1.00	
Frpb, ped/bikes		1.00			1.00	1.00	0.98				1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00				1.00	
Frt		1.00			1.00	1.00	0.85				1.00	
Flt Protected		1.00			0.95	1.00	1.00				0.95	
Satd. Flow (prot)		3539			1770	3539	1547				1770	
Flt Permitted		1.00			0.95	1.00	1.00				1.00	
Satd. Flow (perm)		3539			1770	3539	1547				1863	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	51	0	5	0	77	29	0	0	0	67	0
RTOR Reduction (vph)	0	0	0	0	0	0	18	0	0	0	0	0
Lane Group Flow (vph)	0	51	0	0	5	77	11	0	0	0	67	0
Confl. Peds. (#/hr)							9					
Confl. Bikes (#/hr)			1									
Turn Type	Prot	NA		Prot	Prot	NA	Perm				Perm	
Protected Phases	1	6		5	5	2			8			
Permitted Phases							2	8			4	
Actuated Green, G (s)		1.6			0.5	6.1	6.1				0.8	
Effective Green, g (s)		1.6			0.5	6.1	6.1				0.8	
Actuated g/C Ratio		0.10			0.03	0.38	0.38				0.05	
Clearance Time (s)		5.0			4.0	5.0	5.0				4.0	
Vehicle Extension (s)		2.0			2.0	2.0	2.0				2.0	
Lane Grp Cap (vph)		356			55	1357	593				93	
v/s Ratio Prot		0.01			0.00	c0.02						
v/s Ratio Perm							0.01				c0.04	
v/c Ratio		0.14			0.09	0.06	0.02				0.72	
Uniform Delay, d1		6.5			7.5	3.1	3.0				7.4	
Progression Factor		1.00			1.00	1.00	1.00				1.00	
Incremental Delay, d2		0.1			0.3	0.0	0.0				20.6	
Delay (s)		6.6			7.7	3.1	3.0				28.0	
Level of Service		A			A	A	A				C	
Approach Delay (s)		6.6				3.3			0.0			28.0
Approach LOS		A				A			A			C

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	15.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	0
Future Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.83
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	8	109	973	12	1	165	737	1
v/c Ratio	0.01	0.21	0.71	0.01	0.00	0.65	0.38	0.01
Control Delay	27.7	6.1	31.8	5.8	0.0	53.6	1.4	48.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	6.1	31.8	5.8	0.0	53.6	1.4	48.0
Queue Length 50th (ft)	2	0	285	2	0	106	0	1
Queue Length 95th (ft)	8	38	#454	10	0	165	28	7
Internal Link Dist (ft)	503			527		378		115
Turn Bay Length (ft)		230	90		195			
Base Capacity (vph)	1013	530	1367	1382	1188	312	1914	283
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.21	0.71	0.01	0.00	0.53	0.39	0.00

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	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	7	99	885	11	1	70	81	0	671	0	1
Future Volume (vph)	0	7	99	885	11	1	70	81	0	671	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0			4.2	6.0		4.0
Lane Util. Factor		0.95	1.00	0.97	1.00	1.00			1.00	0.88		1.00
Frpb, ped/bikes		1.00	0.99	1.00	1.00	1.00			1.00	1.00		1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00
Frt		1.00	0.85	1.00	1.00	0.85			1.00	0.85		1.00
Flt Protected		1.00	1.00	0.95	1.00	1.00			0.95	1.00		1.00
Satd. Flow (prot)		3539	1563	3433	1863	1583			1770	2787		1863
Flt Permitted		1.00	1.00	0.95	1.00	1.00			0.95	1.00		1.00
Satd. Flow (perm)		3539	1563	3433	1863	1583			1770	2787		1863
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	8	109	973	12	1	76	89	0	737	0	1
RTOR Reduction (vph)	0	0	81	0	0	0	0	0	0	338	0	0
Lane Group Flow (vph)	0	8	28	973	12	1	0	0	165	399	0	1
Confl. Peds. (#/hr)			1									
Turn Type		NA	Perm	Prot	NA	Perm		Split	NA	pt+ov		NA
Protected Phases		2		1	6			8	8	1 8	4	4
Permitted Phases			2			6						
Actuated Green, G (s)		26.9	26.9	41.8	74.7	74.7			15.1	61.1		1.0
Effective Green, g (s)		26.9	26.9	41.8	74.7	74.7			15.1	56.9		1.0
Actuated g/C Ratio		0.26	0.26	0.40	0.71	0.71			0.14	0.54		0.01
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0			4.2			4.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0			2.0			2.0
Lane Grp Cap (vph)		906	400	1366	1325	1126			254	1510		17
v/s Ratio Prot		0.00		c0.28	0.01				c0.09	0.14		c0.00
v/s Ratio Perm			c0.02			0.00						
v/c Ratio		0.01	0.07	0.71	0.01	0.00			0.65	0.26		0.06
Uniform Delay, d1		29.1	29.6	26.5	4.4	4.4			42.5	12.9		51.5
Progression Factor		1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2		0.0	0.3	1.5	0.0	0.0			4.2	0.0		0.5
Delay (s)		29.1	29.9	28.0	4.4	4.4			46.7	12.9		52.1
Level of Service		C	C	C	A	A			D	B		D
Approach Delay (s)		29.9			27.7				19.1			52.1
Approach LOS		C			C				B			D

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	78.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	0
Future Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Appendix D – Existing plus Project Conditions Intersections Level of Service and Queuing Work Sheets

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	11	0	9	16	0
Future Volume (Veh/h)	11	11	0	9	16	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	13	13	0	11	19	0
Pedestrians	3		3			1
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	0		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	50	10			14	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	50	10			14	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			99	
cM capacity (veh/h)	943	1068			1600	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	13	13	11	19
Volume Left	13	0	0	19
Volume Right	0	13	11	0
cSH	943	1068	1700	1600
Volume to Capacity	0.01	0.01	0.01	0.01
Queue Length 95th (ft)	1	1	0	1
Control Delay (s)	8.9	8.4	0.0	7.3
Lane LOS	A	A		A
Approach Delay (s)	8.6		0.0	7.3
Approach LOS	A			

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT
Lane Group Flow (vph)	2	27	30	29	23	24	12	2
v/c Ratio	0.00	0.02	0.06	0.02	0.03	0.02	0.02	0.00
Control Delay	8.5	5.6	7.7	5.1	1.3	0.0	7.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	5.6	7.7	5.1	1.3	0.0	7.9	0.0
Queue Length 50th (ft)	0	1	2	1	0	0	1	0
Queue Length 95th (ft)	3	6	16	6	4	0	9	0
Internal Link Dist (ft)		662		503				387
Turn Bay Length (ft)	215		145		90	50		
Base Capacity (vph)	1636	3539	1636	3539	1583	1541	1722	1541
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.01	0.02	0.01	0.01	0.02	0.01	0.00

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	2	25	0	4	24	27	21	0	0	22	11	0
Future Volume (vph)	2	25	0	4	24	27	21	0	0	22	11	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0			4.0	5.0	5.0			4.0	4.0	4.0
Lane Util. Factor	1.00	0.95			1.00	0.95	1.00			1.00	1.00	1.00
Frt	1.00	1.00			1.00	1.00	0.85			0.85	1.00	0.85
Flt Protected	0.95	1.00			0.95	1.00	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1770	3539			1770	3539	1583			1583	1770	1583
Flt Permitted	0.95	1.00			0.95	1.00	1.00			1.00	1.00	1.00
Satd. Flow (perm)	1770	3539			1770	3539	1583			1583	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	2	27	0	4	26	29	23	0	0	24	12	0
RTOR Reduction (vph)	0	0	0	0	0	0	21	0	0	23	0	2
Lane Group Flow (vph)	2	27	0	0	30	29	2	0	0	1	12	0
Turn Type	Prot	NA		Prot	Prot	NA	Perm			Perm	Perm	NA
Protected Phases	1	6		5	5	2			8			4
Permitted Phases							2	8		8	4	
Actuated Green, G (s)	0.6	1.0			0.7	1.1	1.1			0.7	0.7	0.7
Effective Green, g (s)	0.6	1.0			0.7	1.1	1.1			0.7	0.7	0.7
Actuated g/C Ratio	0.04	0.06			0.05	0.07	0.07			0.05	0.05	0.05
Clearance Time (s)	4.0	5.0			4.0	5.0	5.0			4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0			2.0	2.0	2.0
Lane Grp Cap (vph)	68	229			80	252	113			71	84	71
v/s Ratio Prot	0.00	0.01			c0.02	c0.01						0.00
v/s Ratio Perm							0.00			0.00	c0.01	
v/c Ratio	0.03	0.12			0.38	0.12	0.01			0.02	0.14	0.00
Uniform Delay, d1	7.1	6.8			7.1	6.7	6.6			7.0	7.1	7.0
Progression Factor	1.00	1.00			1.00	1.00	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1			1.1	0.1	0.0			0.0	0.3	0.0
Delay (s)	7.2	6.9			8.2	6.8	6.7			7.1	7.3	7.0
Level of Service	A	A			A	A	A			A	A	A
Approach Delay (s)		6.9				7.3			7.1			7.3
Approach LOS		A				A			A			A

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	15.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	2
Future Volume (vph)	2
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	2
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBT	NBR
Lane Group Flow (vph)	15	48	592	21	147	1106
v/c Ratio	0.01	0.06	0.77	0.01	0.56	0.61
Control Delay	19.3	0.1	44.9	4.3	48.8	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.3	0.1	44.9	4.3	48.8	2.5
Queue Length 50th (ft)	2	0	192	3	93	0
Queue Length 95th (ft)	10	0	216	11	135	15
Internal Link Dist (ft)	503			527	378	
Turn Bay Length (ft)		230	90			
Base Capacity (vph)	1673	809	833	1405	356	1817
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.06	0.71	0.01	0.41	0.61

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	13	40	497	18	0	72	58	0	929	0	0
Future Volume (vph)	0	13	40	497	18	0	72	58	0	929	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0				4.2	6.0		
Lane Util. Factor		0.95	1.00	0.97	1.00				1.00	0.88		
Frt		1.00	0.85	1.00	1.00				1.00	0.85		
Flt Protected		1.00	1.00	0.95	1.00				0.95	1.00		
Satd. Flow (prot)		3539	1583	3433	1863				1770	2787		
Flt Permitted		1.00	1.00	0.95	1.00				0.95	1.00		
Satd. Flow (perm)		3539	1583	3433	1863				1770	2787		
Peak-hour factor, PHF	0.84	0.84	0.84	0.84	0.84	0.84	0.92	0.84	0.84	0.84	0.84	0.84
Adj. Flow (vph)	0	15	48	592	21	0	78	69	0	1106	0	0
RTOR Reduction (vph)	0	0	25	0	0	0	0	0	0	693	0	0
Lane Group Flow (vph)	0	15	23	592	21	0	0	0	147	413	0	0
Turn Type		NA	Perm	Prot	NA	Perm		Split	NA	pt+ov		
Protected Phases		2		1	6			8	8	1 8	4	4
Permitted Phases			2			6						
Actuated Green, G (s)		49.6	49.6	23.6	79.2				15.6	43.4		
Effective Green, g (s)		49.6	49.6	23.6	79.2				15.6	39.2		
Actuated g/C Ratio		0.47	0.47	0.22	0.75				0.15	0.37		
Clearance Time (s)		6.0	6.0	6.0	6.0				4.2			
Vehicle Extension (s)		2.0	2.0	2.0	2.0				2.0			
Lane Grp Cap (vph)		1671	747	771	1405				262	1040		
v/s Ratio Prot		0.00		c0.17	0.01				c0.08	0.15		
v/s Ratio Perm			c0.01									
v/c Ratio		0.01	0.03	0.77	0.01				0.56	0.40		
Uniform Delay, d1		14.7	14.8	38.1	3.2				41.5	24.2		
Progression Factor		1.00	1.00	1.00	1.00				1.00	1.00		
Incremental Delay, d2		0.0	0.1	4.2	0.0				1.6	0.1		
Delay (s)		14.7	14.9	42.3	3.2				43.2	24.3		
Level of Service		B	B	D	A				D	C		
Approach Delay (s)		14.9			41.0				26.5			0.0
Approach LOS		B			D				C			A

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	0
Future Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.84
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	22	2	15	15	0
Future Volume (Veh/h)	15	22	2	15	15	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76
Hourly flow rate (vph)	20	29	3	20	20	0
Pedestrians	3		1			
Lane Width (ft)	12.0		12.0			
Walking Speed (ft/s)	3.5		3.5			
Percent Blockage	0		0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	57	16			26	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57	16			26	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			99	
cM capacity (veh/h)	935	1060			1584	

Direction, Lane #	WB 1	WB 2	NB 1	SB 1
Volume Total	20	29	23	20
Volume Left	20	0	0	20
Volume Right	0	29	20	0
cSH	935	1060	1700	1584
Volume to Capacity	0.02	0.03	0.01	0.01
Queue Length 95th (ft)	2	2	0	1
Control Delay (s)	8.9	8.5	0.0	7.3
Lane LOS	A	A		A
Approach Delay (s)	8.7		0.0	7.3
Approach LOS	A			

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	WBR	NBR	SBL
Lane Group Flow (vph)	36	46	41	29	40	67
v/c Ratio	0.02	0.10	0.02	0.04	0.03	0.12
Control Delay	6.6	10.7	3.6	0.8	0.1	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	10.7	3.6	0.8	0.1	9.8
Queue Length 50th (ft)	0	0	0	0	0	0
Queue Length 95th (ft)	8	27	4	3	0	34
Internal Link Dist (ft)	660		503			
Turn Bay Length (ft)		145		90	50	
Base Capacity (vph)	3502	1528	3502	1511	1504	1609
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.03	0.01	0.02	0.03	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	30	0	4	34	34	24	0	0	33	56	0
Future Volume (vph)	0	30	0	4	34	34	24	0	0	33	56	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			4.0	5.0	5.0			4.0	4.0	
Lane Util. Factor		0.95			1.00	0.95	1.00			1.00	1.00	
Frpb, ped/bikes		1.00			1.00	1.00	0.98			1.00	1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00			1.00	1.00	
Frt		1.00			1.00	1.00	0.85			0.85	1.00	
Flt Protected		1.00			0.95	1.00	1.00			1.00	0.95	
Satd. Flow (prot)		3539			1770	3539	1547			1583	1770	
Flt Permitted		1.00			0.95	1.00	1.00			1.00	1.00	
Satd. Flow (perm)		3539			1770	3539	1547			1583	1863	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	0	36	0	5	41	41	29	0	0	40	67	0
RTOR Reduction (vph)	0	0	0	0	0	0	19	0	0	35	0	0
Lane Group Flow (vph)	0	36	0	0	46	41	10	0	0	5	67	0
Confl. Peds. (#/hr)							9					
Confl. Bikes (#/hr)			1									
Turn Type	Prot	NA		Prot	Prot	NA	Perm			Perm	Perm	
Protected Phases	1	6		5	5	2			8			4
Permitted Phases							2	8		8	4	
Actuated Green, G (s)		1.5			0.7	6.2	6.2			2.2	2.2	
Effective Green, g (s)		1.5			0.7	6.2	6.2			2.2	2.2	
Actuated g/C Ratio		0.09			0.04	0.36	0.36			0.13	0.13	
Clearance Time (s)		5.0			4.0	5.0	5.0			4.0	4.0	
Vehicle Extension (s)		2.0			2.0	2.0	2.0			2.0	2.0	
Lane Grp Cap (vph)		305			71	1261	551			200	235	
v/s Ratio Prot		c0.01			c0.03	0.01						
v/s Ratio Perm							0.01			0.00	c0.04	
v/c Ratio		0.12			0.65	0.03	0.02			0.03	0.29	
Uniform Delay, d1		7.3			8.2	3.6	3.6			6.7	6.9	
Progression Factor		1.00			1.00	1.00	1.00			1.00	1.00	
Incremental Delay, d2		0.1			14.2	0.0	0.0			0.0	0.2	
Delay (s)		7.4			22.4	3.7	3.6			6.7	7.1	
Level of Service		A			C	A	A			A	A	
Approach Delay (s)		7.4				11.1			6.7			7.1
Approach LOS		A				B			A			A

Intersection Summary			
HCM 2000 Control Delay	8.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	17.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	0
Future Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.83
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	12	127	973	13	1	168	737	1
v/c Ratio	0.01	0.24	0.71	0.01	0.00	0.65	0.38	0.01
Control Delay	27.6	6.7	31.9	5.8	0.0	53.6	1.4	48.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	6.7	31.9	5.8	0.0	53.6	1.4	48.0
Queue Length 50th (ft)	3	0	284	2	0	108	0	1
Queue Length 95th (ft)	11	45	#457	11	0	167	28	7
Internal Link Dist (ft)	503			527		378		115
Turn Bay Length (ft)		230	90		195			
Base Capacity (vph)	1008	536	1366	1379	1185	314	1916	283
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.24	0.71	0.01	0.00	0.54	0.38	0.00

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	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	11	116	885	12	1	70	84	0	671	0	1
Future Volume (vph)	0	11	116	885	12	1	70	84	0	671	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0			4.2	6.0		4.0
Lane Util. Factor		0.95	1.00	0.97	1.00	1.00			1.00	0.88		1.00
Frpb, ped/bikes		1.00	0.99	1.00	1.00	1.00			1.00	1.00		1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00
Frt		1.00	0.85	1.00	1.00	0.85			1.00	0.85		1.00
Flt Protected		1.00	1.00	0.95	1.00	1.00			0.95	1.00		1.00
Satd. Flow (prot)		3539	1563	3433	1863	1583			1770	2787		1863
Flt Permitted		1.00	1.00	0.95	1.00	1.00			0.95	1.00		1.00
Satd. Flow (perm)		3539	1563	3433	1863	1583			1770	2787		1863
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.92	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	12	127	973	13	1	76	92	0	737	0	1
RTOR Reduction (vph)	0	0	95	0	0	0	0	0	0	336	0	0
Lane Group Flow (vph)	0	12	32	973	13	1	0	0	168	401	0	1
Confl. Peds. (#/hr)			1									
Turn Type		NA	Perm	Prot	NA	Perm		Split	NA	pt+ov		NA
Protected Phases		2		1	6			8	8	1 8	4	4
Permitted Phases			2			6						
Actuated Green, G (s)		26.7	26.7	41.8	74.5	74.5			15.3	61.3		1.0
Effective Green, g (s)		26.7	26.7	41.8	74.5	74.5			15.3	57.1		1.0
Actuated g/C Ratio		0.25	0.25	0.40	0.71	0.71			0.15	0.54		0.01
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0			4.2			4.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0	2.0			2.0			2.0
Lane Grp Cap (vph)		899	397	1366	1321	1123			257	1515		17
v/s Ratio Prot		0.00		c0.28	0.01				c0.09	0.14		c0.00
v/s Ratio Perm			c0.02			0.00						
v/c Ratio		0.01	0.08	0.71	0.01	0.00			0.65	0.26		0.06
Uniform Delay, d1		29.3	29.8	26.5	4.5	4.4			42.3	12.8		51.5
Progression Factor		1.00	1.00	1.00	1.00	1.00			1.00	1.00		1.00
Incremental Delay, d2		0.0	0.4	1.5	0.0	0.0			4.5	0.0		0.5
Delay (s)		29.3	30.2	28.0	4.5	4.4			46.8	12.8		52.1
Level of Service		C	C	C	A	A			D	B		D
Approach Delay (s)		30.1			27.7				19.1			52.1
Approach LOS		C			C				B			D

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	0
Future Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Appendix E – Signal Warrant Analysis Work Sheets

Peak Hour Warrant (Rural Areas)

(Community less than 10,000 population or above 70 km/h (40 mph) on Major Street)

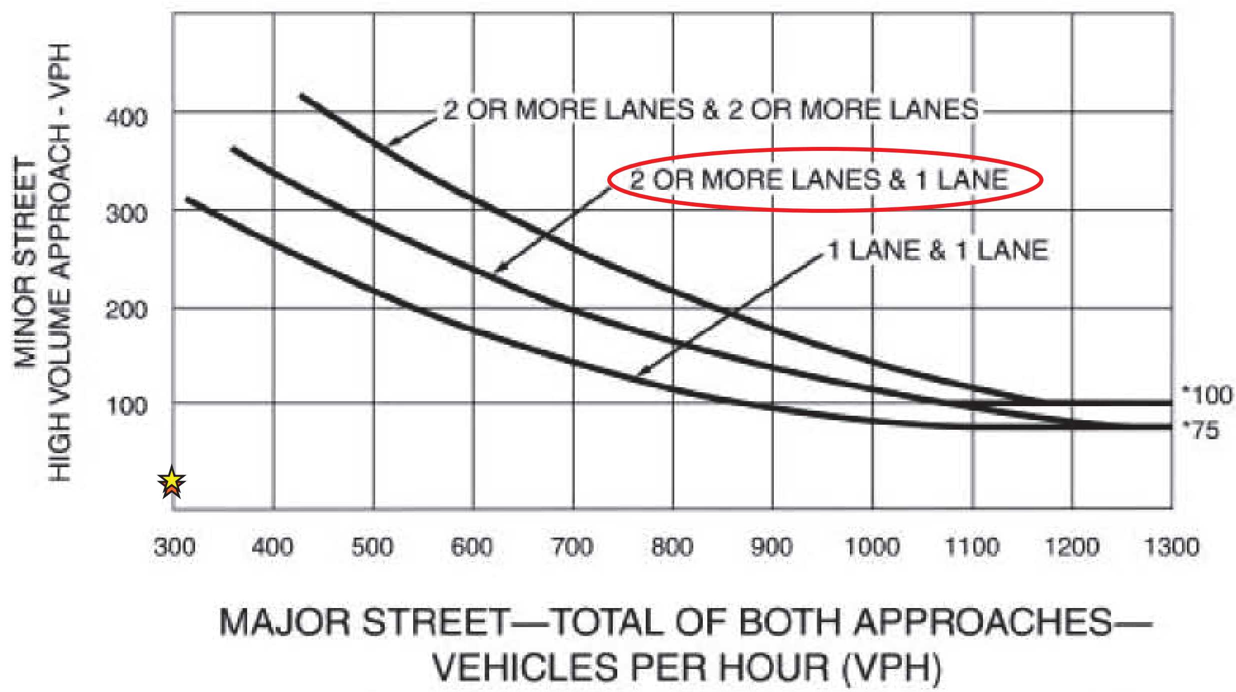
Intersection: N. Canyons Parkway and Doolan Rd, Livermore, CA

Scenario: Existing Conditions A.M. & P.M. Peak Hour

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

Minor Street Volume = 19 (29) VPH



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Legend:

XX – AM Peak Volume

(XX) – PM Peak Volume

★ – A.M.

★ – P.M.

Major Street Volume = 32 (67) VPH

A signal is not warranted for the A.M. or P.M. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-4

Peak Hour Warrant (Rural Areas)

(Community less than 10,000 population or above 70 km/h (40 mph) on Major Street)

Intersection: N. Canyons Parkway and Doolan Rd, Livermore, CA

Scenario: Existing plus Project Conditions A.M. & P.M. Peak Hour

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 km/h (40 mph) ON MAJOR STREET)

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Legend:

XX – AM Peak Volume

(XX) – PM Peak Volume

★ – A.M.

★ – P.M.

Major Street Volume = 22 (37) VPH

A signal is not warranted for the A.M. or P.M. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-4

Appendix F – Cumulative Conditions Level of Service and Queueing Work Sheets

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	224	23	1626	21	17
v/c Ratio	0.07	0.10	0.49	0.03	0.07
Control Delay	2.9	21.0	2.0	0.1	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	21.0	2.0	0.1	20.6
Queue Length 50th (ft)	0	6	0	0	4
Queue Length 95th (ft)	34	24	164	0	19
Internal Link Dist (ft)	601		661	375	404
Turn Bay Length (ft)		135			
Base Capacity (vph)	3282	394	3278	1043	712
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.06	0.50	0.02	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	206	0	21	1485	11	0	0	19	16	0	0
Future Volume (vph)	0	206	0	21	1485	11	0	0	19	16	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.86			1.00	
Flt Protected		1.00		0.95	1.00			1.00			0.95	
Satd. Flow (prot)		3539		1770	3535			1588			1765	
Flt Permitted		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (perm)		3539		1770	3535			1588			1858	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	224	0	23	1614	12	0	0	21	17	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	224	0	23	1626	0	0	0	0	0	17	0
Confl. Peds. (#/hr)				3		1			3	3		
Turn Type	Prot	NA		Prot	NA			NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)		38.9		1.3	44.7			1.3			1.3	
Effective Green, g (s)		38.9		1.3	44.7			1.3			1.3	
Actuated g/C Ratio		0.71		0.02	0.81			0.02			0.02	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		2503		41	2872			37			43	
v/s Ratio Prot		0.06		0.01	c0.46			0.00				
v/s Ratio Perm											c0.01	
v/c Ratio		0.09		0.56	0.57			0.01			0.40	
Uniform Delay, d1		2.5		26.6	1.8			26.2			26.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.0		16.4	0.3			0.1			5.9	
Delay (s)		2.5		42.9	2.0			26.4			32.4	
Level of Service		A		D	A			C			C	
Approach Delay (s)		2.5			2.6			26.4			32.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	3.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	27	237	4	1539	23	12	110
v/c Ratio	0.15	0.11	0.03	0.60	0.02	0.07	0.43
Control Delay	28.2	4.0	28.0	7.4	0.6	26.6	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.2	4.0	28.0	7.4	0.6	26.6	12.4
Queue Length 50th (ft)	7	7	1	78	0	3	0
Queue Length 95th (ft)	32	31	10	297	3	19	40
Internal Link Dist (ft)		661		503			
Turn Bay Length (ft)	215		145		90		
Base Capacity (vph)	360	2515	605	2664	1205	1158	1118
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.09	0.01	0.58	0.02	0.01	0.10

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	25	218	0	4	0	1416	21	0	0	0	11	0
Future Volume (vph)	25	218	0	4	0	1416	21	0	0	0	11	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0			4.0	5.0	5.0				4.0	
Lane Util. Factor	1.00	0.95			1.00	0.95	1.00				1.00	
Frt	1.00	1.00			1.00	1.00	0.85				1.00	
Flt Protected	0.95	1.00			0.95	1.00	1.00				0.95	
Satd. Flow (prot)	1770	3539			1770	3539	1583				1770	
Flt Permitted	0.95	1.00			0.95	1.00	1.00				0.91	
Satd. Flow (perm)	1770	3539			1770	3539	1583				1693	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	237	0	4	0	1539	23	0	0	0	12	0
RTOR Reduction (vph)	0	0	0	0	0	0	8	0	0	0	0	0
Lane Group Flow (vph)	27	237	0	0	4	1539	15	0	0	0	12	0
Turn Type	Prot	NA		Prot	Prot	NA	Perm				Perm	
Protected Phases	1	6		5	5	2			8			
Permitted Phases							2	8			4	
Actuated Green, G (s)	2.2	40.6			0.9	39.3	39.3				4.4	
Effective Green, g (s)	2.2	40.6			0.9	39.3	39.3				4.4	
Actuated g/C Ratio	0.04	0.69			0.02	0.67	0.67				0.07	
Clearance Time (s)	4.0	5.0			4.0	5.0	5.0				4.0	
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0				2.0	
Lane Grp Cap (vph)	66	2439			27	2361	1056				126	
v/s Ratio Prot	c0.02	0.07			0.00	c0.43						
v/s Ratio Perm							0.01				c0.01	
v/c Ratio	0.41	0.10			0.15	0.65	0.01				0.10	
Uniform Delay, d1	27.7	3.0			28.6	5.8	3.3				25.4	
Progression Factor	1.00	1.00			1.00	1.00	1.00				1.00	
Incremental Delay, d2	1.5	0.0			0.9	0.5	0.0				0.1	
Delay (s)	29.2	3.1			29.5	6.3	3.3				25.5	
Level of Service	C	A			C	A	A				C	
Approach Delay (s)		5.7				6.3			0.0			25.4
Approach LOS		A				A			A			C

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	58.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	101
Future Volume (vph)	101
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.0
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	110
RTOR Reduction (vph)	102
Lane Group Flow (vph)	8
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	4.4
Effective Green, g (s)	4.4
Actuated g/C Ratio	0.07
Clearance Time (s)	4.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	118
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.07
Uniform Delay, d1	25.3
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	25.4
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	157	97	308	984	329	332	1111
v/c Ratio	0.15	0.18	0.60	0.55	0.48	0.48	0.53
Control Delay	30.8	6.2	52.3	21.6	29.7	29.8	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	6.2	52.3	21.6	29.7	29.8	1.6
Queue Length 50th (ft)	44	0	114	247	204	207	0
Queue Length 95th (ft)	75	37	159	322	289	291	27
Internal Link Dist (ft)	503			527		372	
Turn Bay Length (ft)		230	90				
Base Capacity (vph)	1076	552	513	1782	691	691	2109
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.18	0.60	0.55	0.48	0.48	0.53

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	144	89	283	905	0	72	536	0	1022	0	0
Future Volume (vph)	0	144	89	283	905	0	72	536	0	1022	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0			4.2	4.2	6.0		
Lane Util. Factor		0.95	1.00	0.97	0.95			0.95	0.95	0.88		
Frt		1.00	0.85	1.00	1.00			1.00	1.00	0.85		
Flt Protected		1.00	1.00	0.95	1.00			0.95	0.95	1.00		
Satd. Flow (prot)		3539	1583	3433	3539			1681	1681	2787		
Flt Permitted		1.00	1.00	0.95	1.00			0.95	0.95	1.00		
Satd. Flow (perm)		3539	1583	3433	3539			1681	1681	2787		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	157	97	308	984	0	78	583	0	1111	0	0
RTOR Reduction (vph)	0	0	67	0	0	0	0	0	0	488	0	0
Lane Group Flow (vph)	0	157	30	308	984	0	0	329	332	623	0	0
Turn Type		NA	Perm	Prot	NA		Perm	Split	NA	pt+ov		
Protected Phases		2		1	6			8	8	1 8	4	4
Permitted Phases			2				8					
Actuated Green, G (s)		36.5	36.5	17.9	60.4			49.4	49.4	71.5		
Effective Green, g (s)		36.5	36.5	17.9	60.4			49.4	49.4	67.3		
Actuated g/C Ratio		0.30	0.30	0.15	0.50			0.41	0.41	0.56		
Clearance Time (s)		6.0	6.0	6.0	6.0			4.2	4.2			
Vehicle Extension (s)		2.0	2.0	2.0	2.0			2.0	2.0			
Lane Grp Cap (vph)		1076	481	512	1781			692	692	1563		
v/s Ratio Prot		0.04		0.09	c0.28				c0.20	0.22		
v/s Ratio Perm			0.02					0.20				
v/c Ratio		0.15	0.06	0.60	0.55			0.48	0.48	0.40		
Uniform Delay, d1		30.4	29.6	47.7	20.5			25.8	25.9	14.9		
Progression Factor		1.00	1.00	1.00	1.00			1.00	1.00	1.00		
Incremental Delay, d2		0.3	0.2	1.4	0.2			0.2	0.2	0.1		
Delay (s)		30.7	29.8	49.1	20.7			26.0	26.1	15.0		
Level of Service		C	C	D	C			C	C	B		
Approach Delay (s)		30.4			27.5				19.1			0.0
Approach LOS		C			C				B			A

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	0
Future Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	1350	49	223	33	16
v/c Ratio	0.48	0.18	0.07	0.14	0.06
Control Delay	7.2	22.4	1.5	12.7	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.2	22.4	1.5	12.7	22.4
Queue Length 50th (ft)	0	12	0	1	4
Queue Length 95th (ft)	270	41	15	22	20
Internal Link Dist (ft)	481		660	324	404
Turn Bay Length (ft)		135			
Base Capacity (vph)	2825	415	3094	652	746
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.12	0.07	0.05	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1242	0	45	183	22	2	2	27	15	0	0
Future Volume (vph)	0	1242	0	45	183	22	2	2	27	15	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	0.98			0.88			1.00	
Flt Protected		1.00		0.95	1.00			1.00			0.95	
Satd. Flow (prot)		3539		1770	3482			1616			1765	
Flt Permitted		1.00		0.95	1.00			0.98			1.00	
Satd. Flow (perm)		3539		1770	3482			1582			1858	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1350	0	49	199	24	2	2	29	16	0	0
RTOR Reduction (vph)	0	0	0	0	5	0	0	28	0	0	0	0
Lane Group Flow (vph)	0	1350	0	49	218	0	0	5	0	0	16	0
Confl. Peds. (#/hr)				1					3	3		
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)		34.1		2.7	41.3			2.3			2.3	
Effective Green, g (s)		34.1		2.7	41.3			2.3			2.3	
Actuated g/C Ratio		0.65		0.05	0.79			0.04			0.04	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		2294		90	2733			69			81	
v/s Ratio Prot		c0.38		c0.03	0.06							
v/s Ratio Perm								0.00			c0.01	
v/c Ratio		0.59		0.54	0.08			0.08			0.20	
Uniform Delay, d1		5.3		24.3	1.3			24.1			24.3	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.4		6.6	0.0			0.5			1.2	
Delay (s)		5.6		30.9	1.3			24.6			25.5	
Level of Service		A		C	A			C			C	
Approach Delay (s)		5.6			6.6			24.6			25.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	52.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1396	4	250	26	32	22
v/c Ratio	0.47	0.02	0.12	0.03	0.12	0.07
Control Delay	4.9	19.0	3.6	0.5	17.9	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	19.0	3.6	0.5	17.9	0.4
Queue Length 50th (ft)	0	1	0	0	5	0
Queue Length 95th (ft)	234	8	17	2	28	0
Internal Link Dist (ft)	660		503			
Turn Bay Length (ft)		145		90		
Base Capacity (vph)	2940	908	3192	1381	1718	1469
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.00	0.08	0.02	0.02	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	1284	0	4	0	230	24	0	0	0	29	0
Future Volume (vph)	0	1284	0	4	0	230	24	0	0	0	29	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			4.0	5.0	5.0				4.0	
Lane Util. Factor		0.95			1.00	0.95	1.00				1.00	
Frpb, ped/bikes		1.00			1.00	1.00	0.97				1.00	
Flpb, ped/bikes		1.00			1.00	1.00	1.00				1.00	
Frt		1.00			1.00	1.00	0.85				1.00	
Flt Protected		1.00			0.95	1.00	1.00				0.95	
Satd. Flow (prot)		3539			1770	3539	1540				1770	
Flt Permitted		1.00			0.95	1.00	1.00				1.00	
Satd. Flow (perm)		3539			1770	3539	1540				1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1396	0	4	0	250	26	0	0	0	32	0
RTOR Reduction (vph)	0	0	0	0	0	0	7	0	0	0	0	0
Lane Group Flow (vph)	0	1396	0	0	4	250	19	0	0	0	32	0
Confl. Peds. (#/hr)							9					
Confl. Bikes (#/hr)			1									
Turn Type	Prot	NA		Prot	Prot	NA	Perm				Perm	
Protected Phases	1	6		5	5	2			8			
Permitted Phases							2	8			4	
Actuated Green, G (s)		27.6			0.7	32.3	32.3				2.1	
Effective Green, g (s)		27.6			0.7	32.3	32.3				2.1	
Actuated g/C Ratio		0.64			0.02	0.74	0.74				0.05	
Clearance Time (s)		5.0			4.0	5.0	5.0				4.0	
Vehicle Extension (s)		2.0			2.0	2.0	2.0				2.0	
Lane Grp Cap (vph)		2250			28	2633	1146				90	
v/s Ratio Prot		c0.39			0.00	c0.07						
v/s Ratio Perm							0.01				c0.02	
v/c Ratio		0.62			0.14	0.09	0.02				0.36	
Uniform Delay, d1		4.8			21.1	1.5	1.4				20.0	
Progression Factor		1.00			1.00	1.00	1.00				1.00	
Incremental Delay, d2		0.4			0.9	0.0	0.0				0.9	
Delay (s)		5.1			21.9	1.5	1.4				20.9	
Level of Service		A			C	A	A				C	
Approach Delay (s)		5.1				1.8			0.0			20.4
Approach LOS		A				A			A			C

Intersection Summary			
HCM 2000 Control Delay	5.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	43.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	20
Future Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	22
RTOR Reduction (vph)	21
Lane Group Flow (vph)	1
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	2.1
Effective Green, g (s)	2.1
Actuated g/C Ratio	0.05
Clearance Time (s)	4.0
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	76
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.01
Uniform Delay, d1	19.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	19.7
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	920	512	1259	78	139	140	577	1
v/c Ratio	1.04	0.79	0.76	0.03	0.71	0.57	0.28	0.02
Control Delay	95.5	26.9	36.6	5.1	79.1	67.5	1.2	71.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.5	26.9	36.6	5.1	79.1	67.5	1.2	71.0
Queue Length 50th (ft)	~500	164	507	7	137	135	0	1
Queue Length 95th (ft)	#658	328	#748	21	210	203	25	8
Internal Link Dist (ft)	503			527		378		115
Turn Bay Length (ft)		230	90					
Base Capacity (vph)	883	646	1658	2729	205	258	2027	409
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.79	0.76	0.03	0.68	0.54	0.28	0.00

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	846	471	1158	71	1	70	187	0	531	0	1
Future Volume (vph)	0	846	471	1158	71	1	70	187	0	531	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0			4.2	4.2	6.0		4.0
Lane Util. Factor		0.95	1.00	0.97	0.95			0.95	0.95	0.88		1.00
Frpb, ped/bikes		1.00	0.99	1.00	1.00			1.00	1.00	1.00		1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00	1.00		1.00
Frt		1.00	0.85	1.00	1.00			1.00	1.00	0.85		1.00
Flt Protected		1.00	1.00	0.95	1.00			0.95	0.95	1.00		1.00
Satd. Flow (prot)		3539	1562	3433	3532			1681	1681	2787		1863
Flt Permitted		1.00	1.00	0.95	1.00			0.76	0.95	1.00		1.00
Satd. Flow (perm)		3539	1562	3433	3532			1340	1681	2787		1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	920	512	1259	77	1	76	203	0	577	0	1
RTOR Reduction (vph)	0	0	264	0	0	0	0	0	0	213	0	0
Lane Group Flow (vph)	0	920	248	1259	78	0	0	139	140	364	0	1
Confl. Peds. (#/hr)			1									
Turn Type		NA	Perm	Prot	NA		Perm	Split	NA	pt+ov		NA
Protected Phases		2		1	6			8	8	1 8	4	4
Permitted Phases			2				8					
Actuated Green, G (s)		34.2	34.2	72.5	112.7			22.1	22.1	98.8		1.0
Effective Green, g (s)		34.2	34.2	72.5	112.7			22.1	22.1	94.6		1.0
Actuated g/C Ratio		0.23	0.23	0.48	0.75			0.15	0.15	0.63		0.01
Clearance Time (s)		6.0	6.0	6.0	6.0			4.2	4.2			4.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)		806	356	1659	2653			197	247	1757		12
v/s Ratio Prot		c0.26		c0.37	0.02				0.08	0.13		c0.00
v/s Ratio Perm			0.16					c0.10				
v/c Ratio		1.14	0.70	0.76	0.03			0.71	0.57	0.21		0.08
Uniform Delay, d1		57.9	53.1	31.6	4.7			60.9	59.5	11.8		74.0
Progression Factor		1.00	1.00	1.00	1.00			1.00	1.00	1.00		1.00
Incremental Delay, d2		78.3	10.8	1.8	0.0			9.0	1.8	0.0		1.1
Delay (s)		136.2	63.9	33.4	4.7			69.9	61.3	11.8		75.1
Level of Service		F	E	C	A			E	E	B		E
Approach Delay (s)		110.3			31.8				29.3			75.1
Approach LOS		F			C				C			E

Intersection Summary			
HCM 2000 Control Delay	62.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	0
Future Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Appendix G – Cumulative Plus Project Conditions Level of Service and Queueing Work Sheets

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	226	10	1626	11	17
v/c Ratio	0.07	0.05	0.49	0.04	0.07
Control Delay	2.7	21.1	2.0	0.3	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.7	21.1	2.0	0.3	20.7
Queue Length 50th (ft)	0	3	0	0	4
Queue Length 95th (ft)	33	14	165	0	20
Internal Link Dist (ft)	601		661	375	404
Turn Bay Length (ft)		135			
Base Capacity (vph)	3274	393	3281	677	711
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.03	0.50	0.02	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	206	2	9	1485	11	2	0	8	16	0	0
Future Volume (vph)	0	206	2	9	1485	11	2	0	8	16	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	1.00			0.89			1.00	
Flt Protected		1.00		0.95	1.00			0.99			0.95	
Satd. Flow (prot)		3535		1770	3535			1622			1765	
Flt Permitted		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (perm)		3535		1770	3535			1637			1858	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	224	2	10	1614	12	2	0	9	17	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	226	0	10	1626	0	0	0	0	0	17	0
Confl. Peds. (#/hr)				3		1			3	3		
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)		39.2		1.1	44.8			1.3			1.3	
Effective Green, g (s)		39.2		1.1	44.8			1.3			1.3	
Actuated g/C Ratio		0.71		0.02	0.81			0.02			0.02	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		2514		35	2874			38			43	
v/s Ratio Prot		0.06		0.01	c0.46							
v/s Ratio Perm								0.00			c0.01	
v/c Ratio		0.09		0.29	0.57			0.01			0.40	
Uniform Delay, d1		2.5		26.6	1.8			26.3			26.5	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.0		4.5	0.3			0.1			5.9	
Delay (s)		2.5		31.1	2.0			26.3			32.4	
Level of Service		A		C	A			C			C	
Approach Delay (s)		2.5			2.2			26.3			32.4	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	2.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	55.1	Sum of lost time (s)	13.5
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBR	SBL	SBT
Lane Group Flow (vph)	27	225	30	1526	23	23	12	110
v/c Ratio	0.15	0.11	0.17	0.59	0.02	0.03	0.07	0.28
Control Delay	27.5	4.9	27.5	7.0	0.6	0.1	27.0	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	4.9	27.5	7.0	0.6	0.1	27.0	1.9
Queue Length 50th (ft)	7	6	8	77	0	0	3	0
Queue Length 95th (ft)	31	30	33	269	3	0	19	0
Internal Link Dist (ft)		661		503				387
Turn Bay Length (ft)	215		145		90	50		
Base Capacity (vph)	364	2393	613	2698	1219	1291	1260	1177
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.09	0.05	0.57	0.02	0.02	0.01	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	25	207	0	4	24	1404	21	0	0	21	11	0
Future Volume (vph)	25	207	0	4	24	1404	21	0	0	21	11	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0			4.0	5.0	5.0			4.0	4.0	4.0
Lane Util. Factor	1.00	0.95			1.00	0.95	1.00			1.00	1.00	1.00
Frt	1.00	1.00			1.00	1.00	0.85			0.85	1.00	0.85
Flt Protected	0.95	1.00			0.95	1.00	1.00			1.00	0.95	1.00
Satd. Flow (prot)	1770	3539			1770	3539	1583			1583	1770	1583
Flt Permitted	0.95	1.00			0.95	1.00	1.00			1.00	0.98	1.00
Satd. Flow (perm)	1770	3539			1770	3539	1583			1583	1817	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	225	0	4	26	1526	23	0	0	23	12	0
RTOR Reduction (vph)	0	0	0	0	0	0	8	0	0	21	0	102
Lane Group Flow (vph)	27	225	0	0	30	1526	15	0	0	2	12	8
Turn Type	Prot	NA		Prot	Prot	NA	Perm			Perm	Perm	NA
Protected Phases	1	6		5	5	2			8			4
Permitted Phases							2	8		8	4	
Actuated Green, G (s)	2.2	38.9			2.2	38.9	38.9			4.1	4.1	4.1
Effective Green, g (s)	2.2	38.9			2.2	38.9	38.9			4.1	4.1	4.1
Actuated g/C Ratio	0.04	0.67			0.04	0.67	0.67			0.07	0.07	0.07
Clearance Time (s)	4.0	5.0			4.0	5.0	5.0			4.0	4.0	4.0
Vehicle Extension (s)	2.0	2.0			2.0	2.0	2.0			2.0	2.0	2.0
Lane Grp Cap (vph)	66	2365			66	2365	1058			111	128	111
v/s Ratio Prot	0.02	0.06			c0.02	c0.43						0.00
v/s Ratio Perm							0.01			0.00	c0.01	
v/c Ratio	0.41	0.10			0.45	0.65	0.01			0.01	0.09	0.07
Uniform Delay, d1	27.4	3.4			27.4	5.6	3.2			25.2	25.3	25.3
Progression Factor	1.00	1.00			1.00	1.00	1.00			1.00	1.00	1.00
Incremental Delay, d2	1.5	0.0			1.8	0.5	0.0			0.0	0.1	0.1
Delay (s)	28.9	3.4			29.2	6.1	3.2			25.2	25.4	25.4
Level of Service	C	A			C	A	A			C	C	C
Approach Delay (s)		6.1				6.5			25.2			25.4
Approach LOS		A				A			C			C

Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	58.2	Sum of lost time (s)	13.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	101
Future Volume (vph)	101
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	110
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR
Lane Group Flow (vph)	159	105	308	987	333	337	1111
v/c Ratio	0.15	0.19	0.62	0.56	0.47	0.48	0.53
Control Delay	31.0	6.7	53.3	22.2	29.1	29.3	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	6.7	53.3	22.2	29.1	29.3	1.6
Queue Length 50th (ft)	45	0	114	251	206	209	0
Queue Length 95th (ft)	76	41	160	327	290	294	27
Internal Link Dist (ft)	503			527		372	
Turn Bay Length (ft)		230	90				
Base Capacity (vph)	1069	551	498	1760	702	702	2112
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.19	0.62	0.56	0.47	0.48	0.53

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	146	97	283	908	0	72	545	0	1022	0	0
Future Volume (vph)	0	146	97	283	908	0	72	545	0	1022	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0			4.2	4.2	6.0		
Lane Util. Factor		0.95	1.00	0.97	0.95			0.95	0.95	0.88		
Frt		1.00	0.85	1.00	1.00			1.00	1.00	0.85		
Flt Protected		1.00	1.00	0.95	1.00			0.95	0.95	1.00		
Satd. Flow (prot)		3539	1583	3433	3539			1681	1681	2787		
Flt Permitted		1.00	1.00	0.95	1.00			0.95	0.95	1.00		
Satd. Flow (perm)		3539	1583	3433	3539			1681	1681	2787		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	159	105	308	987	0	78	592	0	1111	0	0
RTOR Reduction (vph)	0	0	73	0	0	0	0	0	0	486	0	0
Lane Group Flow (vph)	0	159	32	308	987	0	0	333	337	625	0	0
Turn Type		NA	Perm	Prot	NA		Perm	Split	NA	pt+ov		
Protected Phases		2		1	6			8	8	1 8	4	4
Permitted Phases			2				8					
Actuated Green, G (s)		36.3	36.3	17.4	59.7			50.1	50.1	71.7		
Effective Green, g (s)		36.3	36.3	17.4	59.7			50.1	50.1	67.5		
Actuated g/C Ratio		0.30	0.30	0.14	0.50			0.42	0.42	0.56		
Clearance Time (s)		6.0	6.0	6.0	6.0			4.2	4.2			
Vehicle Extension (s)		2.0	2.0	2.0	2.0			2.0	2.0			
Lane Grp Cap (vph)		1070	478	497	1760			701	701	1567		
v/s Ratio Prot		0.04		0.09	c0.28				c0.20	0.22		
v/s Ratio Perm			0.02					0.20				
v/c Ratio		0.15	0.07	0.62	0.56			0.48	0.48	0.40		
Uniform Delay, d1		30.6	29.8	48.2	21.0			25.4	25.5	14.8		
Progression Factor		1.00	1.00	1.00	1.00			1.00	1.00	1.00		
Incremental Delay, d2		0.3	0.3	1.6	0.2			0.2	0.2	0.1		
Delay (s)		30.9	30.1	49.8	21.3			25.6	25.7	14.9		
Level of Service		C	C	D	C			C	C	B		
Approach Delay (s)		30.5			28.1				18.9			0.0
Approach LOS		C			C				B			A

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	0
Future Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	1351	16	223	21	16
v/c Ratio	0.42	0.06	0.07	0.08	0.06
Control Delay	3.9	19.3	0.9	13.7	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	19.3	0.9	13.7	18.9
Queue Length 50th (ft)	0	3	0	1	3
Queue Length 95th (ft)	250	19	15	18	19
Internal Link Dist (ft)	481		660	324	404
Turn Bay Length (ft)		135			
Base Capacity (vph)	3188	454	3281	747	817
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.42	0.04	0.07	0.03	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1242	1	15	183	22	5	2	13	15	0	0
Future Volume (vph)	0	1242	1	15	183	22	5	2	13	15	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes		1.00		1.00	1.00			0.99			1.00	
Flpb, ped/bikes		1.00		1.00	1.00			1.00			1.00	
Frt		1.00		1.00	0.98			0.91			1.00	
Flt Protected		1.00		0.95	1.00			0.99			0.95	
Satd. Flow (prot)		3539		1770	3482			1659			1765	
Flt Permitted		1.00		0.95	1.00			1.00			1.00	
Satd. Flow (perm)		3539		1770	3482			1679			1858	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1350	1	16	199	24	5	2	14	16	0	0
RTOR Reduction (vph)	0	0	0	0	4	0	0	14	0	0	0	0
Lane Group Flow (vph)	0	1351	0	16	219	0	0	7	0	0	16	0
Confl. Peds. (#/hr)				1					3	3		
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)		33.9		1.1	39.5			1.1			1.1	
Effective Green, g (s)		33.9		1.1	39.5			1.1			1.1	
Actuated g/C Ratio		0.68		0.02	0.80			0.02			0.02	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		2418		39	2772			37			41	
v/s Ratio Prot		c0.38		c0.01	0.06							
v/s Ratio Perm								0.00			c0.01	
v/c Ratio		0.56		0.41	0.08			0.20			0.39	
Uniform Delay, d1		4.0		23.9	1.1			23.8			23.9	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.3		6.9	0.0			2.6			6.0	
Delay (s)		4.3		30.8	1.1			26.4			30.0	
Level of Service		A		C	A			C			C	
Approach Delay (s)		4.3			3.1			26.4			30.0	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	49.6	Sum of lost time (s)	13.5
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	WBR	NBR	SBL	SBT
Lane Group Flow (vph)	1380	40	217	26	35	32	22
v/c Ratio	0.53	0.17	0.12	0.03	0.06	0.13	0.03
Control Delay	7.9	21.4	3.9	0.4	0.2	20.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	21.4	3.9	0.4	0.2	20.8	0.1
Queue Length 50th (ft)	71	8	7	0	0	7	0
Queue Length 95th (ft)	254	34	15	2	0	29	0
Internal Link Dist (ft)	660		503				387
Turn Bay Length (ft)		145		90	50		
Base Capacity (vph)	2580	822	2993	1299	1413	1601	1449
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.05	0.07	0.02	0.02	0.02	0.02

Intersection Summary

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	1270	0	4	33	200	24	0	0	32	29	0
Future Volume (vph)	0	1270	0	4	33	200	24	0	0	32	29	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			4.0	5.0	5.0			4.0	4.0	4.0
Lane Util. Factor		0.95			1.00	0.95	1.00			1.00	1.00	1.00
Frpb, ped/bikes		1.00			1.00	1.00	0.97			1.00	1.00	1.00
Flpb, ped/bikes		1.00			1.00	1.00	1.00			1.00	1.00	1.00
Frt		1.00			1.00	1.00	0.85			0.85	1.00	0.85
Flt Protected		1.00			0.95	1.00	1.00			1.00	0.95	1.00
Satd. Flow (prot)		3539			1770	3539	1539			1583	1770	1583
Flt Permitted		1.00			0.95	1.00	1.00			1.00	1.00	1.00
Satd. Flow (perm)		3539			1770	3539	1539			1583	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1380	0	4	36	217	26	0	0	35	32	0
RTOR Reduction (vph)	0	0	0	0	0	0	7	0	0	33	0	20
Lane Group Flow (vph)	0	1380	0	0	40	217	19	0	0	2	32	2
Confl. Peds. (#/hr)							9					
Confl. Bikes (#/hr)			1									
Turn Type	Prot	NA		Prot	Prot	NA	Perm			Perm	Perm	NA
Protected Phases	1	6		5	5	2			8			4
Permitted Phases							2	8		8	4	
Actuated Green, G (s)		28.0			2.1	34.1	34.1			3.3	3.3	3.3
Effective Green, g (s)		28.0			2.1	34.1	34.1			3.3	3.3	3.3
Actuated g/C Ratio		0.60			0.05	0.73	0.73			0.07	0.07	0.07
Clearance Time (s)		5.0			4.0	5.0	5.0			4.0	4.0	4.0
Vehicle Extension (s)		2.0			2.0	2.0	2.0			2.0	2.0	2.0
Lane Grp Cap (vph)		2135			80	2600	1131			112	132	112
v/s Ratio Prot		c0.39			c0.02	0.06						0.00
v/s Ratio Perm							0.01			0.00	c0.02	
v/c Ratio		0.65			0.50	0.08	0.02			0.02	0.24	0.01
Uniform Delay, d1		6.0			21.6	1.7	1.7			20.0	20.4	20.0
Progression Factor		1.00			1.00	1.00	1.00			1.00	1.00	1.00
Incremental Delay, d2		0.5			1.8	0.0	0.0			0.0	0.3	0.0
Delay (s)		6.5			23.4	1.7	1.7			20.1	20.7	20.1
Level of Service		A			C	A	A			C	C	C
Approach Delay (s)		6.5				4.8			20.1			20.4
Approach LOS		A				A			C			C

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	46.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	20
Future Volume (vph)	20
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	22
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Group Flow (vph)	924	527	1259	79	140	141	577	1
v/c Ratio	1.05	0.81	0.76	0.03	0.71	0.57	0.28	0.02
Control Delay	98.0	27.9	36.6	5.2	79.0	67.4	1.2	71.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.0	27.9	36.6	5.2	79.0	67.4	1.2	71.0
Queue Length 50th (ft)	~508	174	505	7	138	136	0	1
Queue Length 95th (ft)	#663	343	#749	22	210	204	25	8
Internal Link Dist (ft)	503			527		378		115
Turn Bay Length (ft)		230	90					
Base Capacity (vph)	879	651	1658	2725	206	259	2029	409
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.81	0.76	0.03	0.68	0.54	0.28	0.00

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	0	850	485	1158	72	1	70	189	0	531	0	1
Future Volume (vph)	0	850	485	1158	72	1	70	189	0	531	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.0	6.0			4.2	4.2	6.0		4.0
Lane Util. Factor		0.95	1.00	0.97	0.95			0.95	0.95	0.88		1.00
Frpb, ped/bikes		1.00	0.99	1.00	1.00			1.00	1.00	1.00		1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00			1.00	1.00	1.00		1.00
Frt		1.00	0.85	1.00	1.00			1.00	1.00	0.85		1.00
Flt Protected		1.00	1.00	0.95	1.00			0.95	0.95	1.00		1.00
Satd. Flow (prot)		3539	1562	3433	3532			1681	1681	2787		1863
Flt Permitted		1.00	1.00	0.95	1.00			0.76	0.95	1.00		1.00
Satd. Flow (perm)		3539	1562	3433	3532			1340	1681	2787		1863
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	924	527	1259	78	1	76	205	0	577	0	1
RTOR Reduction (vph)	0	0	271	0	0	0	0	0	0	212	0	0
Lane Group Flow (vph)	0	924	256	1259	79	0	0	140	141	365	0	1
Confl. Peds. (#/hr)			1									
Turn Type		NA	Perm	Prot	NA		Perm	Split	NA	pt+ov		NA
Protected Phases		2		1	6			8	8	1 8	4	4
Permitted Phases			2				8					
Actuated Green, G (s)		34.0	34.0	72.5	112.5			22.3	22.3	99.0		1.0
Effective Green, g (s)		34.0	34.0	72.5	112.5			22.3	22.3	94.8		1.0
Actuated g/C Ratio		0.23	0.23	0.48	0.75			0.15	0.15	0.63		0.01
Clearance Time (s)		6.0	6.0	6.0	6.0			4.2	4.2			4.0
Vehicle Extension (s)		2.0	2.0	2.0	2.0			2.0	2.0			2.0
Lane Grp Cap (vph)		802	354	1659	2649			199	249	1761		12
v/s Ratio Prot		c0.26		c0.37	0.02				0.08	0.13		c0.00
v/s Ratio Perm			0.16					c0.10				
v/c Ratio		1.15	0.72	0.76	0.03			0.70	0.57	0.21		0.08
Uniform Delay, d1		58.0	53.6	31.6	4.8			60.7	59.4	11.7		74.0
Progression Factor		1.00	1.00	1.00	1.00			1.00	1.00	1.00		1.00
Incremental Delay, d2		82.5	12.0	1.8	0.0			8.9	1.8	0.0		1.1
Delay (s)		140.5	65.7	33.4	4.8			69.6	61.1	11.7		75.1
Level of Service		F	E	C	A			E	E	B		E
Approach Delay (s)		113.4			31.7				29.3			75.1
Approach LOS		F			C				C			E

Intersection Summary			
HCM 2000 Control Delay	63.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	20.2
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	0
Future Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Appendix H – Parking Study

June 26, 2020

John Park
Owner
Parkwest Casino 580
968 North Canyons Parkway
Livermore, CA 9451

Subject: 2020 Parking Study Update for Parkwest Casino 580 in Livermore

Dear Mr. Van Wagner:

TJKM Transportation Consultants has prepared this parking analysis of Parkwest Casino 580 in the City of Livermore. This study is being completed to assist you and the City of Livermore to understand the existing parking situation at the site in preparation for a planned expansion. TJKM was retained to determine existing parking levels at the facility and to forecast future parking demand. In recent history, Parkwest Casino 580 has had significant overflow parking issues. Now, an expansion of not only the gambling facilities but also a major expansion of on-site parking are planned.

Existing Conditions

Parkwest Casino 580 currently occupies the main portion of a 42,000 square foot building located in the southeast quadrant of the intersection of North Canyons Parkway and Doolan Road. The building was previously occupied by other businesses in addition to Parkwest Casino 580, but now only about one-quarter of the building is occupied by a single user. The remaining portion of the building is occupied by Parkwest Casino 580 or is vacant. The parking lot contains about 129 parking stalls of which about 14 are reserved for the use of the other building occupant during normal business hours and are available for Casino 580 customers after hours and weekends.

Because the number of customers of Casino 580 exceeds the capacity of the parking lot on many occasions, the management instructs its employees to park on the west side of Doolan Road or the north side of Collier Canyon Road (the frontage road on the north side of I-580). These two areas are located in unincorporated portions of Alameda County and the roadway has no parking restrictions. Generally, the employee vehicles are parked on unpaved (but firmly surfaced) shoulders and do not interfere with the flow of traffic in the area, which aside from Casino-bound traffic is very light.

The employee on-street parking is concentrated in about a 1,200 foot length of the east side of Doolan Road north of Collier Canyon Road and a length of about 800 feet on the north side of Collier Canyon Road west of Doolan Road. In parking observations conducted for this study, from 60 to 100 vehicles are generally parked in this area. Although there are no street lights in the unincorporated areas, there are four street lights on the east side of Doolan Road in this area, which provide some lighting for the area used for parking. The four light fixtures themselves are located about 20 feet laterally from the parking areas across the street. There are no street lights on Collier Canyon Road. On Doolan Road, there are sidewalks for employees to walk to and from their cars, but on the east side of the street. On Collier Canyon Road there are no sidewalks.

In TJKM's surveys, it was observed that there is a very active private security force patrolling the area within and near Parkwest Casino 580. The security people are monitoring both on- and off-site parking to insure that parkers and their vehicles are safe.

Parking Observations

In order to determine how parking conditions changed since TJKM's previous detailed observations during December 2015 and January 2016, TJKM was tasked with making new parking counts. Unfortunately, due to the Corona Virus outbreak, Parkwest Casino 580 was closed down in Mid-March of 2020 before the parking observations could be made. Instead, TJKM utilized in-house parking observations made over a several month period in 2018 and 2019. TJKM had intended to make separate counts to validate the in-house counts.

Upon inspection, it was found that the characteristics and patterns of the new counts appeared identical to the earlier TJKM counts. In the 3.5 year period between the TJKM counts and the in-house counts, parking demand grew about 10 to 12 percent, or about three percent per year. TJKM is of the opinion that the in-house counts are reliable and representative of actual conditions.

The earlier TJKM counts were conducted four times a day over a seven week period, with a total of about 200 observations. The in-house counts were conducted hourly, 24/7, for the months of October, November and December 2018 and from April to November in 2019. Parking observations during this time period occurred over 245 days for a total of over 5,800 hourly observations. Each parking observation included both on-site and off-site parking. It is the intent to provide sufficient on-site parking to satisfy the total parking demand for the expanded facility.

There is one other business on-site occupying about one quarter of the 42,000 square foot building and sharing the parking lot. The business sells and maintains motorcycles and has a relatively low parking demand. In addition to its internal garage, there are about 14 parking stalls marked for use from 9 a.m. to 6 p.m. on weekdays. The rest of the time, the stalls are available for the casino. The in-house counts that were made included the parked vehicles related to this business. This business will remain in the after condition.

TJKM's earlier observations also included head counts of casino occupants at the same time as cars counts were made in order to estimate average auto occupancy. The calculated occupancies ranged from about 1.1 to 1.3 persons per vehicle. This statistic was less informative than the actual counts of parked cars.

Table 1 demonstrate the variation of parked vehicles by time of day. Parkwest Casino 580 is open 24 hours daily, except for closures on Mondays from 2 to 11 a.m. The two days reflected on this chart – Friday October 25, 2019 and the next day Saturday October 26, 2019 were the two busiest days in the last month of counts that are available. In that sense, they would approximate the counts that might have been made by TJKM about four months later. Fridays and Saturdays are typically the two busiest days of the week; in most weeks Sunday is the third highest. On Fridays, the counts peak after 9 p.m. and continue past midnight.

Table 1: Hourly Variations in Parked Vehicles on a Friday and Saturday

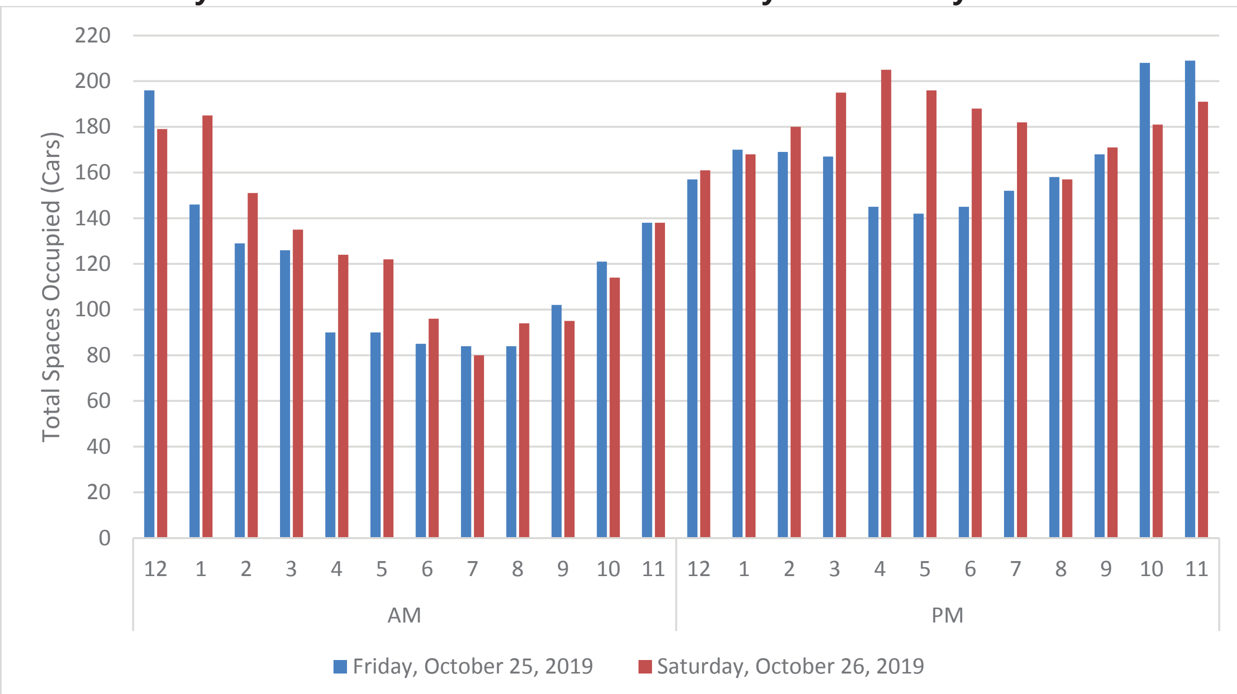


Table 2: Summary of Hours Exceeding 220 Parked Vehicles

Month	Days	Hours >220 Vehicles	Highest No. of Vehicles	Details of 220 Vehicle Exceedances
Oct. 2018	15	0	217	
Nov. 2018	30	1	225	Nov. 9
Dec. 2018	2	0	212	
Apr. 2019	5	0	203	
May 2019	31	0	220	
June 2019	30	0	215	
July 2019	31	21	236	7/15: 6 times, 7/16: 6 times, 7/17: 1 time, 7/18: 1 time, 7/23: 3 times, 7/30: 4 times
Aug. 2019	31	1	223	Aug. 8
Sept. 2019	30	0	219	
Oct. 2019	31	1	225	Oct. 21
Nov. 2019	9	0	203	
Total	**245**	**24**	**-**	

TJKM reviewed the hourly spreadsheets for all 245 days in which parking observations were made. Most days had no hours with more than 200 parked vehicles, some had between 200 and 220 parked vehicles. **Table 2** shows the highest observed hour during each of the observed months. There were only 24 single hours during the 245 days of observations in which there were more than 220 parked vehicles. Interestingly, all but three of those hours occurred in the last two weeks of June 2019, and half of them were in two consecutive days. The use of 220 parked cars as a current upper limit results in this number of parked vehicles being exceeded only 0.4 percent of the time.

Potential Parking Capacity Increases

The proposed expansion of the Parkwest Casino 580 facility provides for additional gambling tables and also provides an increase in space for the bar and restaurant and for the stage area that provides an internal venue for periodic entertainment of the gamblers. These facilities are all intended for use by gambling patrons and are not for the use of outsiders. Therefore, the increase in attendance at the facility is expected to be directly proportional to the increase in gambling tables.

The facility is currently allowed to occupy 10 gambling tables at a time. The facility intends to increase the legally usable gambling tables from 10 to 16. Of the six increased tables, three would be used as VIP tables, only accommodating two or three gamblers per table instead of the typical eight to ten per table. The VIP tables would accommodate a maximum of five people, including staffing. Given the current peak parking demand of 220 vehicles, this amounts to 22 parked vehicles per active gambling table, which includes gamblers and the Parkwest Casino 580 support staff. The 22 stall parking demand represents roughly double the number of actual people at each table.

To project future demand for the six added gambling tables, TJKM considers three standard tables each generating demand for 22 parking stalls and three VIP tables, each generating demand for 10 parking stalls. The total added demand is 3 x 22 + 3 x 10 = 96 parking spaces. When added to the peak demand of 220 stalls, this yields a combined demand of 316 parking stalls. It should be emphasized that this is a very conservative number which should be exceeded less than one-half percent of the hours of operation.

The proposed expanded parking facilities will hold a total of 350 vehicles in the existing and new parking areas. This leaves a surplus of 34 parking stalls, an excess of 10 percent.

Site Circulation

The entrance to the new parking lot is an existing signalized intersection on N. Canyons Parkway, approximately midway between Airway Boulevard and Doolan Road. At the present time, essentially all arriving and departing traffic uses Airway Boulevard to access the I-580 freeway, so the signalized entrance to the new parking lot will be heavily utilized. In addition, the two existing site driveways will remain – the existing main entrance on Doolan Road and the existing right in/ right out driveway near the east end of the building. This driveway will be used primarily for exiting traffic in the future.

The cities of Livermore and Dublin and the County of Alameda are planning to connect North Canyons Parkway in Livermore with Dublin Boulevard in Dublin. This roadway is currently being designed and should be constructed and open within about five years, pending final financing. The signalized access point will be helpful when traffic increases on N. Canyons Parkway.

For on-site circulation, a future VIP entrance to the building is expected to be added at a new location on the south (freeway) side of the building, supplementing the existing entrance near the Doolan Road driveway. The new VIP entrance is being considered and will be finalized as part of any Casino remodel/upgrades. Both entrances would be accessible for patrons and staff utilizing both existing and new parking facilities. In the near term, only the existing west entrance will be available.

Summarizing:

- The Parkwest Casino 580 facility has a strong history of measuring and recording recent parking activity in which parking lot counts have been made hourly 24/7 for 245 days.
- The peak parking demand at the facility is 220 parked vehicles. This number was only exceeded in 24 individual <u>hours</u> during the 245 survey <u>days</u>, or 0.4 percent of the time.
- The expanded facility will generate an additional parking demand of 96 parking spaces, bringing the total demand to 316 parking stalls, under absolute peak conditions.
- The combined capacity of the existing and new parking lots is 350 parking stalls, leaving a surplus of 34 parking stalls during peak conditions.
- The expanded facilities will have excellent automobile access to the parking areas and excellent pedestrian access to the building itself.

Please contact me if there are questions about this material.

Very truly yours,

Chris D. Kinzel

Chris D. Kinzel, P.E.
Vice President

Attachment: Proposed site plan

LEGEND

Scale 1" = 50'

0 25 50 100 150

NORTH

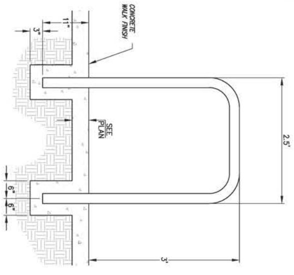
- CONCRETE SIDEWALK
- PCC PAVEMENT
- BIO-RETENTION PLANTER
- LANDSCAPE
- NEW AC PAVEMENT
- BICYCLE RACK PER DETAIL 1 BELOW
- PARKING OVERHANG
- SAWCUT LINE
- EMPLOYEE PARKING STALL
- ELECTRIC VEHICLE CAPABLE SPACE
- ELECTRIC VEHICLE CHARGING STATION (EVCS)
- EVCS ACCESSIBLE SPACE
- ELECTRIC CHARGING

PARKING SUMMARY

	EXISTING	MODIFIED EXISTING	PROPOSED	TOTAL
STANDARD STALLS	126	121	178	299
ELECTRICAL VEHICLE CAPABLE SPACE	0	0	26	26
ELECTRICAL VEHICLE CHARGING STATION (EVCS)	0	0	26	26
ACCESSIBLE ELECTRICAL VEHICLE CHARGING STATION (EVCS)	0	1	0	1
ADA STALLS	5	4	0	9
TOTAL	131	126	230	361
	EXISTING	MODIFIED EXISTING	PROPOSED	TOTAL
BICYCLE PARKING	0	0	36	36

PARKING COUNT NOTE:

THE EXISTING CASINO 580 SITE HAS 5 ACCESSIBLE STALLS AND 126 STANDARD STALLS FOR A TOTAL OF 131 STALLS. FIVE OF THE EXISTING STANDARD STALLS WILL BE CONVERTED TO ONE ACCESSIBLE ELECTRIC VEHICLE CHARGING AND FOUR ACCESSIBLE STALLS. THIS MODIFICATION MAINTAINS THE 131 TOTAL STALLS ON THE EXISTING SITE. THE PARKING LOT EXPANSION ADDS AN ADDITIONAL 230 STALLS FOR A NEW TOTAL OF 361 PARKING STALLS.



STAPLE BICYCLE RACK
NOT TO SCALE
1

PRELIMINARY SITE PLAN
OF
AIRWAY BOULEVARD AT N. CANYONS PARKWAY
FOR
MONUMENT PROPERTIES LIVERMORE, LLC

LIVERMORE, CALIFORNIA

DATE	OCT. 2024
SCALE	AS SHOWN
DESIGNER	BC
DRAWN BY	CF
JOB NO.	A18649
SHEET	C5.0
	5 OF 8 SHEETS

KIER+WRIGHT
2850 Collier Canyon Road
Livermore, California 94551
Phone (925) 245-8788
www.kierwright.com

NO.	REVISION	BY	NO.	REVISION	BY
△			△		
△			△		
△			△		
△			△		
△			△		