CITY OF ANTIOCH
COMMUNITY DEVELOPMENT DEPARTMENT

Rocketship Elementary School

INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

September 2017

RANEY
PLANNING & MANAGEMENT, INC.

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Appendices

INITIAL STUDY

September 2017

A. BACKGROUND

1.	Project Title:	Rocketship Elementary School
2.	Lead Agency Name and Address:	City of Antioch Community Development Department P.O. Box 5007 Antioch, CA 94531
3.	Contact Person and Phone Number:	Alexis Morris Planning Manager (925) 779-7035
4.	Project Location:	1700 Cavallo Road Assessor Parcel Number (APN) 065-151-049-7 Antioch, CA
5.	Project Sponsor's Name and Address:	Launchpad Development Eighteen, LLC 350 Twin Dolphin Drive, Suite 109 Redwood City, CA 94065
6.	Existing General Plan Designation:	Commercial Office (CO)
7.	Existing Zoning Designation:	Regional Commercial District (C-3)
8.	Proposed Zoning Designation:	Professional Office District (C-0)

9. Project Description Summary:

The Rocketship Elementary School (proposed project) would include the demolition of the existing, vacant office building to construct a new 30,367-square-foot (s.f.) elementary school on 1.7 acres. The proposed project would serve as a Pre-K through 5th grade elementary charter school, as part of the Rocketship Education Public Charter school network. The proposed project would serve up to 600 students with 32 full-time staff.

B. SOURCES

All the technical reports and modeling results used for the purposes of this analysis are available upon request at the City of Antioch Community Development Department, Planning Division located at Third & "H" Streets in Antioch, California, Monday through Friday between 8:00 – 11:30 AM. The following documents are referenced information sources utilized by this analysis:

1. Antioch Unified School District. Developer Fee Justification Document for Residential, Commercial, and Industrial Development Projects. July 2014.
2. Association of Bay Area Governments Resilience Program. Landslide Maps and Information. July 15, 2016. Available at: http://resilience.abag.ca.gov/landslides/. Accessed May 25, 2017.
3. California Department of Toxic Substances Control. Hazardous Waste and Substances Site List. Accessed May 26, 2017.
4. California Department of Transportation. California Scenic Highway Mapping System. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm. Accessed on May 25, 2017.
5. California Department of Resources Recycling and Recovery (CalRecycle). Solid Waste Information System. Available at: www.calrecycle.ca.gov/SWFacilities/. Accessed July, 2016.
6. Caltrans. Transportation and Construction Vibration Guidance Manual. September 2013.
7. City of Antioch. City of Antioch, California Code of Ordinances Table of Land Use Regulations § 9-5.3803. Current through September 22, 2015.
8. City of Antioch. City of Antioch General Plan. November 23, 2003.
9. City of Antioch. General Plan Update EIR. July 2003.
10. California Department of Conservation. Contra Costa County Important Farmland Map. July, 2011.
11. Contra Costa Transportation Authority. 2011 Contra Costa Congestion Management Program [page 62]. Adopted November 16, 2011.
12. Delta Diablo. Proposed Tuscany Meadows Subdivision Letter Addressed to Nick Pappani, Vice President Raney Planning and Management. October 3, 2013.
13. Dryad, LLC. Tree Evaluation & Preservation, 700 Cavallo Rd., Antioch, CA. February 12, 2017.
14. Institute of Transportation Engineers. Trip Generation Handbook – 9th Edition. September 2012.
15. Northwest Information Center. Records Search Results for the Proposed Rocketship School Project, 1700 Cavallo Road, Antioch. June 8, 2017.
16. Personal Communication with Alexis Morris, Senior Planner, City of Antioch Community Development Department. August 16, 2016.
17. United States Department of Agriculture. Web Soil Survey. Accessed May 25, 2017.

C. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

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

Signature — September 22, 2017 Date

Alexis Morris, Planning Manager — Printed Name

City of Antioch — For

E. BACKGROUND AND INTRODUCTION

This Initial Study identifies and analyzes the potential environmental impacts of the 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 Initial Study will be implemented in conjunction with the project, as required by CEQA. The mitigation measures will be incorporated into the project through project conditions of approval. The City will adopt findings and a Mitigation Monitoring/Reporting Program for the project in conjunction with approval of the project.

F. PROJECT DESCRIPTION

The following section provides a detailed description of the location, setting, and components of the proposed project.

Project Location

The 1.7-acre project site is located at 1700 Cavallo Road, Antioch, CA 94509, near the 18th Street Corridor, southeast of downtown Antioch and north of State Route (SR) 4 (see Figure 1).

Project Setting and Surrounding Land Uses

The site currently consists of a vacant office building built in 1965 and formerly used as a newspaper office and distributor, 29 on-site trees, and 31 existing parking spaces. The proposed project is surrounded by existing development, including commercial uses to the south and southwest, single-family residential to the east and northwest, and a Contra Costa County office building immediately north of the site (see Figure 2). The existing K through 5th grade Kimball Elementary School is located approximately 0.21 miles to the northwest of the project site.

Project Components

The proposed project includes the removal of an existing, vacant office building and the development of a new charter elementary school with a total building area of 30,367 s.f. (see Figure 3). The proposed school would serve up to 600 students between Pre-K and 5th Grade with 32 full-time staff. The proposed two-story school would include 20 classrooms, 2,250 s.f. of office space, and two classrooms for learning labs, as well as a parent work room, conference rooms, a warming kitchen, and student and staff restrooms. In addition to the proposed building, the project would include 12,406 s.f. of landscaping area, and 35,856 s.f. of open space, which would include a play structure, soccer turf, tree grove, lunch shelter, and garden boxes for the students. The proposed project would also be used for monthly community meetings in the evening for 10-20 families to discuss issues with school leadership, and professional development, testing preparation, and enrichment workshops twice per month on Saturdays from 8:00 AM to 4:00 PM with attending staff.

Figure 1
Regional Project Location

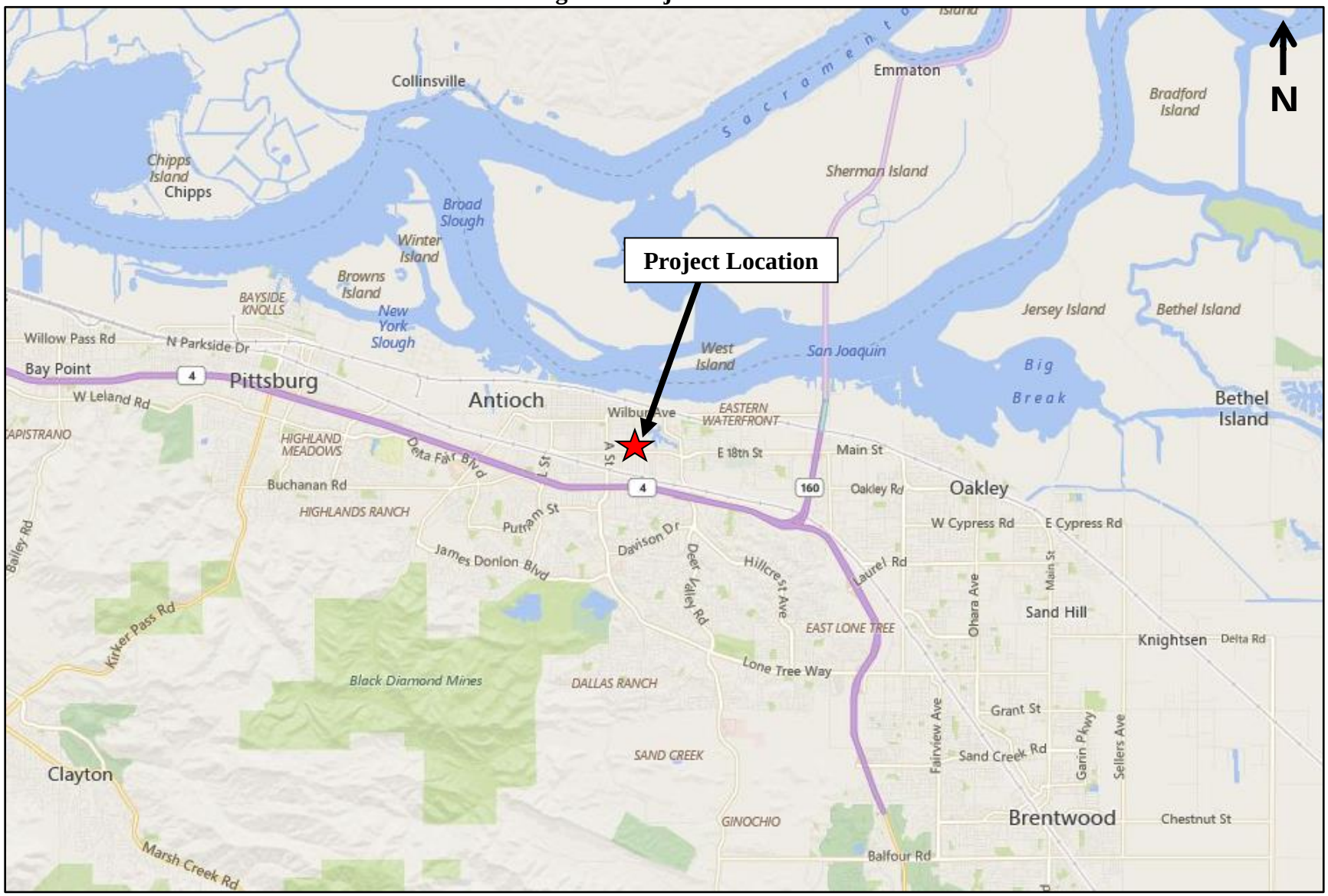


Figure 2
Project Vicinity Map

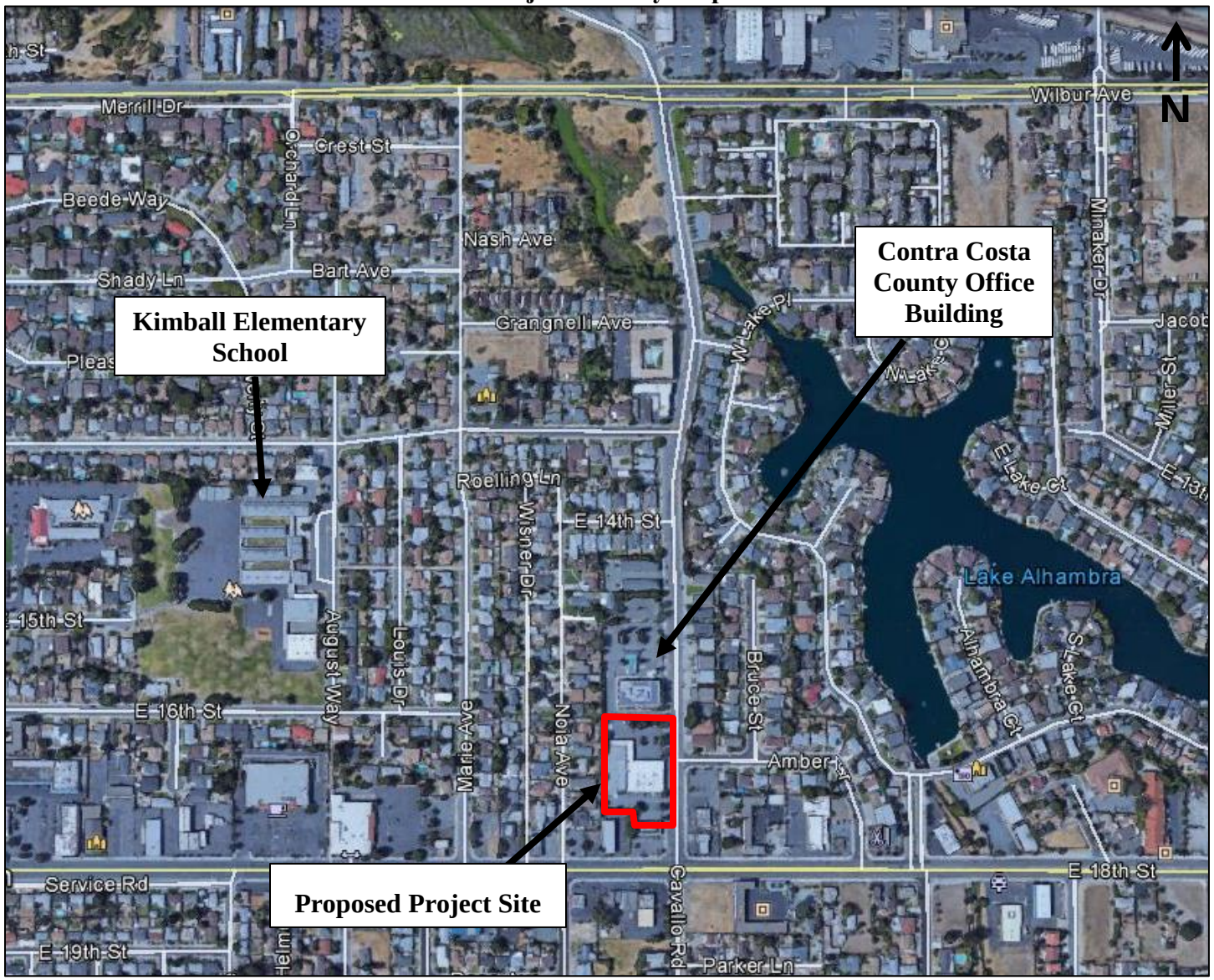
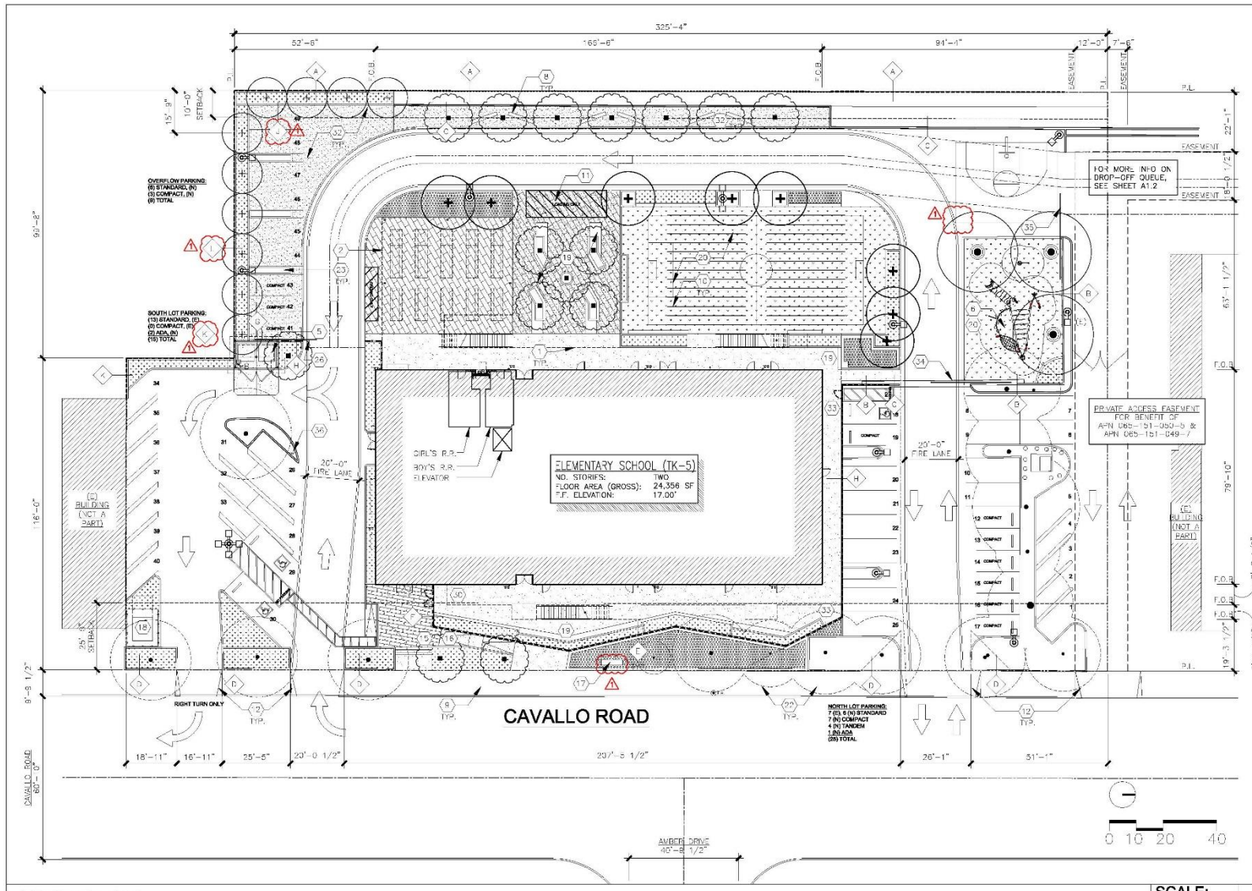


Figure 3
Project Site Plan



SITE PLAN

SCALE: 1" = 20'-0" 7

SITE PLAN NOTES:

1. ACCESSIBLE PATH OF TRAVEL AS SHOWN SHALL BE A BARRIER FREE ACCESS WITHOUT ANY ABRUPT VERTICAL CHANGES EXCEED 1/2" @ 1:2 MAXIMUM SLOPE, EXCEPT AT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL. MAXIMUM CROSS SLOPE SHALL BE 2% TYPICAL. MAXIMUM RUNNING SLOPE SHALL BE 5% EXCEPT AT RAMPS AND CURB RAMPS. MAXIMUM RUNNING SLOPE SHALL BE 8.33%.
2. DO NOT SCALE FROM DRAWINGS.
3. COLOR OF DETECTABLE WARNING WITH TRUNCATED DOMES TO BE YELLOW. DETECTABLE WARNING TO BE INSTALLED ON TOP OF CONCRETE PAVEMENT. DO NOT INSTALL DETECTABLE WARNING ON TOP OF A.C. PAVEMENT.
4. THE ISA SHALL CONSIST OF A WHITE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL BE EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595B.
5. WHERE ACCESSIBLE PARKING SPACES ARE MARKED WITH LINES, WIDTH MEASUREMENTS OF PARKING SPACES AND ACCESS AISLES SHALL BE MADE FROM THE CENTER LINE OF THE MARKING. DOUBLE STRIPING IS NON-COMPLIANT.
6. IN CONCRETE PAVEMENT PROVIDE CONTROL JOINTS @ 12'-0" MAX. O.C. EACH WAY. CONTROL JOINTS TO BE SAWCUT, NOT TOOLED. ARCHITECT TO APPROVE JOINT LOCATIONS PRIOR TO SAWCUTTING. SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
7. ALL WALL/FENCE HEIGHTS ARE FROM HIGHEST ADJACENT GRADE EXCEPT WALL/FENCE TYPE 'J', WHICH IS FROM LOWEST ADJACENT GRADE.
8. ALL EXTERIOR PAVEMENT TO DRAIN AWAY FROM BUILDINGS AND HAVE MINIMUM 1/8" PER FOOT SLOPE. (S.C.D.)
9. SURFACE SLOPE PERCENTAGE VALUE IS MAXIMUM WHERE INDICATED. SURFACE SLOPE VALUE IS ABSOLUTE WHERE "MAXIMUM" IS NOT INDICATED. ALL EXTERIOR PAVEMENT SHALL HAVE A MINIMUM SLOPE OF 1.0% FOR DRAINAGE.
10. ARCHITECTURAL TARGET ELEVATIONS ARE BASED ON DATUM POINT OF 100.00' ESTABLISHED AS FINISH FLOOR. DATUM POINT IS EQUIVALENT TO 66.00' RELEVANT TO TOPOGRAPHIC SURVEY AND CIVIL DRAWINGS.
11. FOR EXISTING TREES TO REMAIN SEE DETAIL A/L.2, TREE PRESERVATION AND SPECIFICATION 01 55 39, AND TREE AND PLAN PROTECTION.

SITE WALL/FENCE TYPES (SEE NOTE #7)

- A — (F) CONC. RETAINING WALL W/5'-0" C.L. FENCE
- B — (E) 6'-0" C.M.U. WALL
- C — (E) CONC RETAINING WALL
- D — (E) CONC RETAINING/ PLANTER WALL
- E — 3'-0" C.M.U. WALL W/CEMENT PLASTER FINISH W/3'-0" STEEL FENCE ON TOP
- F — 6'-0" FENCE W/PLASTIC LUMBER SLATS TO MATCH STAIN #1
- G — 6'-0" C.M.U. WALL
- H — 6'-0" WROUGHT IRON FENCE
- J — CONC. RET. WALL (SEE D2.0)
- K — (E) C.L. FENCE
- L — 6'-0" C.L. FENCE

LEGEND:

- PROPERTY LINE
- SETBACK LINE
- CONCRETE PAVEMENT, S.C.D.
- ASPHALT PAVEMENT, S.C.D.
- BIO-RETENTION AREA, S.L.D., S.C.D.
- SYNTHETIC TURF, S.L.D.
- LANDSCAPE AREA, S.L.D.
- VISIBILITY TRIANGLE
- CONCRETE PAVERS, S.C.D.
- PERVIOUS CONC. PAVERS, S.C.D.
- ACCESSIBLE PATH OF TRAVEL (SEE NOTE 1)
- (E) TREE
- (N) TREE
- DW — WATER METER (DOMESTIC)
- IW — WATER METER (IRRIGATION)
- BFP D — BACKFLOW PREVENTER (D"=DOMESTIC, I"=FIRE, I"=IRRIGATION)(S.C.D.)
- DCDA — DETECTOR DOUBLE CHECK VALVE
- ETM — ELECTRICAL TRANSFORMER BY PG&E (S.C.D. & S.E.D.)
- MSS — ELECTRICAL METER/MAIN SERVICE & DISTRIBUTION (S.E.D.)
- GAS — GAS METER (S.C.D.)
- FDC — FIRE DEPARTMENT CONNECTION
- PIV — POST INDICATOR VALVE
- DB — DITCH BASIN WITH TRASH CAPTURE
- SD — POLE LIGHT ON 2'-0" DIA. X 2'-0" HIGH CONC. PEDESTAL (S.C.D. & S.E.D.)
- 0.5% (MIN.) — DOWNWARD SURFACE SLOPE (SEE NOTE #9)
- D.F. — ADA-COMPLIANT HI-LO DRINKING FOUNTAIN
- D.S. — DOWNSPOUT
- F.H. — FIRE HYDRANT (S.C.D.)
- F.S.R. — FIRE SPRINKLER RISER (S.F.D.)
- H.B. — HOSE BIBB
- STREET LIGHT (S.C.D.)

KEYNOTES:

1. LINE OF ROOF OVERHANG ABOVE
2. COVERED LUNCH SHELTER
3. 20' WIDE FIRE ACCESS LANE
4. VISIBILITY TRIANGLE PER CITY STANDARD
5. TRASH ENCLOSURE W/ DRAIN TO SEWER & HOT/COLD WATER SUPPLY, SEE A1.2
6. PLAY EQUIPMENT
7. SIGN TO READ "NO PARKING – FIRE LANE"
8. WOOD BENCH
9. CONCRETE SIDEWALK (S.C.D.)
10. PAINTED "LAUNCH" LINES
11. 10'-0" X 30'-0" LOADING ZONE W/ PAINTED STRIPES
12. (E) CURB CUT & DRIVE APRON (S.C.D.)
13. CONCRETE WALKWAY (S.C.D.)
14. CONCRETE CURB & GUTTER (S.C.D.)
15. CONCRETE STEPS
16. CONCRETE RAMP
17. MONUMENT SIGN
18. ELECTRICAL TRANSFORMER
19. OUTDOOR SITTING AREA WITH BUILT-IN BENCHES
20. SYNTHETIC TURF (S.I.D.)
21. TREE (S.L.D.)
22. (E) TREE (S.L.D.) (SEE NOTE #11)
23. 3'-0"W X 10'-0"L X 2'-0"H VEGETABLE GARDEN PLANTERS (6x6 LANDSCAPE TIES W/REBAR STAKES)
24. CURB RAMP W/DETECTABLE WARNING
25. 20'-0" CLR. MANUALLY OPERATED SLIDING GATE W/NON-CASEHARDENED LOCK, 6'-0"H
26. CONCRETE SEAT WALL
27. 5'-0" X 5'-0" TREE WELL W/ D.G.
28. RUBBERISED SAFETY SURFACE
29. COVERED & SECURED BICYCLE PARKING
30. INDUSTRIAL MOUNTED E.V. CHARGER ON CONC. PAD
31. DECOMPOSED GRANITE (D.G.)
32. FIRE DEPARTMENT ACCESS GATE
33. (E) W. 20'-0" CLR. 6'-0"H SLIDING GATE TO REMAIN. INSTALL NON-CASEHARDENED LOCK.
34. (E) W.R. SLIDING GATE TO REMAIN
35. SIGN TO READ "ONE WAY – DO NOT ENTER"

NOTES

SCALE: N.T.S. 4

VICINITY MAP

SCALE: N.T.S. 1

GENERAL SUMMARY:

GENERAL PLAN:	OFFICE, NEIGHBORHOOD COMMERCIAL	
ZONING DESIGNATIONS:	C-O	
FEMA FLOOD ZONE:	SITE NOT LOCATED IN FLOOD ZONE	
SIZE OF PROPERTY:	GROSS:	74,792.22 SF (1.717 ACRES)
	NET:	74,792.22 SF (1.717 ACRES)
TOTAL FLOOR AREA: (GROSS)	FIRST FLOOR:	13,239 SF
	SECOND FLOOR:	11,117 SF
	SUBTOTAL:	24,356 SF
	BALCONIES / OVERHANGS:	3,917 SF
	COVERED LUNCH SHELTER:	2,094 SF
TOTAL BUILDING AREA:		30,367 SF
TOTAL BUILDING FOOTPRINT:		18,009 SF ⚠
PERCENTAGE OF LOT COVERAGE:		24.4%
LANDSCAPING AREA:	12,105 SF	16.6%
COMMON OPEN SPACE	2,992 SF	4.0%
PRIVATE USABLE OPEN SPACE	32,984 SF	43.9%
PARKING, DRIVEWAY, AND MISC.	19,034 SF	25.7%

PARKING SUMMARY:

PARKING REQUIRED			# SPACES REQUIRED
USE	BASIS	FACTOR	
GRADES TK–5	20 CLASSROOMS	1 PER CLASSROOM	20
OFFICE	2750 SF	1 PER 750 SF	3
LEARNING LABS	2 CLASSROOMS	1 PER CLASSROOM	2
		TOTAL # SPACES REQUIRED:	31

PARKING PROVIDED:		STANDARD	COMPACT	ADA	# SPACES PROVIDED
SOUTH LOT	EXISTING	13	–	–	15
	NEW	–	–	2	
NORTH LOT	EXISTING	11	7	–	26
	NEW	6	–	1	
OVERFLOW LOT	EXISTING	–	–	–	9
	NEW	6	3	–	
			TOTAL # SPACES PROVIDED:		49

SITE DATA

SCALE: N.T.S. 3

ARCHITECT:
SWIFTLEEOFFICE
543A S. Raymond Ave.
Pasadena, CA 91105
T. 323.257.8200 F. 323.257.8276
www.swiftleeoffice.com

CONSULTANT:

PROJECT NAME:
Rocketship Antioch Public School
Antioch, CA 94509

DATE: 03.13.17
REVISED: 04.13.17
USE PERMIT SUBMITTA...
REVISION ⚠

APPROVAL:

STAMP/SEAL:
LICENSED ARCHITECT MARMAN A. SMITH C-28798 03.31.17 RENEWAL STATE OF CALIFORNIA

SHEET TITLE:
SITE PLAN

PROJ. NO: 2017-12

SHEET NO:
A1.1

On-Site Parking

The proposed project would include a total of 41 on-site parking spaces to serve the 34 full-time staff members. The project includes nine overflow spaces that could be used during pick-up and drop-off times. In addition, the project applicant intends to provide a shuttle for staff members to and from the Antioch BART station located 1.3 miles away.

Arrival and Dismissal Operations

The proposed site currently shares a reciprocal access agreement with the adjacent Contra Costa County office building to the north. All existing driveways would remain. Main access for the project, consisting of student pick-up and drop-off, would be off-site to the north, utilizing the reciprocal access agreement (see Figure 4). Student drop-off would be from 7:00 AM to 7:45 AM Monday through Friday and student pick-up would be tiered according to grade: pick-up for Pre-K would be from 3:45 PM to 3:55 PM; grades 1 and 2 from 4:00 PM to 4:10 PM; grades 3, 4, and 5 from 4:10 PM to 4:20 PM. Pick-up for all grades would be at 2:15 PM on Thursdays to allow teachers time for professional development. Outside play periods would occur throughout the day with a maximum of 120 students at play at any one time.

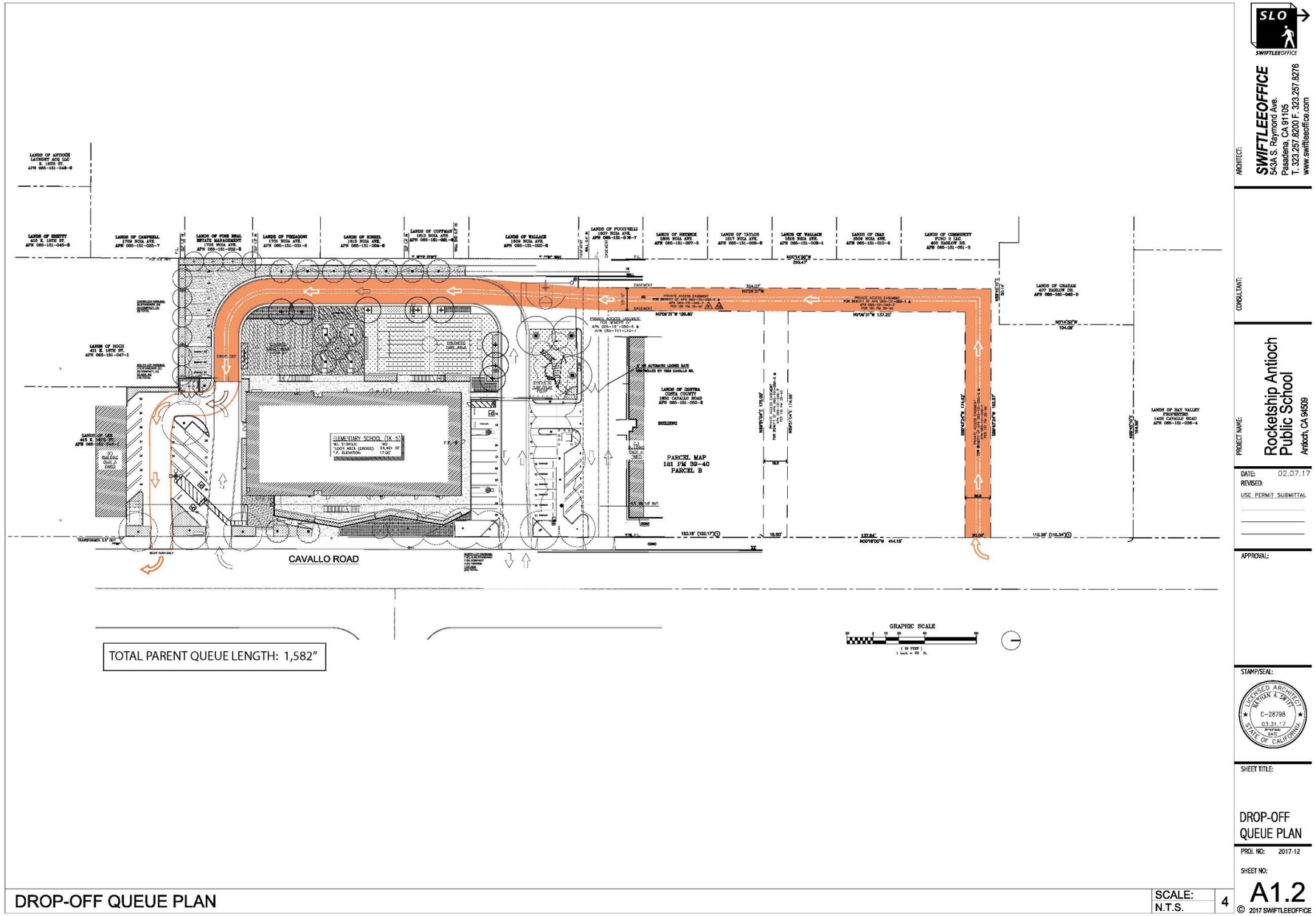
The project applicant has developed operation guidelines for student arrivals and departures and to direct vehicles through the pick-up and drop-off queue. Five operations support staff would be staged on-site to safely manage student arrival/dismissal, as well as three school leaders, such as the Principal, Assistant Principals, Business Operations Managers, etc. All staff associated with arrival and dismissal operations would undergo a day of professional development regarding traffic safety and arrival/dismissal operations prior to the start of school. Parents would additionally have a development day to receive similar education regarding proper traffic operations, and how and where to safely unload and load students on-site.

Dismissal operations would include the provision of color-coded dismissal placards to all parents prior to start of school that must be displayed in the dashboard order to enter the queue during dismissal. Each color would be assigned to a certain grade level and would include the child's name. Parents would be required to pick-up their child according to the staggered dismissal times previously listed.

As vehicles enter the queue, staff would announce the name of the child on each vehicle's placard. Staff staged with the students under the lunch shelter would prepare each student for dismissal. Additional staff would fill the student loading area with vehicles and confirm that the loading area is safe for students to load into the appropriate vehicles. Once staff confirms that all students are safely in their respective vehicles and the queue is free and clear, cars would be allowed to exit. Support staff and/or the school leader would then allow additional vehicles to refill the student loading area.

In addition, the proposed project includes off-site road improvements to construct a crosswalk at the intersection of Amber Drive and Cavallo Road along the project frontage. During pick-up and drop-off operations, a trained staff crossing-guard would be monitoring the Amber Drive crosswalk.

Figure 4
Project Drop-Off Queue Plan



Security Plan

A Security Plan prepared for the proposed project describes interior safety building features, site security, proximity to high-crime areas, traffic, transience, Megan's Law, and efforts to coordinate with the City of Antioch and Police Department. The Security Plan proposes, with approval from the Antioch Police Department, a security guard stationed on the corner of 18th Street and Cavallo Road, during the first two years of school operation.

Project Entitlements

The project site is currently zoned Regional Commercial District (C-3), which allows for commercial uses; however, does not allow for the use of schools. Therefore, the proposed project includes a request to rezone the project site to Professional Office District (C-0), which would conditionally allow a school with approval of a Use Permit.[1] The site's General Plan designation of Commercial Office (CO) would remain.

The discretionary entitlements, for the proposed project include the following:

- Rezone from C-3 to C-0;
- Variance to allow a six-foot tall wrought iron fence with a cast-in-place concrete wall base within the front setback along Cavallo Road; and
- Use Permit and Design Review to allow school development.

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. Included in each discussion are project-specific mitigation measures recommended, as appropriate, as part of the proposed project.

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.

[1] City of Antioch. City *of Antioch, California Code of Ordinances Table of Land Use Regulations § 9-5.3803.* Current through September 22, 2015.

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. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	✖	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	✖	☐

Discussion

a-c. The City of Antioch General Plan Update (GPU) EIR determined views of Mt. Diablo, the ridgelines south of SR 4, and the San Joaquin River as scenic vistas within the City of Antioch. Views of the City's three scenic vistas are either blocked by existing developments or are located too far away to be seen from the site. Furthermore, according to the California Scenic Highway Mapping System, the nearest State Scenic Highway, Interstate 680 (I-680), is located approximately 16.5 miles southwest of the site, and SR 160 is an Eligible State Scenic Highway – Not Officially Designated, which is located approximately 2.5 mile east of the project site.[2] Both I-680 and SR 160 do not have views of the project site; therefore, the project site is not located within the vicinity of any scenic vistas.

The project site currently consists of an existing, vacant office building and is surrounded by existing development; therefore, construction of the proposed project would not alter the site's existing visual character. According to Section 9-5.2607 of the Antioch Municipal Code (AMC), the project is subject to Design Review by the City of Antioch. The purpose of the Design Review process is to promote the orderly development of the City, encourage high quality site design and planning, protect the stability of land values and investments, and ensure consistency with the Citywide Design Guidelines.

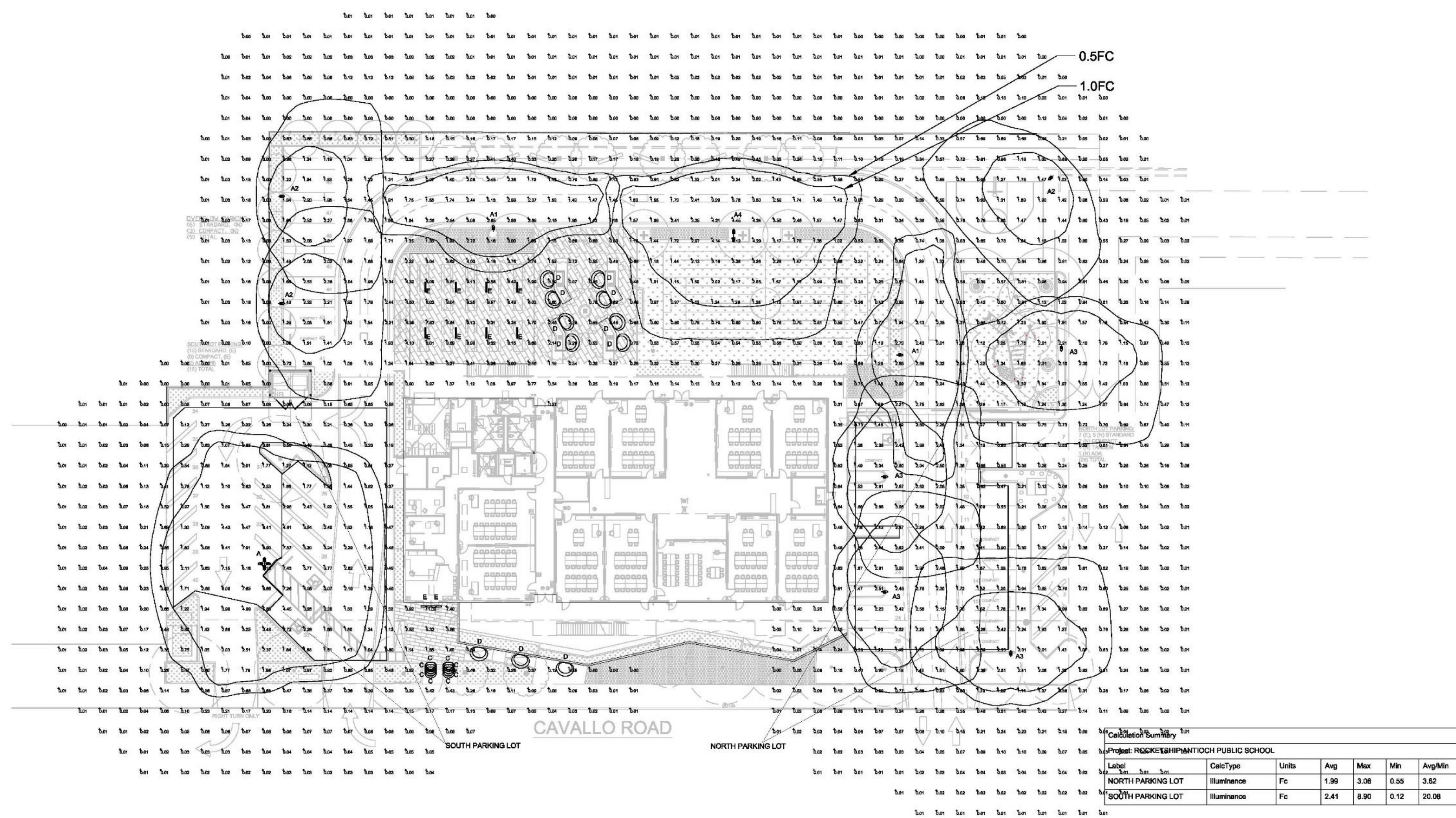
The proposed project would not be located within the vicinity of any scenic vistas nor a State Scenic Highway, the proposed project would be consistent with surrounding uses, and the proposed project would be subject to the City of Antioch's Municipal Code and Design Review process. Therefore, impacts related to an adverse effect on a scenic vista, substantial damage to scenic resources, and degrading the existing visual character of the site and its surroundings would be ***less-than-significant***.

[2] California Department of Transportation. *California Scenic Highway Mapping System*. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm. Accessed on May 25, 2017.

d. The project site is surrounded on three sides by existing commercial developments that generate light and glare. Residential uses are located to the west and northeast of the site and would be considered sensitive receptors to a producer of light and glare. The proposed project plans include a photometric plan that verifies nighttime lighting would be facing downward and any spill over light would not affect surrounding sensitive receptors (see Figure 5).

In addition, while construction and operation of the proposed project would generate both light and glare on-site, all components of the proposed project would be subject to Design Review by the City of Antioch that would ensure light and glare do not obstruct day or nighttime views in the area. Due to the verification that light and glare produced by the proposed project would not affect the nearest sensitive receptors, as well as the added assurance of the Design Review process, 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.

Figure 5
Site Photometric Plan



Calculation Summary								
Project: ROCKETSHIP ANTIOCH PUBLIC SCHOOL								
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	# Pts
NORTH PARKING LOT	Illuminance	Fc	1.99	3.06	0.55	3.62	5.60	76
SOUTH PARKING LOT	Illuminance	Fc	2.41	8.90	0.12	20.08	74.17	114

Luminaire Schedule										
Project: ROCKETSHIP ANTIOCH PUBLIC SCHOOL										
Symbol	Qty	Label	Arrangement	Lum. Lumens	LLF	LDD	LLD	BF	Description	Filename
	1	A *	GROUP	6392 / 6458	0.850	0.900	0.944	1.000	PHILIPS GARDCO ELA16-XX-4-(1)2/(3)4-80LA-NW-VOLT-XX - 18' POLE *	ELA16-2/4-80LA-NW.ies
	2	A1	SINGLE	6392	0.850	0.900	0.944	1.000	PHILIPS GARDCO ELA16-XX-1-2-80LA-NW-VOLT-XX - 18' POLE	ELA16-2-80LA-NW.ies
	3	A2	SINGLE	4706	0.850	0.900	0.944	1.000	PHILIPS GARDCO ELA16-XX-1-4-80LA-NW-VOLT-HS - 18' POLE	ELA16-4-80LA-NW-HS.ies
	4	A3	SINGLE	6458	0.850	0.900	0.944	1.000	PHILIPS GARDCO ELA16-XX-1-4-80LA-NW-VOLT-XX - 18' POLE	ELA16-4-80LA-NW.ies
	1	A4 **	GROUP	6392 / 6458	0.850	0.900	0.944	1.000	PHILIPS GARDCO ELA16-XX-2-(1)2/(1)4-80LA-NW-VOLT-XX - 18' POLE **	ELA16-2/4-80LA-NW.ies
	8	C	SINGLE	262	0.850	0.900	0.944	1.000	BEGA 22 044 - 16.8W LED	22044.IES
	11	D	SINGLE	262	0.850	0.900	0.944	1.000	BEGA 22 044 - 16.8W LED - 1' A.F.G.	22044.IES
	10	E	SINGLE	3694	0.850	0.900	0.944	1.000	KENALL ES5-48-1-45L35K-DCC-1-VOLT-XH-PP - 12' M.H.	ES5-48-45L35K-DCC-DV-2H-PP.ies

* TYPE 2 OPTIC LOCATION AIMING 180° AS SHOWN ON PLANS.
** TYPE 2 OPTIC LOCATION AIMING 90° AS SHOWN ON PLANS.

LIGHTING LAYOUT VERIFICATION

ALL VALUES SHOWN ARE MAINTAINED HORIZONTAL FOOTCANDLES AT GRADE

PHOTOMETRIC DATA USED AS INPUT FOR THESE CALCULATIONS IS BASED ON ESTABLISHED IES PROCEDURES AND PUBLISHED LAMP, RATINGS, FIELD PERFORMANCE WILL DEPEND ON ACTUAL LAMP, BALLAST, ELECTRICAL AND SITE CHARACTERISTICS.

Calculations have been performed according to IES standards and good practice. Some differences between measured values and calculated results may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.

Associated Lighting Representatives, Inc.

ASSOCIATED LIGHTING REPRESENTATIVES, INC
7777 PARDEE LANE
P.O BOX 2265
OAKLAND, CA 94621
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REPORT FOR: INTERMOUNTAIN ELECTRIC COMPANY
BY: APPLICATIONS ENGINEERING; GILBERTO J. RODRIGUEZ
SALES REPRESENTATIVE: ALR; BLAKE BUTTWEILER

AGi32 lighting software by Lighting Analysts

AGI32 VERSION 17.4
AGI (C) 1999-2017 LIGHTING ANALYSIS, INC.
10268 W. CENTENNIAL ROAD - SUITE 202
LITTLETON, CO 80127

PROJECT DESCRIPTION
ROCKETSHIP ANTIOCH PUBLIC SCHOOL
ANTIOCH, CA

DRAWING NO. / INPUT FILE
14016BUT-D.DWG /.AGI

SCALE	SHEET	DATE	REV
1" = 20'	1 OF 1	01.30.2017	3

ARCHITECT:
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CONSULTANT:

PROJECT NAME:
Rocketship Antioch Public School
Antioch, CA 94509

DATE: 02.07.17
REVISED:
USE PERMIT SUBMITTAL

APPROVAL:

STAMP/SEAL:
LICENSED ARCHITECT NATHAN A. SWIFT C-28798 03.31.17 RENEWAL DATE STATE OF CALIFORNIA

SHEET TITLE:
SITE PHOTOMETRIC PLAN

PROJ. NO: 2017-12

SHEET NO:
E-1.2

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 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 individually or cumulatively result in loss of Farmland to non-agricultural use?	☐	☐	☐	✖

Discussion

a-e. The proposed project site is currently developed, consisting of an existing structure and paved parking lots, and is surrounded by existing development. The project site is currently designated as "Urban and Built-Up Land" on the Contra Costa County Important Farmland map,[3] is not under any Williamson Act contract, and is not zoned nor designated in the General Plan for agriculture uses. In addition, the project area is not considered forest land (as defined in Public Resources Code section 12220[g]), nor timberland (as defined by Public Resources Code 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 Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to a non-agricultural use, conflicts with existing zoning for agricultural use or a Williamson Act contract, conversion of forest land, nor the loss or conversion of Timberland Production zoning.

[3] California Department of Conservation. *Contra Costa County Important Farmland Map.* July, 2011.

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. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	✖	☐
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	✖	☐
d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	✖	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☐	✖	☐

a-c. The City of Antioch 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 (MTC) 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 (CAP), adopted on April 19, 2017. The 2017 CAP was developed as a multi-pollutant plan that provides an integrated control strategy to reduce ozone, PM, toxic air contaminants (TACs), and greenhouse gases (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 CAP. 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. For development projects, BAAQMD establishes significance thresholds 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. Thus, by exceeding the BAAQMD's mass emission thresholds for operational emissions of ROG, NO_X, or PM_{10}, a project would be considered to conflict with or obstruct implementation of the BAAQMD's air quality planning efforts.

Table 1
BAAQMD Thresholds of Significance

	Construction	Operational	
Pollutant	**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.			

The proposed project's construction and operational emissions were quantified using the California Emissions Estimator Model (CalEEMod) software version 2016.3.1 - 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 based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, vehicle mix, trip length, average speed, etc. Where project-specific information is available, such information should be applied in the model. Accordingly, the proposed project's modeling assumed the following:

- Construction would commence in November 2017 and would occur over an approximately eight-month period;
- An average daily trip rate of 2.75 trips per student were assumed, based on the analysis completed for the proposed project by Hexagon Transportation Consultants, Inc.;
- Compliance with the current California Building Energy Efficiency Standards Code;
- The existing 25,000 s.f. structure would be demolished;

- A total of 1.18 acres would be disturbed during grading;
- Approximately 95 cubic yards (CY) of material would be exported during site preparation, and 1,600 CY of material would be exported during grading of the site; and
- The project site is located 500-feet away from the nearest bus stop.

In addition to the foregoing project specific details, the setting of the project was determined to be "Urban" for the purposes of emissions estimation. The CalEEMod User Guide defines urban areas as areas that are near the center of a City, and are usually characterized by higher densities than surrounding suburban areas. Urban areas often host a mix of uses include office, retail, and multi-family housing.[4] The project site is located within a densely developed section of the City, which hosts a myriad of uses including office, retail, single-family residential, and multi-family residential uses within close proximity.

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. All CalEEMod results are included in Appendix A.

Construction Emissions

According to the CalEEMod results, the proposed project would result in maximum construction criteria air pollutant emissions as shown in Table 2. As shown in the table, the proposed project's construction emissions would be below the applicable thresholds of significance.

Table 2
Maximum Construction Emissions (lbs/day)

Pollutant	Proposed Project Emissions	Threshold of Significance	Exceeds Threshold?
ROG	5.48	54	**NO**
NO_X	37.57	54	**NO**
PM_{10} (exhaust)	1.65	82	**NO**
PM_{10} (fugitive)	7.09	None	**N/A**
$PM_{2.5}$ (exhaust)	1.55	54	**NO**
$PM_{2.5}$ (fugitive)	3.56	None	**N/A**

Source: CalEEMod, January 2017 (see appendix).

Although thresholds of significance for mass emissions of fugitive dust PM_{10} and $PM_{2.5}$ have not been identified by the City of Antioch or BAAQMD, the proposed project's estimated fugitive dust emissions have been included for informational purposes. All projects within the jurisdiction of the BAAQMD are required to implement all of the BAAQMD's Basic Construction Mitigation Measures, which include the following:

[4] California Air Pollution Control Officers Association. *California Emissions Estimator Model User's Guide Version 2016.3.1*. September 2016.

1. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
2. 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.
3. All vehicle speeds on unpaved roads shall be limited to 15 mph.
4. 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.
5. 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.
6. 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.
7. 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 Basic Construction Mitigation Measures listed above for the proposed project’s construction activities, would help to further minimize construction-related emissions.

Because the proposed project would be below the applicable thresholds of significance for construction emissions, the proposed project would not be considered to result in a significant air quality impact during construction.

Operational Emissions

According to the CalEEMod results, the proposed project would result in maximum operational criteria air pollutant emissions as shown in Table 3. As shown in the table, the proposed project’s operational emissions would be well below the applicable thresholds of significance.

Because the proposed project’s operational emissions would be below the applicable thresholds of significance, the proposed project would not be considered to result in a significant air quality impact during operations.

Table 3
Unmitigated Maximum Operational Emissions

Pollutant	Proposed Project Emissions		Threshold of Significance		Exceeds Threshold?
	lbs/day	tons/yr	lbs/day	tons/yr	
ROG	4.01	0.51	54	10	**NO**
NO_X	12.08	1.55	54	10	**NO**
PM_{10} (exhaust)	0.11	0.01	82	15	**NO**
PM_{10} (fugitive)	5.51	0.70	None	None	**N/A**
$PM_{2.5}$ (exhaust)	0.10	0.01	54	10	**NO**
$PM_{2.5}$ (fugitive)	1.48	0.19	None	None	**N/A**

Source: CalEEMod, January 2017 (see appendix).

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. If a project exceeds the significance thresholds presented in Table 1, the proposed project's emissions would be cumulatively considerable, resulting in significant adverse cumulative air quality impacts to the region's existing air quality conditions. Because the proposed project would result in emissions below the applicable thresholds of significance, the project would not be expected to 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 CAP. According to BAAQMD, if a project would not result in significant and unavoidable air quality impacts, after the application of all feasible mitigation, the project may be considered consistent with the air quality plans. Because the proposed project would result in emissions below the applicable thresholds of significance, the project would not be considered to conflict with or obstruct implementation of regional air quality plans.

Because the proposed project would not conflict with or obstruct implementation of the applicable air quality plans, violate any air quality standards or contribute substantially to an existing or projected air quality violation, or result in a cumulatively considerable net increase in any criteria air pollutant, impacts would be considered ***less than significant***.

d. 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. The proposed project would involve the operation of a school, which would be considered a sensitive receptor. The nearest existing sensitive receptors to the project site would be the single-family residences located approximately 100 feet to the east, opposite the project site across Cavallo Road.

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

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. 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.).

As discussed in the Transportation and Circulation Section of this IS/MND a Transportation Impact Analysis (TIA) was conducted for the proposed project by Hexagon Transportation Consultants, Inc.[5] The TIA was completed in accordance with the standards

[5] Hexagon Transportation Consultants, Inc. *1700 Cavallo Road Antioch Rocketship School*. August 1, 2017.

established by the Contra Costa Transportation Authority (CCTA), which is the Congestion Management Agency (CMA) for Contra Costa County. As shown in the TIA, the surrounding intersections would not experience traffic volumes equal to or exceeding 24,000 vehicles per her hour. As shown in Figure 6 of the TIA, vehicle volumes at all affected intersections would be far below the 24,000, and, thus 44,000, vehicle per hour thresholds used by BAAQMD. Additionally, the TIA concluded that the project would not have the potential to impact any intersections within the County's congestion management program, and the project would not result in significant impact to any intersections within the local circulation network. Consequently, a substantial increase in levels of CO at surrounding intersections would not be anticipated to occur with implementation of the proposed project.

In addition to increasing vehicle volumes at nearby intersections, the proposed project would involve idling of vehicles on the project site during pick-up and drop-off of students. Vehicles picking-up and dropping off students at the site would be expected to queue and idle on-site, which would result in the emission of CO at the project site. Although vehicles idling on the project site would not be located at an intersection, BAAQMD's screening thresholds would continue to apply to idling emissions. Therefore, the proposed project would only be considered to have the potential to result in a CO hotspot where more than 44,000 vehicles per hour idled on the project site or more than 24,000 vehicles per hour idled in an area with restricted air mixing. As discussed in the TIA, the proposed project would generate a maximum of 578 vehicle trips per hour, in the AM peak hour, which would be well below BAAQMD's screening thresholds. As such, the proposed project would not be anticipated to result in a substantial increase in levels of CO at the project site during student pick-up and drop-off.

Considering the above, 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.

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, and rail yards.[6] 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.

[6] California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.

Nearby Sources of TAC Emissions

Section 15186 of the CEQA Guidelines requires that any project involving the siting of a new school facility must consider any facilities, within 0.25 mile of the proposed school, which might reasonably be anticipated to emit hazardous emissions. The CARB's Handbook identifies various common sources of TACs, and recommends setback distances to ensure that new receptors are not exposed to significant concentrations of TACs. Common sources of TACs include freeways, distribution centers, rail yards, and chrome plating operations. None of the aforementioned land uses exist near the project site; however, the CARB Handbook identifies gas dispensing facilities (GDFs) as a potential source of TACs. Currently, a GDF exists at the northeastern corner of East 18th Street and Cavallo Road, which is approximately 130 feet to the southeast of the project site. Refueling at GDFs releases benzene into the air. The CARB has identified benzene as a high-risk carcinogen.

The CARB Handbook separates GDFs into two categories, small GDFs are those facilities with a throughput of less than 3.6 million gallons per year (mgy), while large GDFs involve throughputs of greater than 3.6 mgy. The CARB advises that a 50-foot separation between small GDFs and sensitive uses be maintained to protect receptors from exposure to excess concentrations of benzene. The project site is 130 feet away from the GDF, and, thus, the site is outside of the separation distance recommended for small GDFs. Concurrently, the CARB recommends that sensitive land uses be avoided within 300 feet of a large GDF. The CARB estimates that between 2000 and 2002 only four percent of existing GDFs had throughputs in excess of 2.4 mgy. The GDF in proximity to the project site has only four pumps, and is most likely a neighborhood focused GDF with a throughput below 3.6 mgy; however, the throughput of the nearby GDF is currently unknown, and, thus, could exceed 3.6 mgy. Because the throughput of the existing GDF is unknown, the CARB's recommended setback distance for large GDFs must also be considered. The CARB's Handbook advises that sensitive receptors within 300 feet of a large GDF, which are GDFs with a throughput in excess of 3.6 mgy, may be exposed to excess concentrations of benzene, and further study should be conducted. The proposed project is within 130 feet of the GDF, and, although the GDF is unlikely to experience and annual throughput equal to or in excess of 3.6 mgy, given the nature of the proposed project, and the sensitive nature of future students at the project site, further analysis was conducted to analyze potential exposure of future receptors to benzene from the existing GDF (see Health Risk Screening Results in Appendix B).

Based on the conservative assumption that the existing GDF near the project site operates with a throughput of 3.6 mgy, the potential benzene concentrations at the project site were estimated using the American Meteorological Society/Environmental Protection Agency (AMS/EPA) Regulatory Model (AERMOD) dispersion model. The associated cancer risk and non-cancer (chronic and acute) hazard index were calculated using the CARB's HARP 2 Risk Assessment Standalone Tool (RAST),[7] which calculates the cancer and non-cancer health impacts using the risk assessment guidelines of the 2015 Office of Environmental

[7] California Air Resources Board. *User Manual for the Hotspots Analysis and Reporting Program Health Risk Assessment Standalone Tool, Version 2*. March 17, 2015.

Health Hazard Assessment (OEHHA) Guidance Manual for Preparation of Health Risk Assessments.[8] The modeling was performed in compliance with the California Air Pollution Control Officers Association's (CAPCOA) Guidance document, *Gasoline Service Station Industrywide Risk Assessment Guidelines*, as well as the USEPA's *User's Guide for the AMS/EPA Regulatory Model – AERMOD*,[9] and the 2015 OEHHA Guidance Manual.

The BAAQMD maintains thresholds for the review of local community risk and hazard impacts. The thresholds are designed to assess the impact of new sources of TACs on existing sensitive receptors. However, for the purposes of this analysis, the BAAQMD thresholds are used to assess the potential impact of an existing source of TACs on new sensitive receptors. Based on the BAAQMD thresholds, the proposed project would result in a significant impact if, due to benzene exposure from the nearby GDF, future students or workers experienced an increased cancer risk of more than 10 in one million people, or experienced a hazard index greater than 1.0.

As shown in Table 4 below, even assuming a throughput of 3.6 mgy operation of the existing GDF would not result in benzene concentrations at the project site that would have the potential to result in cancer risk or non-cancer risk in excess of BAAQMD standards. Therefore, locating the proposed project in proximity to the existing GDF would not result in the exposure of future students or teachers to excess benzene concentrations.

Table 4
Maximum Cancer Risk and Non-Cancer Hazard Index

	Cancer Risk (per million persons)	**Non-Cancer (Chronic) Hazard Index**	**Non-Cancer (Acute) Hazard Index**
Maximally Exposed Student	0.32	0.01	0.03
Maximally Exposed Teacher	0.04	0.01	0.03
Maximally Exposed Pregnant Teacher	0.41	0.01	0.03
Threshold of Significance	*10*	*1.0*	*1.0*
Exceed Threshold?	**No**	**No**	**No**

Source: AERMOD and HARP 2 RAST, September 2017 (see Appendix B)

Other Sources of TACs

As discussed above, another TAC of concern is DPM. Sources of DPM include diesel generators, high traffic freeways, and facilities attracting heavy and constant diesel vehicle traffic. Diesel generators are not known to operate in proximity to the project site, and the

[8] Office of Environmental Health Hazard Assessment. *Air Toxics Hot Spots Program Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments* [pg. 8-18]. February 2015.

[9] U.S. Environmental Protection Agency. *User's Guide for the AMS/EPA Regulatory Model – AERMOD*. September 2004.

site is not located in proximity to high traffic freeways. The CARB considers land uses that attract 100 or more heavy duty diesel truck trips per day, such as distribution centers, to be significant sources of DPM. The project site is located in proximity to residential and neighborhood commercial developments; developments that would involve more than 100 heavy duty diesel truck trips per day are not known to occur in proximity to the project site. Therefore, the proposed project would not be located in proximity to any existing sources of DPM.

The proposed project would involve increased vehicle traffic in the area related to student pick-up and drop-off. However, such increased traffic would consist primarily of passenger vehicles. Passenger vehicles are typically gasoline powered, rather than diesel powered; therefore, project traffic would not be anticipated to contribute a significant source of DPM emissions to the project area. In addition, the proposed project would not involve any land uses or operations that would be considered major sources of TACs. As such, the proposed project would not generate any substantial pollutant concentrations during operations.

However, short-term, construction-related activities could 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. Furthermore, all construction equipment and operation thereof would be regulated per 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, construction equipment would operate intermittently throughout the day and only on portions of the site at a time, and construction activity would be limited to the hours of 7:00 AM to 6:00 PM, Monday through Friday, and 9:00 AM to 5:00 PM on weekends and holidays per Section 5-17.04 of the City's Municipal Code.

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, sensitive receptors in the area would not be exposed to pollutants for a permanent or substantially extended period of time. Therefore, construction of the proposed project would not be expected to expose nearby sensitive receptors to substantial pollutant concentrations.

Conclusion

Based on the above discussion, the proposed project would not expose any sensitive receptors to substantial concentrations of localized CO or TACs from 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.

e. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, quantitative methodologies to determine the presence of a significant odor impact do not exist. 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 and is not located in the vicinity of any such existing or planned land uses.

Construction activities often include diesel fueled equipment and heavy-duty trucks, which can create odors associated with diesel fumes, which could be found to be objectionable. However, as discussed above, construction activities would be temporary, and operation of construction equipment would be regulated and intermittent. 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 air pollutant emissions as well as any associated odors. Accordingly, substantial objectionable odors would not be expected to occur during construction activities or affect a substantial number of people.

It should be noted that BAAQMD regulates objectionable odors through Regulation 7, Odorous Substances, which does not become applicable until the Air Pollution Control Officer (APCO) receives odor complaints from ten or more complainants within a 90-day period. Once effective, Regulation 7 places general limitation on odorous substances and specific emission limitations on certain odorous compounds, which remain effective until such time that citizen complaints have been received by the APCO for one year. The limits of Regulation 7 become applicable again when the APCO receives odor complaints from five or more complainants within a 90-day period. Thus, although not anticipated, if odor complaints are made after the proposed project is developed, the BAAQMD would ensure that such odors are addressed and any potential odor effects reduced to less than significant.

For the aforementioned reasons, construction and operation of the proposed project would not create objectionable odors, nor would the project site be affected by any existing sources of substantial objectionable odors, and a ***less-than-significant*** impact related to objectionable odors 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 federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	✖
d. Interfere substantially with the movement of any 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, d. Special-status species include those plant and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the federal and State Endangered Species Acts. Both acts afford protection to listed and proposed species. In addition, California Department of Fish and Wildlife (CDFW) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue, U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern, sensitive species included in USFWS Recovery Plans, and CDFW special-status invertebrates are all considered special-status species. Although CDFW Species of Special Concern generally do not have special legal status, they are given special consideration under CEQA. In addition to regulations for special-status species, most birds in the United States, 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. In addition, plant species on California Native Plant Society (CNPS) Lists 1 and 2 are considered special-status plant species and are protected under CEQA.

The proposed project site is located in an urban area, and is surrounded on all sides by existing residential and commercial development. The site is currently developed with an existing structure and paved parking lot. However, there are 29 trees on or bordering the proposed project site. The trees present on the project site provide suitable nesting habitat for migratory birds whose nests are afforded protection under the MBTA. Site construction activities, including tree removal during the active nesting season (February 1 to August 31) have the potential to cause the failure or abandonment of active nests of migratory birds. Impacts to nesting birds, their eggs, and/or young caused by implementation of the project would be regarded as a potentially significant impact.

Because of the potential for special-status and/or federally-protected nesting migratory birds to occur on-site, or in the immediate vicinity of the site, development of the proposed project could have an adverse effect, either directly or through habitat modifications, on a species identified as a special-status species in local or regional plans, policies, or regulations, or by the CDFW or the USFWS or interfere substantially with the movement of any resident or migratory wildlife corridors. Therefore, a ***potentially significant*** impact could result.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

IV-1. *Pre-construction surveys for nesting birds shall be conducted by a qualified biologist not more than two weeks prior to site disturbance during the breeding season (February 1st to August 31st). If site disturbance commences outside the breeding season, pre-construction surveys for nesting birds are not required. If active nests of migratory birds are not detected within approximately 250 feet of the project site, further mitigation is not required.*

If nesting raptors or other migratory birds are detected on or adjacent to the site during the survey, a suitable construction-free buffer shall be established around all active nests. The dimensions of the buffer (typically 75 feet for passerine birds, up to 250 feet for raptors) shall be determined at that time and may vary depending on location and species. The buffer areas shall be enclosed with temporary fencing, and construction equipment and workers shall not enter the enclosed setback areas. Buffers shall remain in place for the duration of the breeding season or until a qualified biologist has confirmed that all chicks have fledged and are independent of their parents. Alternatively, the project applicant could comply with one of the following:

1) *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the East Contra Costa County Habitat Conservancy (Conservancy), provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCCHCP/NCCP Covered Species; or*
2) *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and FWS have approved the conservation plan.*

b, c. The proposed project site is located in an urban area, and is surrounded on all sides by existing residential and commercial development. As such, jurisdictional waters, streambeds, and sensitive plant communities do not exist on or near the site. Therefore, the project site does not contain riparian habitat or other sensitive natural communities, including wetlands. As a result, the proposed project, including the off-site sewer improvement, would have ***no impact*** on riparian habitat or other sensitive natural communities.

e. The City of Antioch defines protected trees as meeting one of four criteria:

- Any tree required to be preserved as a condition of approval;
- Established indigenous trees;
- Street trees; and
- Mature and landmark trees.

A Tree Evaluation Report was prepared for the proposed project by Dryad, LLC.[10] As part of the Tree Evaluation Report, all on-site trees with a trunk diameter of six inches or greater were evaluated to determine species, trunk diameter, health and structural condition, and suitability for preservation. Overall, 29 trees were evaluated, representing five species. Of the 29 trees, only five trees qualified as Protected Trees, as defined by the City of Antioch, and would qualify as Landmark Trees. The applicant is proposing to remove nine trees, preserving 20 on-site. According to the Tree Evaluation Report, six of the nine trees proposed for removal have been rated as poor candidates for preservation. Per Section 9-5.1202 of the AMC, approval to remove the remaining three trees would be included in the City's development application process.

Because approval to remove trees is included in the City's development application process, a tree removal permit would not be required for the nine trees to be removed. However, impacts to the 20 trees to be preserved could occur during construction, and, thus, the project could conflict with Title 9, Chapter 5, Article 12 of the AMC. As a result, the proposed project could conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and a ***potentially significant*** impact could result.

[10] Dryad, LLC. *Tree Evaluation & Preservation, 700 Cavallo Rd., Antioch, CA*. February 12, 2017.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

IV-2. *Prior to approval of a grading permit, the applicant shall comply with all requirements set forth in Title 9, Chapter 5, Article 12 of the Antioch Municipal Code related to preservation of protected trees, including avoidance of grading within the drip line of such tress and the applicable penalties if grading within the drip line cannot be avoided. Compliance with the requirements shall be ensured by the Community Development Department.*

IV-3. *Throughout implementation of the proposed project, the applicant shall adhere to the Tree Preservation Guidelines stipulated in the Tree Evaluation Report prepared for the proposed project. The Guidelines include design recommendations, pre-construction treatments and recommendations, recommendations for tree protection during construction, and recommendations for maintenance of impacted trees. Compliance with the Guidelines shall be reviewed by the Community Development Department prior to building permit approval.*

f. In July 2007 the East Contra Costa County (ECCC) Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) was adopted by Contra Costa County, other member cities, the USFWS, and the CDFW. The City of Antioch, however, declined to participate in the HCP/NCCP. Therefore, the project site is not located in an area with an approved HCP/NCCP, or local, regional, or State habitat conservation plan. As a result, ***no impact*** would occur.

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 as defined in Section 15064.5?	☐	✖	☐	☐
b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?	☐	✖	☐	☐
c. Directly or indirectly destroy a unique paleontological resource on site or unique geologic features?	☐	✖	☐	☐
d. Disturb any human remains, including those interred outside of formal cemeteries.	☐	✖	☐	☐

Discussion

a-d. The 1.7-acre project site currently consists of a vacant office building built in 1965 with associated parking lots totaling 31 parking spaces. A records search of the California Historic Resources Information System (CHRIS) was performed by the North Central Information Center (NWIC) for cultural resource site records and survey reports within the proposed project area.[11] According to the records search, the project site has been subject to three previous cultural resource studies, which determined that the site is absent of archaeological resources. The results of the records search did not provide any indication of the possibility of historic-period activity within the proposed project site. However, the existing on-site structure was constructed in 1965, which meets the Office of Historic Preservation's minimum age standard that buildings, structures, and objects 45 years or older may be of historical value. The on-site structure was previously used as a newspaper office and distribution center, and the structure does not represent a distinctive characteristic of a type, period, region, or method of design/construction. The previous use is not considered important to local, California, or national history and the structure would not likely yield information important in prehistory or history. As such, the existing on-site building to be demolished as part of the proposed project is not considered an historical resource.

In addition, the records search concluded that the proposed project site has similar environmental factors to known Native American resource sites within Contra Costa County, such as proximity to areas populated by oak, buckeye, hazelnut, pine, and a variety of plant and animal resources, and proximity to water courses and bodies of water. Although the project site is currently developed and the ground previously disturbed, the project site includes oak and pine trees and is located less than 0.25-mile southwest of Lake Alhambra and approximately 0.75-miles south of the San Joaquin River, and thus results in a moderate potential for unrecorded Native American resources within the proposed project area.

[11] Northwest Information Center. *Records Search Results for the Proposed Rocketship School Project, 1700 Cavallo Road, Antioch.* June 8, 2017.

Unknown archaeological resources, including human remains have a moderate potential to be uncovered during ground-disturbing construction and excavation activities at the proposed project site. Therefore, it is likely that the proposed project could cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines Section 15064.5, directly or indirectly destroy a unique paleontological resource or geological feature on site, and/or disturb human remains, including those interred outside of formal cemeteries during construction. Therefore, impacts could be considered ***potentially significant***.

Mitigation Measure(s)

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

V-1. *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. If the Native American Heritage Commission is unable to identify a most likely descendant or most likely descendant fails to make a recommendation within 24 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, then 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.*

V-2. *If any prehistoric or historic artifacts, or other indications of cultural deposits, such as historic privy pits or trash deposits, are found once ground disturbing activities are underway, all work within the vicinity of the find(s) shall cease, the Community Development Department shall be notified, and the find(s) shall be immediately evaluated by a qualified archaeologist. If the find is determined to be a historical or unique archaeological resource,*

contingency funding and a time allotment to allow for implementation of avoidance measures or appropriate mitigation shall be made available (CEQA Guidelines Section 15064.5). Work may continue on other parts of the project site while historical or unique archaeological resource mitigation takes place (Public Resources Code Sections 21083 and 21087).

VI. GEOLOGY AND SOILS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Expose people or structures to 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?	☐	☐	✖	☐
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?	☐	✖	☐	☐
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?	☐	☐	☐	✖

Discussion

ai, aii,
aiv. According to the Association of Bay Area Governments (ABAG) Resilience Program's interactive hazards map, the site is not located within a designated Alquist-Priolo Earthquake Fault Zone and active or potentially active faults do not occur at the site. The nearest known active fault to the site is the Greenville Fault, which is located approximately 13 miles southwest of the site. Furthermore, the project site is flat and not surrounded by any hillsides that could be subject to landslides. Due to the site's proximity to the nearest active fault, the potential exists for the proposed school to be subject to seismic ground shaking, at a shaking severity level of Strong – MMI7.[12] However, the proposed buildings would be properly engineered in accordance with the California Building Code, which include engineering standards appropriate for the seismic area in which the project is located. Conformance with the engineering standards is enforced through building plan review and approval by the City of Antioch Building Division prior to the issuance of

[12] Associate of Bay Area Governments Resilience Program. *Landslide Maps and Information*. July 15, 2016. Available at: http://resilience.abag.ca.gov/landslides/. Accessed May 25, 2017.

building permits. Proper engineering of the proposed project would ensure that seismic-related effects would not cause adverse impacts. Therefore, a ***less-than-significant*** impact would occur related to seismic surface rupture, ground shaking, and landslides.

aiii, c, d. Soil liquefaction results from loss of strength during cyclic loading, such as imposed by earthquakes. Soils most susceptible to liquefaction are clean, loose, saturated, uniformly graded, and fine-grained sands. Empirical evidence indicates that loose to medium-dense gravels, silty sands, and low- to moderate-plasticity silts and clays may be susceptible to liquefaction. In addition, sensitive high-plasticity soils may be susceptible to significant strength loss (cyclic softening) as a result of significant cyclic loading.

Expansive soils can cause foundations to rise each wet season and fall each dry season. Movements may vary under different parts of a building or street, resulting in cracking of foundations and street surfaces, distortion of various structural portions of a building, and warping of doors and windows such that they do not function properly.

According to the ABAG interactive hazards map, the project site is in an area where historic occurrences of liquefaction, or local geologic, geotechnical, or groundwater conditions indicate a low or very low potential for liquefaction. However, the United States Department of Agriculture (USDA) interactive Web Soil Survey map indicates that the site is comprised of Clear Lake clay, Rincon clay loam, and Zamora silty clay loam (approximately 76 percent, .5 percent, and 23.5 percent, respectively).[13] According to the City of Antioch General Plan EIR, Clear Lake clay is characterized as a poorly drained soil with high shrink-swell potential, thus a potential for liquefaction and expansion exists. As a result, a ***potentially significant*** impact could occur related to the potential for seismic-related ground failure, the project being located on a geologic soil that could potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse, and the project being located on expansive soil.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

VI-1. Prior to the approval of the building permits, the project applicant shall submit, for review and approval by the City of Antioch Building Division, a design level geological report describing the appropriate measures for construction on expansive soils and limiting the effects of liquefaction.

b. All municipalities within Contra Costa County are required to develop more restrictive surface water control standards for new development projects as part of the renewal of the Countywide National Pollutant Discharge Elimination System (NPDES) permit. The City of Antioch has adopted the County C.3 Stormwater Standards that require all new developments that alter one or more acres of land to minimize impacts related to erosion. A C.3 Stromwater Control Plan was prepared for the proposed project and is discussed in

[13] United States Department of Agriculture. *Web Soil Survey.* Accessed May 25, 2017.

further detail in the Hydrology and Water Quality section of this initial study. In addition, the proposed project would be subject to the requirements of the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB), including the City's C.3 Standards, which are included in the City's NPDES General Permit. Furthermore, Section 8-13.01of the AMC requires stormwater control measures be implemented during the construction phases of development.

Construction of the proposed project would involve the disturbance and relocation of topsoils. After grading and leveling, but prior to the overlaying of the ground surface with structures, the earth surfaces would be susceptible to erosion from wind and water. Therefore, the construction-related impacts associated with the potential for soil erosion and the loss of topsoil on the project site could be ***potentially significant***.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

VI-2. *Prior to submittal of improvement plans, the project applicant shall submit, for the review and approval by the City Engineer, an erosion control plan that utilizes standard construction practices to limit the erosion effects during construction of the proposed project. Measures shall include, but are not limited to, the following:*

- *Hydro-seeding;*
- *Placement of erosion control measures within drainage ways and ahead of drop inlets;*
- *The temporary lining (during construction activities) of drop inlets with "filter fabric" (a specific type of geotextile fabric);*
- *The placement of straw wattles along slope contours;*
- *Directing subcontractors to a single designation "wash-out" location (as opposed to allowing them to wash-out in any location they desire);*
- *The use of siltation fences; and*
- *The use of sediment basins and dust palliatives.*

e. The proposed project would connect to the City's existing sewer system, and would not require the use of a septic tank or other alternative waste water disposal method. Therefore, ***no impact*** would occur related to having soils incapable of adequately supporting the use of septic tanks or alternate waste water disposal systems.

VII. 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 greenhouse gases (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 and natural gas), water usage, wastewater generation, 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 the BAAQMD. The BAAQMD threshold of significance for project-level operational GHG emissions is 1,100 $MTCO_2e$/yr or 4.6 $MTCO_2e$/yr per service populations (population + employees). BAAQMD's approach to developing a threshold of significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions needed to move towards climate stabilization. If a project would generate GHG emissions above the threshold level, the project would be considered to generate significant GHG emissions and conflict with applicable GHG regulations. The City of Antioch, as lead agency, has chosen to use the BAAQMD thresholds of significance for the analysis within this IS/MND, as the thresholds are supported by substantial evidence.

The proposed project's GHG emissions were quantified using CalEEMod using the same assumptions as presented in the Air Quality section of this IS/MND, and compared to the

1,100 $MTCO_2e$/yr threshold of significance. The proposed project's required compliance with the current California Building Energy Efficiency Standards Code was assumed in the modeling. In addition, the CO_2 intensity factor within the model was adjusted to reflect the Pacific Gas & Electric Company's anticipated progress towards statewide renewable portfolio standard goals. All CalEEMod results are included in Appendix A.

According to the CalEEMod results, the proposed project would result in unmitigated operational GHG emissions of 974.88 $MTCO_2e$/yr, which is below the 1,100 $MTCO_2e$/yr threshold of significance. Construction GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change. Neither the City nor BAAQMD has adopted a threshold of significance for construction-related GHG emissions. Nevertheless, to provide a conservative estimate of emissions, the proposed project's construction GHG emissions have been amortized over the anticipated operational lifetime of the project. The BAAQMD does not recommend any specific operational lifetimes for use in amortizing construction-related GHG emissions; however, the Sacramento Metropolitan Air Quality Management District (SMAQMD) recommends an operational building lifetime of 40 years for new conventional development, which is based off of information from California Executive Order D-16-00 and the US Green Building Council's 2013 report on *The Costs and Financial Benefits of Green Buildings*.[14] In the absence of specific BAAQMD recommendations, the SMAQMD-recommended 40 year lifetime is used for this analysis. Construction of the proposed project would occur over less than two years and would result in total GHG emissions of 295.73 $MTCO_2e$. Thus, the total construction emissions amortized over 40 years would be 7.39 $MTCO_2e$/yr. If the amortized construction emissions are added to the annual operational emissions, the project's total GHG emissions would equal 982.27 $MTCO_2e$/yr, which remains below BAAQMD's threshold of significance for operational emissions. Accordingly, the proposed project would not be expected to have a significant impact related to GHG emissions during construction.

It should be noted that the estimation of operational GHG emissions presented above does not include any on-site renewable energy generation. Although the proposed project would be below the BAAQMD's thresholds of significance without the inclusion of on-site renewable energy, the project applicant has indicated that up to 100 percent of project electricity demand may be provided through on-site solar energy installations. However, because on-site renewable energy generation plans have not been finalized, on-site renewable energy generation was not included in the CalEEMod emissions modeling completed for project operations. Therefore, while the project is not anticipated to result in impacts related to GHG emissions from project operations without the inclusion of on-site renewable energy generation, actual operation of the proposed project would most likely result in emissions lower than the emissions presented above. Consequently, the analysis of this IS/MND represents a conservative analysis of potential GHG emissions from operation of the proposed project.

Based on the above, the proposed project would not be considered to generate GHG

[14] Sacramento Metropolitan Air District. *Guide to Air Quality Assessment in Sacramento County*. Available at: http://www.airquality.org/businesses/ceqa-land-use-planning/ceqa-guidance-tools. Accessed March 2017.

emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs; and impacts would be considered ***less than significant***.

VIII. 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 for people residing or working in the project area?	☐	☐	☐	✖
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	✖
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	✖	☐
h. Expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	✖	☐

Discussion

a, c. Projects that involve the routine transport, use, or disposal of hazardous materials are typically industrial in nature. The proposed project includes the development of an elementary school, which would not typically involve the routine transport, use, disposal, or generation of substantial amounts of hazardous materials. However, during the operation of the proposed project, hazardous materials use would be limited to cleaning and landscaping products such as fertilizer and pesticides. All chemicals would be stored inside buildings with appropriate containment and ventilation, as required, and such chemicals would be utilized in limited quantities by experienced personnel according to label instructions.

Additionally, construction activities would involve the use of heavy equipment, which would contain fuels and oils, and various other products such as concrete, paints, and adhesives. However, the project contractor would be required to comply with all California Health and Safety Codes and local ordinances regulating the handling, storage, and transportation of hazardous and toxic materials, as overseen by the California Environmental Protection Agency (EPA) and California Department of Toxic Substance Control.

The proposed project would be required to comply with the aforementioned ordinances, policies, and regulations that would ensure the project would not emit hazardous materials, substances, or waste. As such, impacts related to the routine transport, use, or disposal of hazardous materials within one-quarter mile of an existing or proposed school would be ***less than significant.***

b. The proposed project includes the demolition of an existing office building, constructed in 1965. For buildings constructed prior to 1980, the Code of Federal Regulations (29 CFR 1926.1101) states that all thermal system insulation and surface materials must be designated as "presumed asbestos-containing material" (PACM) unless proven otherwise through sampling in accordance with the standards of the Asbestos Hazard Emergency Response Act. Asbestos-containing materials (ACMs) were banned in the mid-1970s. ACMs could include, but are not limited to resilient floor coverings, drywall joint compounds, acoustic ceiling tiles, piping insulation, electrical insulation, and fireproofing materials. Furthermore, the existing structures were constructed prior to lead-based paint being banned in 1978 by the Federal Government, making the presence of lead-based paint possible. Typically, exposure to lead from older vintage paint is possible when the paint is in poor condition or is being removed. In construction settings, workers could be exposed to airborne lead during renovation, maintenance, or demolition work. Lead-based paints were phased out of production in the early 1970s. Given the age of the existing structure, asbestos-containing materials and lead-based paint has the potential to 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. Therefore a ***potentially significant*** impact would occur.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce potential impacts to a *less-than-significant* level.

VIII-1 *Prior to issuance of a demolition permit by the City for any on-site structures, the project applicant shall provide a site assessment that determines whether any structures to be demolished contain asbestos. If structures do not contain asbestos, further mitigation is not required. If asbestos-containing materials are detected, the applicant shall prepare and implement an asbestos abatement plan consistent with federal, State, and local standards, subject to approval by the City Engineer, City Building Official, and the Bay Area Air Quality Management District.*

Implementation of the asbestos abatement plan shall include the removal and disposal of the asbestos-containing materials by a licensed and certified asbestos removal contractor, in accordance with local, State, and federal regulations. In addition, the demolition contractor shall be informed that all building materials shall be considered as containing asbestos. The contractor shall take appropriate precautions to protect his/her workers, the surrounding community, and to dispose of construction waste containing asbestos in accordance with local, State, and federal regulations subject to the City Engineer, City Building Official, and the Bay Area Air Quality Management District.

VIII-2 *Prior to issuance of a demolition permit by the City for any on-site structures, the project applicant shall provide a site assessment that determines whether any structures to be demolished contain lead-based paint. If structures do not contain lead-based paint, further mitigation is not required. If lead-based paint is found, all loose and peeling paint shall be removed and disposed of by a licensed and certified lead paint removal contractor, in accordance with federal, State, and local regulations. The demolition contractor shall be informed that all paint on the buildings shall be considered as containing lead. The contractor shall take appropriate precautions to protect his/her workers, the surrounding community, and to dispose of construction waste containing lead paint in accordance with federal, State, and local regulations subject to approval by the City Engineer.*

d. The project site is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.[15] Therefore, the project would not create a significant hazard to the public or the environment, and ***no impact*** associated with such would occur.

e, f. The project site is not located within the vicinity of a public airport or private airstrip as the nearest airstrip to the site is the Funny Farm airstrip in Byron, located approximately 15.6 miles southeast of the site. As such, the project site is not located within two miles of any public airports or private airstrips, and does not fall within an airport land use plan area. Therefore, ***no impact*** would occur.

g. In 1996, the City of Antioch approved an Emergency Plan that addresses response to disasters, including but not limited to earthquakes, floods, fires, hazardous spills or leaks, major industrial accidents, major transportation accidents, major storms, airplane crashes, environmental response, civil unrest, and national security emergencies. The plan outlines the general authority, organization, and response actions for City of Antioch staff when disasters happen. Implementation of the proposed project would not result in any modifications to the existing roadway system and therefore, would not interfere with an emergency evacuation or response plan. As a result, a ***less-than-significant*** impact would occur.

[15] California Department of Toxic Substances Control. *Hazardous Waste and Substances Site List.* Accessed May 26, 2017.

h. Areas at risk for wildland fires are typically in or on the edge of undeveloped areas with large amounts of combustible vegetation. The proposed project site is surrounded by existing development on all sides, and is not located within an area where wildland fires typically occur. According to the City of Antioch General Plan EIR, the areas of the City most susceptible to wildland fire hazards exist within the southern, unincorporated portions of the General Plan Study area.[16] In addition, according to the Cal Fire Resource Assessment Program, the proposed project site is not located within a Very High Fire Hazard Severity Zone. Therefore, the proposed project would not expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands, and a ***less-than-significant*** impact would occur.

[16] City of Antioch. *General Plan Update EIR* [page 4.6-9]. July 2003

IX. 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?	☐	☐	✖	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (i.e., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	✖	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	✖	☐
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	✖	☐
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	✖	☐
f. Otherwise substantially degrade water quality?	☐	☐	✖	☐
g. Place housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	✖	☐
h. Place within a 100-year floodplain structures which would impede or redirect flood flows?	☐	☐	✖	☐
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.	☐	☐	✖	☐
j. Inundation by seiche, tsunami, or mudflow?	☐	☐	✖	☐

Discussion

a-f. A *Stormwater Control Plan* (SWCP) was prepared for the proposed project by Underwood & Rosenblum, Inc. in May, 2017, per AMC Section 6-9.05 (see Appendix C).

All municipalities within Contra Costa County are required to develop more restrictive surface water control standards for new development projects as part of the renewal of the

Countywide NPDES permit. The City of Antioch has adopted the County C.3 Stormwater Standards, which require new development and redevelopment projects that create or alter 10,000 or more square feet of impervious area to contain and treat all stormwater runoff from the project site. Given that the proposed project would create approximately 31,828 s.f. of impervious area, the proposed project would be subject to the requirements of the SWRCB and the RWQCB, including the C.3 Standards, which are included in the City's NPDES General Permit.

The SWCP prepared for the proposed project conforms with the most recent Contra Costa Clean Water Program Stormwater C.3 Guidebook and verifies that the proposed project complies with all City stormwater requirements. In compliance with the C.3 Guidebook, the proposed project would include four bio-retention facilities throughout the site, which would be sized to exceed the minimum volume requirement necessary to adequately treat all runoff from the proposed impervious surfaces. Runoff would gravity flow to the bio-retention area where the stormwater would be able to infiltrate the soil in a similar manner to what currently occurs on the project site prior to entering the conveyance system before discharging into the City's storm drain system. Because the proposed bio-retention facility would be designed with adequate capacity to capture and treat runoff from proposed impervious surfaces, the proposed project would not alter the existing drainage pattern of the site. In addition to reducing runoff and allowing for groundwater recharge, the bio-retention area would treat incoming runoff by filtering stormwater through permeable soil layers. The process of stormwater moving through the soil layers would remove pollutants from the stormwater before further subsurface infiltration or discharge to City infrastructure. As a result, the proposed project would not lead to the degradation of water quality or the violation of water quality standards due to operational stormwater runoff.

Therefore, the project would not substantially deplete groundwater supplies, interfere with the recharge of groundwater, violate water quality standards, substantially degrade water quality, directly alter or lead to the alteration of existing drainage features leading to erosion, flooding or siltation, nor would the project contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems. As a result, the project would have a ***less-than-significant*** impact.

g-i. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map number 06013C0143G, the project site is located within Zone X. FEMA defines Zone X as an area not within a 100-year or 500-year floodplain. The Contra Loma Dam is the closest dam to the project site, located just over two miles south. The Citywide inundation map for the failure of Contra Loma Dam and Dike No. 2 (Figure 4.7-3 of the GPU EIR) indicates that the project site is located outside of the areas that would be impacted by dam failure. It should be noted that, according to the GPU EIR, dam failure would be an unlikely event.[17] As a result, the project would not place structures within the 100-year floodplain, nor expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. Therefore, a ***less-than-significant*** flooding impact would result.

[17] City of Antioch. *General Plan Update EIR* [pg. 4.7-4]. July 2003.

j. The project area is located over 50 miles from the Pacific Ocean and tsunamis typically affect coastlines and areas up to one-quarter mile inland. Therefore, due to the project site's distance from the coast, potential impacts related to a tsunami are minimal. Additionally, the project site is not susceptible to impacts resulting from a seiche because of the site's distance from any enclosed bodies of water. The nearest enclosed body of water to the project site is the Contra Loma Reservoir, which is located just over two miles south of the project site. Because steep slopes are not located in close proximity to the site, mudflows would not pose an issue. Therefore, a ***less-than-significant*** impact would occur related to inundation by seiche, tsunami, or mudflow.

X. 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. Conflict with any applicable land use plans, policies, or regulations of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating on environmental effect?	☐	☐	✖	☐
c. Conflict with any applicable habitat conservation plan or natural communities conservation plan?	☐	☐	☐	✖

Discussion

a. The 1.7-acre project site consists of an existing, vacant office building and is surrounded by existing development. The proposed project would include the removal of the existing structure to construct a new elementary school. Rather than dividing the community, the project would be infill development and serve the existing students in the area. Therefore, the proposed project would have a ***less-than-significant*** impact with respect to dividing an existing community.

b. The project site is currently zoned Regional Commercial District (C-3), which does not permit the use of schools. Therefore the project applicant is requesting a rezone of the project site to Professional Office District (C-0), which would conditionally allow a school with the approval of a Use Permit. In addition, the City's current development standards do not allow for a fence, wall or hedge that exceeds three-feet in the required front yard setback (Section 9-5.1602 of the Antioch Municipal Code). Therefore, the proposed project requires a variance to allow a six-foot tall wrought iron fence with a cast-in-place concrete wall base within the front setback along Cavallo Road. Furthermore, the proposed project is subject to design review. The project would be reviewed by an outside architect to ensure design compatibility with the citywide design guidelines. As a result, should the City of Antioch City Council approve the rezone, variance, and use permit, the proposed project would not conflict with any plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. Therefore, a ***less-than-significant*** impact would occur.

c. In July 2007 the East Contra Costa County (ECCC) Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) was adopted by Contra Costa County, other member cities, the USFWS, and the CDFW. The City of Antioch, however, declined to participate in the HCP/NCCP. Therefore, the project site is not located in an area with an approved HCP/NCCP, or local, regional, or State habitat conservation plan. As a result, ***no impact*** would occur.

XI. 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. According to the City of Antioch General Plan EIR, known mineral resources that would be of value to the region and residents of the State do not exist in Antioch. Because the project site is located within the City limits and was anticipated for development under the General Plan, the proposed project would not result in the loss of availability of a known mineral resource nor the availability of a locally-important mineral resource. Therefore, the proposed project would have ***no impact*** to mineral resources.

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

Discussion

a, c. The following discussion is based on the Environmental Noise Assessment prepared for the Rocketship Elementary School Project by Bollard Acoustical Consultants, Inc. (BAC), dated August 14, 2017 (Appendix D). The Environmental Noise Assessment evaluates the potential off-site noise generations, noise generated by on-site school related activities, drive-through lane circulation, and parking area movements. Traffic impacts of the proposed project are additionally addressed in accordance with the standards set forth by the AMC and the City of Antioch General Plan and General Plan EIR.

The City of Antioch establishes a stationary noise standard of 60 dBA for residential neighborhoods. The site is immediately surrounded by existing residential developments to the west and northeast and commercial developments to the north, south, and southeast. The nearest sensitive residential receptors to the project site are located approximately 35 feet from the shared property lines.

Existing Ambient Noise Environment

The existing ambient noise environment in the immediate project vicinity is primarily defined by local traffic on East 18th Street and Cavallo Road. To generally quantify the existing ambient noise environment in the project area, long-term (72 hour) ambient noise level measurements were conducted at two (2) locations on the project site from June 3-5, 2017 (see Figure 6). Results of the ambient noise level measurements indicate the average measured hourly daytime and nighttime noise levels at both study sites were generally comparable and that the average measured hourly noise levels were highest near the eastern edge of the project site, approximately 35 feet from the center of Cavallo Road (see Table 5).

Table 5
Summary of Long-Term Ambient Noise Monitoring Results[1]

Site	Date	L_{dn}, dB	Average Measured Hourly Noise Levels (dB)					
			Daytime (7 AM to 10 PM)			Daytime (7 AM to 10 PM)		
			L_{aq}	L_{50}	L_{max}	L_{aq}	L_{50}	L_{max}
Site 1 – Eastern edge of the project site, approximately 35' from the center of Cavallo Road.	6/3/17	68	66	59	87	61	49	83
	6/4/17	66	65	57	87	58	48	77
	6/5/17	68	66	59	88	60	49	83
Site 2 – Southwestern corner of the project site, against the 5' retaining wall dividing nearby residences from the site.	6/3/17	58	53	49	74	51	44	70
	6/4/17	58	51	48	71	51	45	72
	6/5/17	55	51	48	72	48	44	69

Notes:
[1] Long-term ambient noise monitoring locations are identified on Figure 6 at sites 1 & 2.

Source: Bollard Acoustical Consultants, Inc., Environmental Noise Assessment. August 14, 2017.

Future On-Site Generated Noise Levels

BAC conducted an analysis of noise generation resulting from proposed on-site related activities, including an outdoor play area, parking movements, and drive-through lane circulation, as well as an analysis of the combined future on-site noise sources.

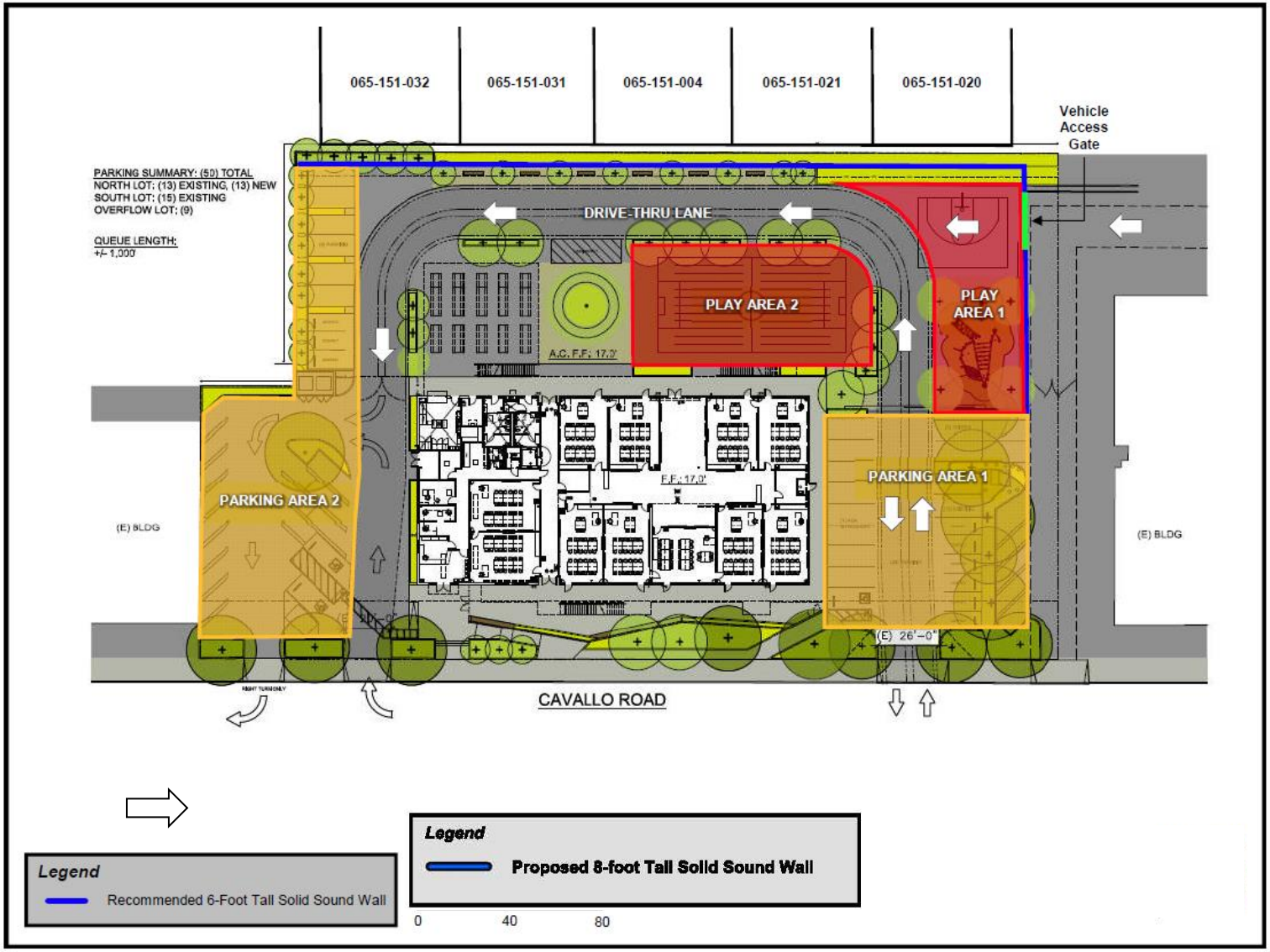
Outdoor Play Area Noise

For the assessment of outdoor play area noise impacts at the nearest noise-sensitive uses, BAC staff utilized noise level data previously collected at various outdoor play areas in recent years. The primary noise source associated with outdoor play area use is shouting children. For the purposes of this analysis, the proposed outdoor play areas have been identified as Play Areas 1 and 2 on Figure 7.

Figure 6
Project Site and Ambient Noise Measurement Locations

Source: Bollard Acoustical Consultants, Inc., Environmental Noise Assessment. August 14, 2017.

Figure 7
Project Site Plan with Drive-Through Lane, Play Areas, and Parking Areas



Source: Bollard Acoustical Consultants, Inc., Environmental Noise Assessment. August 14, 2017.

BAC file data indicates that average noise levels of similar sized outdoor play areas is approximately 55 dB L_{eq} at a distance of 50 feet from the focal point of the play area during recess hours. According to information obtained from the project applicant, the students would have access to the outdoor play areas from 8:10 AM to 4:00 PM with a maximum of 120 students and a minimum of 84 students in the outdoor play areas at any one time. In addition, the project also includes afterschool programs that would commence from 4:00 PM to 6:00 PM, with a conservative assumption of 100 students in the outdoor play areas during this time. A summary of the proposed time periods with associated number of students in outdoor areas during those times is available in Table 3 of the Environmental Noise Assessment in Appendix D. Outdoor play area noise exposure was computed to be 52 CNEL at a reference distance of 50 feet. Assuming standard spherical spreading loss (-6 dB per doubling of distance), outdoor play area noise exposure was projected from the assumed focal point of the proposed areas to the backyards of the nearest single-family residential parcels to the west. The results of those projections are presented in Table 6.

Table 6
Predicted Outdoor Play Area Noise Levels at Nearest Outdoor Activity Areas

Description[1]	Distance from Nearest Play Area Focal Point (feet)[2]	Predicted Play Area Noise Levels, CNEL (dBA)[3]
Play Area 1 to APN: 065-151-020	75	48
Play Area 2 to APN: 065-151-021	80	48
Play Area 2 to APN: 065-151-004	100	46
City of Antioch Stationary Noise Standard:		60

Notes:
[1] Nearest single-family residential parcels are shown on Figure 1.
[2] Distances measured from assumed play area focal points to the center of the single-family residential backyards.
[3] Predicted levels based on reference noise level of 55 dB Leq (52 CNEL) at a distance of 50 feet and a sound attenuation rate of 6 dB per doubling of distance.

Source: Bollard Acoustical Consultants, Inc., Environmental Noise Assessment. August 14, 2017.

The data provided above indicates that predicted noise exposure from the proposed outdoor play areas would comply with the City of Antioch 60 CNEL stationary noise level standard at the backyards of the nearest single-family residences to the west. As a result, mitigation measures for outdoor play area noise would not be warranted for the proposed project. However, BAC recommended the construction of a 6-foot tall masonry sound wall at the location illustrated on Figure 7 in order to limit the potential for annoyance of residents.

Parking Area Noise

The proposed project includes two proposed parking areas, one located at the north end of the property and one at the south end. Based on the project site plans, the proposed parking areas would accommodate up to approximately 50 vehicles (approximately 25 parking stalls in each area). For the purposes of this analysis, the proposed parking areas have been identified as parking areas 1 and 2 (see Figure 7).

As a means of determining potential noise exposure due to project parking lot activities, BAC used parking lot noise level measurements conducted by BAC. The results of those measurements revealed that individual parking lot movements generated mean noise levels of 70 dB SEL at a reference distance of 50 feet. For a conservative assessment of parking area noise generation, BAC assumed the parking area could fill or empty during a peak hour of school operations. During school hours, parking area activity would likely be more spread out. The results of the parking lot noise assessment at the backyards of the nearest residential parcels are shown in Table 7.

Table 7
Predicted Parking Area Noise Levels at Nearest Outdoor Activity Areas

Description[1]	Distance from Nearest Parking Area Focal Point (feet)[2]	Predicted Parking Area Noise Levels, CNEL (dBA)[3]
Parking Area 1 to APN: 065-151-020	165	36
Parking Area 2 to APN: 065-151-032	115	38
City of Antioch Stationary Noise Standard:		60

Notes:
[1] Nearest single-family residential parcels are shown on Figure 1.
[2] Distances measured from assumed play area focal points to the center of the single-family residential backyards.
[3] Predicted levels based on a reference levels of 70 dB SEL and 65 dB L_{max} per parking lot movement at a distance of 50 feet and a sound attenuation rate of 6 dB per doubling of distance.

Source: Bollard Acoustical Consultants, Inc., Environmental Noise Assessment. August 14, 2017.

As shown in Table 7, the predicted noise exposure from the proposed parking areas would satisfy the City of Antioch 60 CNEL stationary noise level standard at the outdoor activity areas of the nearest single-family residences to the west by a wide margin. As a result, mitigation measures for parking area noise would not be warranted for the proposed project.

Pick-up and Drop-off Lane Noise

The project includes a one-way drive-thru lane designated for student pick-up and drop-off. Based on the project site plans, the entry and exit to the one-way drive-thru lane is proposed off Cavallo Road, and wraps around the school facilities on the western end of the project. The location of the proposed drive-thru lane is shown on Figure 7.

To quantify the noise generation of the proposed drive-thru vehicle passages, BAC utilized vehicle trip rate data from the Transportation Impact Assessment prepared by Hexagon Transportation Consultants, Inc. and BAC file data for vehicle passbys. According to Hexagon Transportation Consultants, Inc., the proposed project would generate an estimated 578 trips during the AM peak hour (314 inbound and 264 outbound), and 314 trips during the PM peak hour (128 inbound and 186 outbound). However, not all of the estimated vehicle trips would be utilizing the drive-thru lane. After subtraction of parking area generated vehicle trips from the total, the remaining vehicle trips attributed to the

drive-thru lane for student pick-up and drop-off is 392 (264 AM peak hour outbound + 128 inbound PM peak hour).

BAC file data indicate that typical noise levels of vehicle passbys are approximately 65 SEL dB at a distance of 50 feet. Based on the vehicle trip information above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), drive-thru lane noise exposure at the outdoor activity area (backyard) of nearest single-family residence to the west (APN 065-151-31) was calculated to be 45 CNEL. The predicted drive-thru noise level of 45 CNEL would satisfy the applicable City of Antioch 60 CNEL stationary noise level standard. As a result, mitigation measures for drive-thru lane noise would not be warranted for the proposed project.

Combined Noise from On-Site Sources

Combined noise levels for each on-site noise source occurring concurrently are shown in Table 8. As shown in Table 8, the combined on-site noise exposure of the outdoor play areas, parking areas, and the drive-thru lane would not exceed the City of Antioch's 60 CNEL stationary noise standard. It should be noted that project construction noise would not occur simultaneously with operational noise.

Table 8
Predicted Noise Levels at Nearest Residences from All On-Site Noise Sources Combined

Nearest Residential Parcels	Predicted Noise Levels at Outdoor Activity Areas, L_{dn} (dBA)[1]			
	Outdoor Play Areas	Parking Areas	Drive-Thru Lane	Combined
APN: 065-151-004	46	35	40	47
APN: 065-151-020	48	36	42	49
APN: 065-151-021	48	38	43	50
APN: 065-151-031	43	37	45	48
APN: 065-151-032	41	38	42	45

Notes:
[1] Predicted levels are based on the decibel addition of data contained in previous sections of this report.

Source: Bollard Acoustical Consultants, Inc., Environmental Noise Assessment. August 14, 2017.

Future Off-Site Traffic Noise Level Increases

Construction of the proposed project would result in increased traffic on the local roadway network. BAC utilized the FHWA Model with the traffic study prepared by Hexagon Transportation Consultants, Inc. to determine whether traffic noise impacts would occur as a result of this project. The FHWA Model inputs are provided in Appendix D of the Environmental Noise Assessment available in Appendix D of this Initial Study, and the results are shown in Table 9 and Table 10.

Table 9
Existing vs. Existing Plus Project Traffic Noise Levels, L_{dn} (dBA)

Roadway	Segment	Existing	Existing + Project	Change	Substantial Increase?
A Street	North of Wilbur Ave	55.7	56.3	0.6	No
A Street	Wilbur Ave to 10th Ave	56.6	57.0	0.4	No
A Street	W 10th St to E 13th St	57.9	58.3	0.4	No
A Street	E 13th St to W 18th St	61.6	61.6	--	No
A Street	South of W 18th St	62.2	62.3	0.1	No
Cavallo Road	North of Wilbur Ave	48.7	48.7	--	No
Cavallo Road	Wilbur Ave to E 13th St	60.6	60.9	0.3	No
Cavallo Road	E 13th St to 18th St	58.5	60.7	2.2	No
Cavallo Road	South of E 18th St	54.8	55.0	0.2	No
East 13th Street	A St to Cavallo Rd	51.6	53.4	1.8	No
East 18th Street	A St to Evergreen Ave	60.3	61.0	0.7	No
East 18th Street	Evergreen Ave to Cavallo Rd	60.4	61.2	0.8	No
East 18th Street	Cavallo Rd to Hillcrest Ave	60.9	61.5	0.6	No
East 18th Street	East of Hillcrest Ave	64.1	64.2	0.1	No
Evergreen Avenue	South of E 18th St	48.4	50.1	1.7	No
G Street	North of W 10th St	54.0	54.5	0.5	No
G Street	W 10th St to W 18th St	55.9	56.2	0.3	No
G Street	South of W 18th St	56.6	56.8	0.2	No
Hillcrest Avenue	South of E 18th St	63.3	63.4	0.1	No
Hillcrest Avenue	North of E 18th St	53.6	54.0	0.4	No
West 10th Street	West of W 10th St	58.0	58.1	0.1	No
West 10th Street	G St to A St	58.1	58.6	0.5	No
West 18th Street	West of W 18 St	58.1	58.1	--	No
West 18th Street	G St to A St	56.7	57.2	0.5	No
Wilbur Avenue	A St to Cavallo Rd	61.2	61.8	0.6	No
Wilbur Avenue	East of Cavallo Rd	60.8	60.9	0.1	No

(Continued on next page)

Table 9
Existing vs. Existing Plus Project Traffic Noise Levels, L_{dn} (dBA)

Roadway	Segment	Existing	Existing + Project	Change	Substantial Increase?

Sources:
- *FHWA-RD-77-108.*
- *Transportation Impact Report. Hexagon Transportation Consultants, Inc. 2017.*
- *Bollard Acoustical Consultants, Inc., Environmental Noise Assessment. August 14, 2017.*

Table 10
Existing vs. Cumulative Plus Project Traffic Noise Levels, L_{dn} (dBA)

Roadway	Segment	Cumulative	Cumulative + Project	Change	Substantial Increase?
A Street	North of Wilbur Ave	55.8	56.4	0.6	No
A Street	Wilbur Ave to 10th Ave	57.5	57.8	0.3	No
A Street	W 10th St to E 13th St	58.4	58.7	0.3	No
A Street	E 13th St to W 18th St	62.0	62.0	--	No
A Street	South of W 18th St	62.5	62.6	0.1	No
Cavallo Road	North of Wilbur Ave	48.7	48.7	--	No
Cavallo Road	Wilbur Ave to E 13th St	57.1	58.3	0.2	No
Cavallo Road	E 13th St to 18th St	58.5	60.7	2.2	No
Cavallo Road	South of E 18th St	54.9	55.0	0.6	No
East 13th Street	A St to Cavallo Rd	52.4	53.5	1.1	No
East 18th Street	A St to Evergreen Ave	60.4	61.1	0.7	No
East 18th Street	Evergreen Ave to Cavallo Rd	60.5	61.2	0.7	No
East 18th Street	Cavallo Rd to Hillcrest Ave	61.0	61.5	0.5	No
East 18th Street	East of Hillcrest Ave	64.3	64.4	0.1	No
Evergreen Avenue	South of E 18th St	48.9	50.2	1.3	No
G Street	North of W 10th St	55.1	55.5	0.4	No
G Street	W 10th St to W 18th St	56.2	56.5	0.3	No
G Street	South of W 18th St	57.1	57.3	0.2	No

(Continued on next page)

Table 10
Existing vs. Cumulative Plus Project Traffic Noise Levels, L_{dn} (dBA)

Roadway	Segment	Cumulative	Cumulative + Project	Change	Substantial Increase?
Hillcrest Avenue	South of E 18th St	63.7	63.8	0.1	No
Hillcrest Avenue	North of E 18th St	53.8	54.2	0.4	No
West 10th Street	West of W 10th St	58.1	58.1	--	No
West 10th Street	G St to A St	58.3	58.8	0.5	No
West 18th Street	West of W 18 St	58.3	58.3	--	No
West 18th Street	G St to A St	56.8	57.3	0.5	No
Wilbur Avenue	A St to Cavallo Rd	61.2	61.8	0.6	No
Wilbur Avenue	East of Cavallo Rd	60.8	60.9	0.1	No

Sources:
- *FHWA-RD-77-108.*
- *Transportation Impact Report. Hexagon Transportation Consultants, Inc. 2017.*
- *Bollard Acoustical Consultants, Inc., Environmental Noise Assessment. August 14, 2017.*

It is generally recognized that a 3 dB L_{dn}/CNEL or greater increase in noise levels due to a project would be considered significant where exterior noise levels would exceed 60 dB L_{dn} (for residential uses). The data shown in Table 9 and Table 10 indicate that the project-related increase in traffic noise levels on the local roadway network would not be substantial. As a result, off-site traffic noise impacts are not predicted to occur as a result of the proposed project.

Conclusion

BAC concluded noise generated from the proposed outdoor play area, parking areas, and drive-thru lane would not exceed the City of Antioch's noise standards. Therefore, the proposed project would result in a ***less-than-significant*** impact regarding exposure of persons to or generation of noise levels in excess of standards established in the Antioch General Plan as a result of the outdoor child play areas.

b. Groundborne vibration would not be generated as part of the daily operation of the proposed school. However, groundborne vibrations would be generated during construction of the proposed project. For structural damage, the California Department of Transportation (Caltrans) uses a vibration limit of 0.5 inches/second (in/sec), peak particle velocity (PPV), for buildings structurally sound and designed to modern engineering standards; 0.2 in/sec PPV for buildings that are found to be structurally sound but where structural damage is a major concern; and a conservative limit of 0.08 in/sec PPV for

historic buildings or buildings that are documented to be structurally weakened.[18] All surrounding structures are assumed to be structurally sound, but damage would be a concern so the 0.2 in/sec PPV is used as a threshold of significance for structural damage for this analysis. The threshold of 0.2 in/sec PPV is also used by Caltrans as the threshold for human annoyance caused by vibration. Therefore, activities creating vibrations exceeding 0.2 in/sec PPV would impact sensitive receptors in nearby residences. Table 11 presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet.

Table 11
Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 ft (in/sec)
Vibratory Roller	0.210
Large Bulldozer	0.089
Caisson drilling	0.089
Loaded trucks	0.076
Jackhammer	0.035
Small bulldozer	0.003

Source: Caltrans, Transportation and Construction Vibration: Guidance Manual. September 2013.

The nearest existing structures to project construction areas include residences along the western project property lines, approximately 40 feet away. Based on the levels shown in Table 11, vibration levels produced by heavy equipment during construction, such as the vibratory rollers, are calculated to be 0.13 in/sec PPV or less at a distance of 40 feet. Vibration levels would be lower at structures located further from the construction and as construction moves away from the outer property lines of the site. Vibration levels may be perceptible when construction is located directly adjacent to residences, but would not approach the 0.2 in/sec PPV threshold for architectural damage or human annoyance. However, construction activities would be temporary in nature and would be limited to normal daytime working hours in accordance with Section 5-17.04 of the City Zoning Ordinance. Therefore, a ***less-than-significant*** impact would occur related to exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

d. During construction of the proposed project, noise from construction activities would add to the noise environment in the immediate project vicinity. Heavy equipment used during construction would be used for grading, excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise exposure at any single point outside the project site would vary depending on the proximity of construction activities to that point. Standard construction equipment, such as graders, backhoes, loaders, and trucks, would likely be used for this work. The range of maximum noise levels for various types of construction equipment at a distance of 50 feet is depicted in Table 12. The noise values represent maximum noise generation, or full-power operation of the equipment.

[18] Caltrans. *Transportation and Construction Vibration Guidance Manual*. September 2013.

Table 12 **Construction Equipment Noise Emission Levels**	
Equipment	**Typical Sound Level (dBA)** **50 Feet from Source**
Air compressor	81
Backhoe	80
Compactor	82
Concrete mixer	85
Concrete pump	82
Concrete vibrator	76
Crane, mobile	83
Dozer	85
Generator	81
Grader	85
Impact wrench	85
Jackhammer	88
Loader	85
Paver	89
Pneumatic tool	85
Pump	76
Roller	74
Saw	76
Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, Table 12-1. May 2006.	

The nearest sensitive receptors to the project are the single-family residences located immediately west of the project site, approximately 40 feet from construction activities that would occur on the project site.

As shown in Table 12, construction activities typically generate noise levels ranging from approximately 75 to 90 dB L_{max} at a reference distance of 50 feet from the construction activities. The noise levels from construction operations decrease at a rate of approximately 6 dB per doubling of distance from the source. As a result, maximum construction noise levels would range from 79 to 94 dB L_{max} at the outdoor activity areas (backyards) of the nearest residences.

Pursuant to AMC Section 5-17.04 construction noise is conditionally exempt from 8:00 AM to 5:00 PM, Monday through Friday when operations occur within 300 feet of occupied dwelling space, and from 9:00 AM to 5:00 PM on weekends and holiday. In addition, noise associated with construction activities would be temporary in nature, and would be anticipated to occur during normal daytime working hours.

Nonetheless, given the proximity of the nearby residential buildings to the proposed construction activities, noise levels at nearby noise-sensitive receptors would temporarily or periodically increase above existing levels without the project, and a ***potentially significant*** impact could occur.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

XII-1. *During construction activities and subject to the City of Antioch Code Enforcement Division, the use of heavy construction equipment shall adhere to Section 5-17.04 of the City's Municipal Code, which includes the following regulations:*

It shall be unlawful for any person to operate heavy construction equipment during the hours specified below:

1) On weekdays prior to 8:00 AM and after 5:00 PM.
2) On weekends and holidays, prior to 9:00 AM and after 5:00 PM.

XII-2. *Prior to approval of improvement plans, and subject to the review and approval of the City Engineer, the following notes shall be included on the improvement plans:*

- *All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.*
- *All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity and must be located as far as is feasible from sensitive receptors;*
- *Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible;*
- *Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors; and*
- *Construction site and access road speed limits shall be established and enforced during the construction period.*

e, f. The project site is not located within the vicinity of a public airport or private airstrip as the nearest airstrip to the site is the Funny Farm airstrip in Byron, located approximately 15.6 miles southeast of the site. Therefore, the proposed project would not expose people residing or working in the project area to excessive air traffic noise levels, and ***no impact*** would occur.

XIII. POPULATION AND HOUSING. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Induce substantial 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 housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	✖
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	✖

Discussion

a-c. The 1.7-acre project site consists of an existing, vacant office building and is surrounded by existing commercial and residential developments. The proposed project would include the construction and operation of a 30,367-s.f. elementary school; as such, the project would not directly induce population growth in the area. While the project would require connections to nearby water and sanitary sewer lines, these improvements would not constitute extension of major infrastructure. The water and sanitary sewer line improvements would only have capacity to serve the proposed project. In addition, the proposed project would not displace existing housing or necessitate the construction of replacement housing. Because the project would not indirectly induce population growth nor displace existing people or housing, the project would have ***no impact*** related to inducing substantial population growth.

XIV. 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. Fire protection services to the project area are provided by the Contra Costa County Fire Protection District (CCCFPD). The CCCFPD is an "all-hazards" organization providing fire suppression, paramedic emergency medical services (EMS), technical rescue, water rescue, and fire prevention/investigation services to more than 600,000 residents across a 304 square mile coverage area. The CCCFPD operates 25 fire stations and responds to approximately 45,000 incidents annually. CCCFPD's Station #81 (315 West 10th Street) is located approximately 0.8 mile northwest of the project site and is the closest fire station to the site. Station #81 currently provides fire protection service to the proposed project site and the surrounding commercial and residential developments.

The proposed project would be required to pay applicable fire protection fees per the City's Master Fee Schedule and the proposed elementary school would be constructed in accordance with the fire protection requirements of the 2013 California Fire Code. The CCCFPD and the City's Building Inspection Services Division would review the project building plans to ensure compliance with all code requirements. Given that the existing facilities are able to provide services to the proposed project site, which would meet acceptable service ratios, response times, and performance objectives, development of the proposed project would not increase the demand for fire protection services to require the construction or expansion of any fire protection facilities that would have a significant effect on the environment. As a result, the proposed project would have a ***less-than-significant*** impact related to fire protection services.

b. Police protection in the area is provided by the Antioch Police Department (APD). According to the Antioch Police Chief's City Council presentation given on July 26, 2016, the APD has 102 authorized sworn positions and 95 positions are currently filled.[19] The Antioch Police Station is located approximately 1.5 miles from the project site to the northeast. The operation of the proposed elementary school is intended to serve the existing

[19] Personal Communication with Alexis Morris, Senior Planner, City of Antioch Community Development Department. August 16, 2016.

population and not induce population growth. While the proposed project would increase the demand for police protection services at the site, the project applicant would be required to pay Development Impact Fees for police services per Section 9-3.50 of the City Municipal Code. In addition, the applicant has proposed a safety and security plan to address child safety on-site and during school hours. Therefore, the project would have a ***less-than-significant*** impact related to the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts.

c. School services in the City are provided by the Antioch Unified School District (AUSD). As of 2014, the AUSD serves thirteen K-5 schools, one K-8 school, four 6-8 schools, two comprehensive high schools (9-12), two continuation high schools, Dozier-Libbey Medical High School, and two alternative schools (Bridges and Prospects High).[20] In addition, the AUSD serves three charter schools (Antioch Charter Academy and Antioch Charter Academy II). The proposed project consists of the development of a new charter elementary school, which would serve up to 600 students. The proposed project would serve the existing students in the immediate vicinity of the proposed school. Given that the proposed project would include the development of new school facilities, the project would not result in substantial adverse physical impacts associated with the existing schools nor create a need for new or physically altered governmental facilities. Therefore, the proposed project would result in ***no impact***.

d, e. Development of the proposed elementary school would not induce significant population growth, as the project would not include the construction of housing or the creation of a substantial number of new jobs. As such, the proposed project would not introduce new residents to the area that would use parks, or other public facilities. Thus, the proposed project would result in ***no impact*** regarding any substantial increase in demand for public facilities such as parks and government facilities.

[20] Antioch Unified School District. *Developer Fee Justification Document for Residential, Commercial, and Industrial Development Projects.* July 2014.

XV. 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 proposed project would be a charter elementary school and would not include the construction of housing or the creation of a substantial number of jobs. As a result, the project would not directly or indirectly increase population growth, and would not increase the use of any existing recreational facilities or the demand for new or expansion of existing recreational facilities. Therefore, ***no impact*** to park facilities would occur.

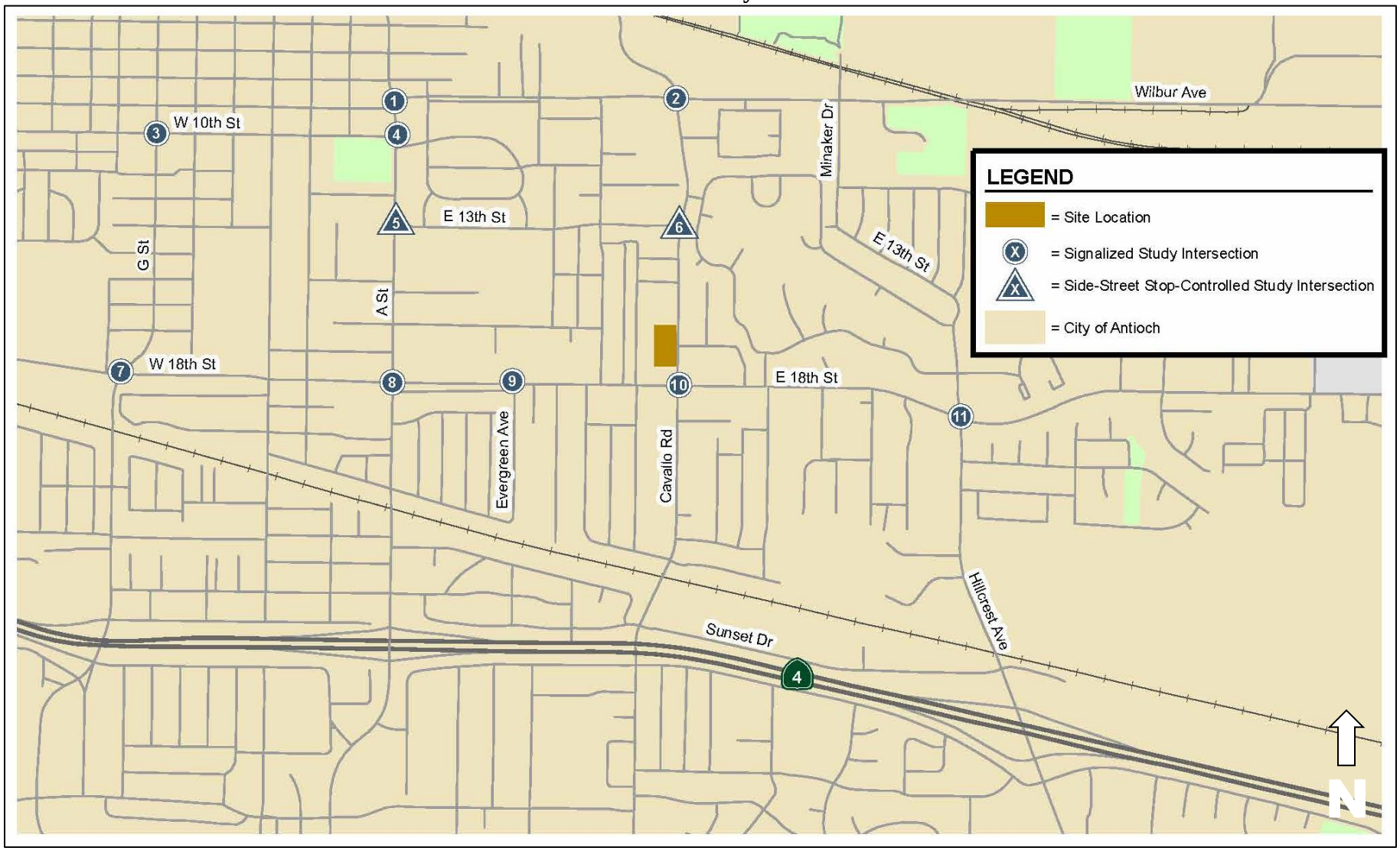
XVI. TRANSPORTATION AND CIRCULATION. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the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

Discussion

a,b. The following discussion is based on the Transportation Impact Analysis (TIA) prepared for the Rocketship Elementary School Project by Hexagon Transportation Consultants, Inc., (Hexagon) dated August 1, 2017 (Appendix E). The TIA prepared for the proposed project was peer-reviewed by Kimley-Horn and Associates, Inc., dated July 31, 2017 (Appendix F). The TIA evaluates the potential traffic impacts of the proposed project in accordance with the standards set forth by the City of Antioch, Contra Costa Transportation Authority (CCTA) Congestion Management Program (CMP), and the East County Action Plan (ECAP).

A total of two Two-Way Stop Control (TWSC) intersections and nine signalized intersections are included in the analysis (see Figure 8). The analysis focuses on the peak commute periods between 7:00 and 9:00 AM and between 4:00 and 6:00 PM, because these hours are during the hours in which traffic conditions on the surrounding roadways are generally the most congested.

Figure 8
Site Location and Study Intersections



Source: Hexagon Transportation Consultants, Inc., August 1, 2017

The following is a list of the study intersections:

1. "A" Street and West 9th Street/Wilbur Avenue *
2. Cavallo Road and Wilbur Avenue *
3. "G" Street and West 10th Street
4. "A" Street and West 10th Street/Beede Way *
5. "A" Street and East 13th Street (unsignalized)
6. Cavallo Road and East 13th Street (unsignalized)
7. "G" Street and West 18th Street
8. "A" Street and East 18th Street *
9. Evergreen Avenue and East 18th Street *
10. Cavallo Road and East 18th Street *
11. Hillcrest Avenue and East 18th Street *

* Denotes intersections on a route of regional significance

Rodway Traffic Volumes

Existing traffic volumes at eleven study intersections were obtained from peak-hour counts collected on April 6, 2017. The existing peak-hour intersection volumes are shown in Figure 6 of the TIA available in Appendix E. It should be noted that at the intersection of "A" Street and East 13th Street, the traffic counts recorded vehicles illegally turning left into the outbound-only driveway of the Higgins Chapel property.

Traffic conditions in the field were observed in order to identify existing operational deficiencies and to confirm the accuracy of calculated intersection level of service (LOS). Overall, most study intersections operated adequately during both the AM and PM peak hours of traffic, and the LOS analysis appears to accurately reflect actual existing traffic conditions. However, field observations showed that during the PM peak hour, congestion on northbound "A" Street extends to the upstream intersection of Belshaw Street, causing vehicles to wait through at least two signal cycles to clear the intersection, causing minor delays for vehicles trying to turn access the left-turn pockets. During the AM peak hour, operational issues were not observed.

Trip Generation

The trip generation rates for the proposed school are based on counts Hexagon conducted at existing Rocketship Schools in San Jose between 2012 and 2014. All of the surveyed schools have similar enrollment size and school hours as the proposed project. The magnitude of traffic generated by the proposed project was estimated by multiplying the observed Rocketship School trip generation rates in other areas by the proposed enrollment (600 students).

The proposed project would implement a Transportation Demand Management (TDM) Program that would encourage students and employees to carpool, take transit, or use active modes of transport to get to and from the site. Proposed TDM measures include carpool matching, financial incentives for parents who carpool, and a ride-share allowance for staff members who live within two miles of the project site. The TDM program is expected to reduce the vehicle trips and parking demand generated by the proposed school compared to that observed at other Rocketship schools in San Jose, which do not have similar TDM programs. It should also be noted that while the trips generated by the proposed school would be new to the roadways immediately adjacent to the project site, in a regional context, the Rocketship school trips would be merely reassigned trips from other schools in the area where the students would have otherwise attended. The trip generation estimates are presented in Table 13.

Table 13
Project Trip Generation Estimates

	Size (Students)	Daily		AM Peak Hour				PM Peak Hour[2]			
		Rate[3]	Trips	Rate	In	Out	Total	Rate	In	Out	Total
School[1]	600	2.75	1,650	0.963	314	264	578	0.523	128	186	314

[1] Peak hour trip rates (per student) based on Hexagon Transportation Consultants surveys conducted in 2012 through 2014 at five Rocketship elementary schools in San Jose.
[2] PM peak hour trip generation reflects 4 PM - 5 PM, which is when peak project traffic and peak background traffic overlap.
[3] Daily trip rate was derived by multiplying the AM peak hour rate by the ratio of daily trip rate to the AM trip rate (1.29/.45) available in the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition* for Elementary School (ITE Land Use #520).

Source: Hexagon Transportation Consultants, Inc. August 1, 2017

Existing Plus Project

Project trips, as represented in the above project trip assignment, were added to existing traffic volumes to obtain existing plus project traffic volumes. Existing plus project conditions were evaluated relative to existing conditions in order to determine potential project impacts. The existing plus project traffic volumes are shown in Figure 9 of the TIA available in Appendix E.

Cumulative Conditions

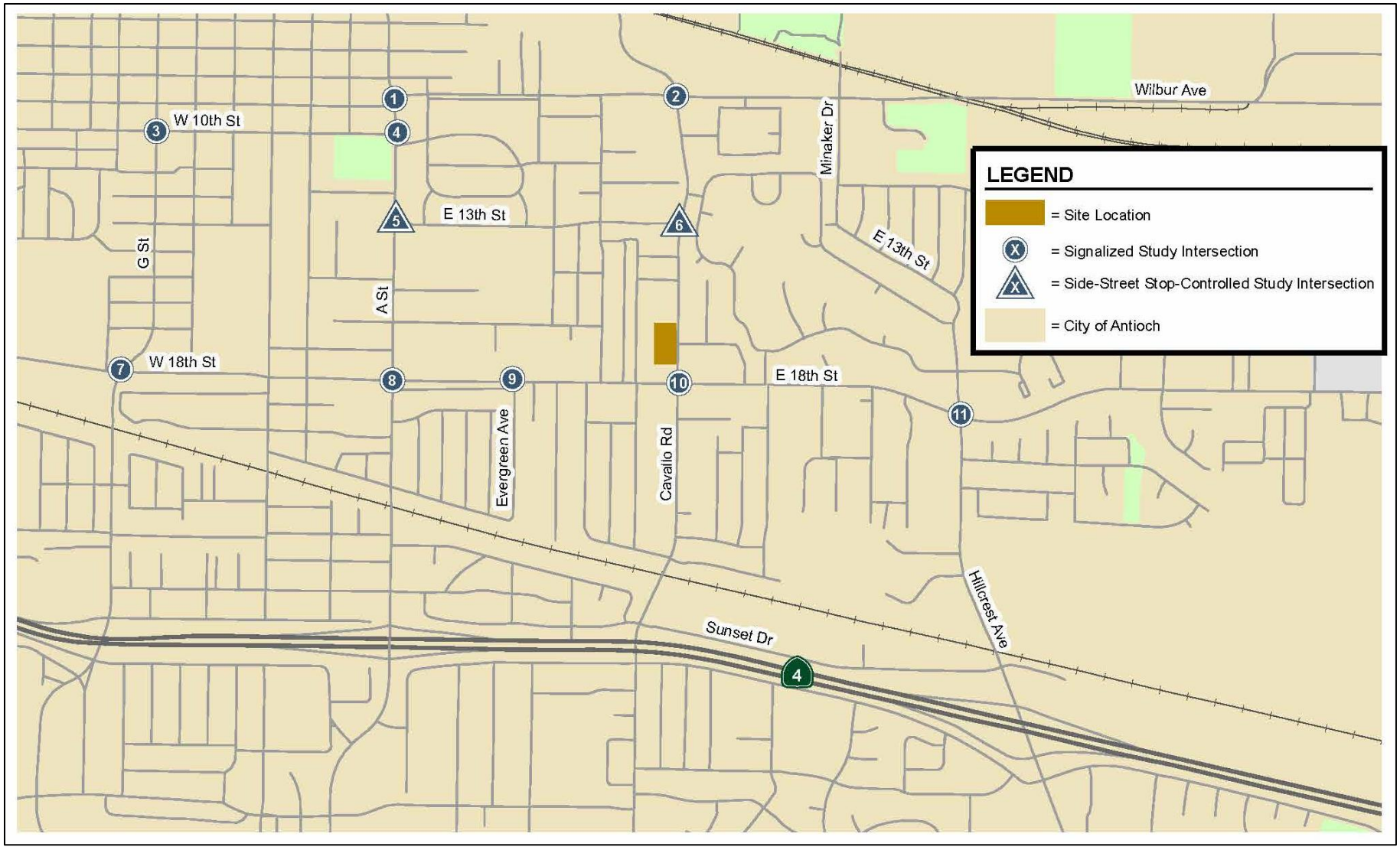
Cumulative traffic volumes were estimated based on year 2040 traffic volumes from the County's travel demand forecast model. The County's travel demand forecast model assumes the completion of the upcoming East Contra Costa Bay Area Rapid Transit (eBART) extension, which would add 10 miles of eBART track from the Pittsburg/Bay Point BART Station to a new Antioch station at Hillcrest Avenue. Thus, assuming a shift in mode choice within the Pittsburg/Antioch areas and ultimately reduce traffic volumes on selected study area roadways, particularly along "A" Street and West 10th Street/Wilbur Avenue.

Cumulative plus project traffic volumes were estimated by adding to the cumulative traffic volumes the additional traffic estimated to be generated by the project. Cumulative plus project conditions were evaluated relative to cumulative conditions to determine potential project impacts. Figures 10 and 11 of the TIA, available in Appendix E, show the intersection turning-movement volumes under cumulative conditions without and with the project.

Intersection Analysis

Intersection LOS was evaluated pursuant to the City of Antioch and ECAP standards. The results of the analysis show that all of the signalized study intersections currently operate at an acceptable LOS (high-level LOS D or better) during both the AM and PM peak hours, while the two TWSC intersections both operate at LOS C or better during the AM and PM peak hours. Results of the intersection LOS analysis under existing conditions are summarized in Table 14 below, which also includes a summary of the existing plus project LOS conditions. **Figure 8**

Site Location and Study Intersections



Source: Hexagon Transportation Consultants, Inc., August 1, 2017

Existing Plus Project

As is shown in Table 14 below, all of the signalized study intersections would continue to operate at acceptable levels of service (high-level LOS D or better) under existing plus project conditions during both peak hours, while both TWSC intersections would operate at LOS C or better under existing plus project conditions during both peak hours. The TWSC intersections would both comply with the City's mid-level LOS D standard for intersections not on a route of regional significance.

Table 14
Existing Intersection LOS Summary

Study No.	Intersection	Peak Hour	Control Type	Existing Conditions			
				No Project		With Project	
				Avg. Delay	LOS	Avg. Delay	LOS
1	"A" Street and West 9th Street/Wilbur Avenue*	AM	Signal	30.2	C	34.8	C
		PM		35.4	D	36.8	D
2	Cavallo Road and Wilbur Avenue*	AM	Signal	27.9	C	29.1	C
		PM		24.0	C	25.9	C
3	"G" Street and West 10th Street*[2]	AM	Signal	11.5	B	11.9	B
		PM		10.1	B	10.1	B
4	"A" Street and West 10th Street/Beede Way*	AM	Signal	26.7	C	28.0	C
		PM		28.8	C	29.5	C
5	"A" Street and East 13th Street	AM	TWSC[1]	16.1	C	16.6	C
		PM		16.0	C	14.8	B
6	Cavallo Road and East 13th Street	AM	TWSC[1]	10.6	B	12.5	B
		PM		10.3	B	10.8	B
7	"G" Street and West 18th Street*[2]	AM	Signal	20.3	D	21.2	C
		PM		26.1	C	27.0	C
8	"A" Street and East 18th Street*[3]	AM	Signal	40.2	D	42.1	D
		PM		49.2	D	50.2	D
9	Evergreen Avenue and East 18th Street*[3]	AM	Signal	25.0	C	26.1	C
		PM		26.9	C	27.7	C
10	Cavallo Road and East 18th Street*	AM	Signal	22.7	C	26.1	C
		PM		23.3	C	24.6	C

(Continued on next page)

11	Hillcrest Avenue and East 18th Street*[3]	AM	Signal	35.2	D	35.9	D
		PM		39.6	D	40.3	D

Notes:
TWSC = Two-Way Stop Control
* Denotes an intersection on a Route of Regional Significance
[1] For TWSC intersections, the worst approach's delay and LOS are reported.
[2] PM counts were seasonally adjusted to reflect traffic when Antioch schools are in session.
[3] The *Highway Capacity Manual* (HCM) 2010 does not support turning movements with shared and exclusive lanes. Therefore, this intersection was analyzed using the HCM 2000.
Bold indicates a substandard LOS.
Bold indicates a significant project impact.

Source: Hexagon Transportation Consultants, Inc. August 1, 2017

Cumulative Conditions

The results of the LOS analysis under cumulative conditions are summarized in Table 15 below. The results show that, all of the signalized study intersections are expected to operate at an acceptable level (high-level LOS D or better) per the City of Antioch and ECAP LOS standards, both with and without the proposed project. In addition, both TWSC intersections would operate at LOS C or better under cumulative plus project conditions during both peak hours, which would comply with the City's mid-level LOS D standard for intersections not on a route of regional significance.

Table 15
Cumulative LOS Summary

Study No.	Intersection	Peak Hour	Control Type	Cumulative Conditions			
				No Project		With Project	
				Avg. Delay	LOS	Avg. Delay	LOS
1	"A" Street and West 9th Street/Wilbur Avenue*	AM	Signal	30.4	C	35.3	D
		PM		38.3	D	40.2	D
2	Cavallo Road and Wilbur Avenue*	AM	Signal	27.9	C	29.1	C
		PM		24.1	C	26.0	C
3	"G" Street and West 10th Street*[2]	AM	Signal	12.4	B	12.9	B
		PM		10.1	B	10.2	B
4	"A" Street and West 10th Street/Beede Way*	AM	Signal	30.9	C	33.2	C
		PM		29.7	C	30.4	C
5	"A" Street and East 13th Street	AM	TWSC[1]	18.9	C	20.7	C
		PM		16.5	C	15.2	C
6	Cavallo Road and East 13th Street	AM	TWSC[1]	10.7	B	12.5	B
		PM		10.3	B	11.0	B
7	"G" Street and West 18th Street*[2]	AM	Signal	22.5	C	23.6	C
		PM		46.7	D	51.2	D
8	"A" Street and East 18th Street*[3]	AM	Signal	40.7	D	42.4	D
		PM		50.0	D	51.1	D
9	Evergreen Avenue and East 18th Street*[3]	AM	Signal	25.2	C	26.2	C
		PM		27.4	C	28.2	C

(Continued on next page)

10	Cavallo Road and East 18th Street*	AM	Signal	22.8	C	26.1	C
		PM		24.2	C	25.5	C
11	Hillcrest Avenue and East 18th Street*[3]	AM	Signal	35.9	C	36.6	D
		PM		40.7	D	41.2	D

Notes:
TWSC = Two-Way Stop Control
* Denotes an intersection on a Route of Regional Significance
[1] For TWSC intersections, the worst approach's delay and LOS are reported.
[2] PM counts were seasonally adjusted to reflect traffic when Antioch schools are in session.
[3] The *Highway Capacity Manual* (HCM) 2010 does not support turning movements with shared and exclusive lanes. Therefore, this intersection was analyzed using the HCM 2000.
Bold indicates a substandard LOS.
Bold indicates a significant project impact.

Source: Hexagon Transportation Consultants, Inc. August 1, 2017

Queuing Analysis

Analysis of vehicle queuing for high-demand movements at intersections was conducted for the following left-turn movements:

1. Southbound and westbound left turn at "A" Street and West 9th Street/Wilbur Avenue;
2. Northbound left turn at Cavallo Road and Wilbur Avenue;
3. Northbound left turn at "A" Street and West 10th Street/Beede Way;
4. Northbound left turn at Cavallo Road and East 13th Street;
5. Westbound left-turn/through movement at "A" Street and East 18th Street;
6. Eastbound and southbound left turn at Cavallo Road and East 18th Street;
7. Northbound left-turn/through movement at Hillcrest Avenue and East 18th Street; and
8. Northbound left turn at Cavallo Road and County Driveway.

The basis of the analysis is as follows: (1) the Poisson probability distribution is used to estimate the 95th percentile maximum number of queued vehicles per signal cycle for a particular movement; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available storage capacity for the movement.

Hexagon's analysis of the estimated queue lengths based on the Poisson numerical calculations resulted in queuing deficiencies at three locations: "A" Street and West 10th Street/Beede Way, Hillcrest Avenue and East 18th Street, and Cavallo Road and East 18th Street (see Table 9 of the TIA, available in Appendix E).

Both the "A" Street and West 10th Street/Beede Way and Hillcrest Avenue and East 18th Street intersections are anticipated to exceed the storage capacity of the turn lanes during the AM and PM peak hours, under cumulative conditions. With the additional trips added by the proposed project, the queue would increase by one vehicle at both peak hours at the

"A" Street and West 10th Street/Beede Way intersection, but such an increase would have a negligible effect on traffic operations and would be expected to last for only a few seconds during only one signal cycle in the AM and PM peak hours. The additional trips added by the proposed project at the Hillcrest Avenue and East 18th Street intersection are not expected to increase the 95th percentile queue. As such, neither intersection would be required to implement improvements.

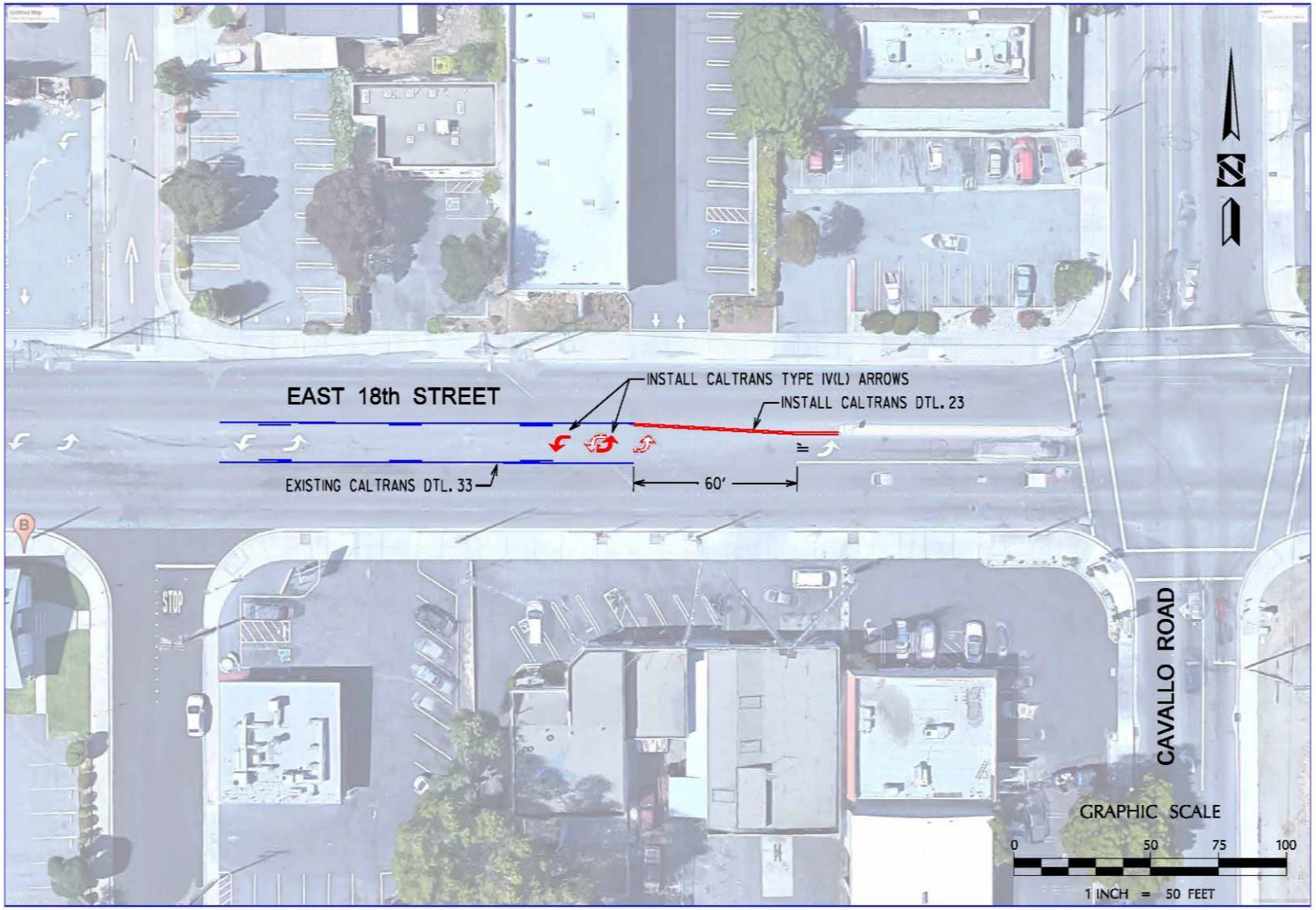
However, with the additional trips added by the proposed project to the Cavallo Road and East 18th Street intersection, the 95th percentile queue would increase by 75 feet and 50 feet, or three vehicles and two vehicles, during the AM and PM peak hours, respectively. The increase in queue length would exceed the existing turn pocket storage, possibly causing some left-turn vehicles to queue in the adjacent through lane while waiting to enter the left-turn pocket. Because East 18th Street has two through lanes in each direction, through traffic could continue to proceed in the curb lane if the inner through lane is blocked by left-turn traffic. The queue spillover would have an insignificant effect on traffic operations at this intersection because the spillover would occur for only a few seconds during only some signal cycles during the peak hours before and after school, and the left-turn queue is expected to completely dissipate during each signal cycle. Furthermore, the intersection would continue to operate at LOS C even if eastbound through traffic were reduced to the use of a single lane for the entire hour. Nevertheless, mitigation for median striping modifications are recommended to encourage eastbound left-turn queues to extend into the center turn lane if necessary (see Figure 9). The modification would remove the left-turn pocket taper striping to increase the queue storage available for use by eastbound left-turn traffic while still accommodating the existing left turns to and from adjacent driveways and Noia Avenue/Woodland Drive.

Conclusion

The analysis determined that under all scenarios with and without the project, pursuant to the City of Antioch and ECAP LOS standards, all of the study intersections are expected to operate at acceptable levels (high-level LOS D or better). In addition, under all scenarios with and without the project, all stop-controlled approaches at the TWSC intersections would operate at LOS C or better during both peak hours, which would comply with the City's mid-level LOS D standard for intersections not on a route of regional significance.

Overall, the proposed project's increase in traffic to the nearby transportation and circulation network would not be considered substantial in relation to the existing traffic load or capacity of the circulation system, and would not exceed any LOS standard. However, as previously discussed, Hexagon identified modifications to left-turn queuing on East 18th Street as a result of the proposed project. If these modifications to remove the left-turn pocket taper striping and increase the queue storage available for use by eastbound left-turn traffic are not made, a ***potentially significant*** impact would occur.

Figure 9
Recommended Median Restriping on East 18th Street at Cavallo Road



Source: Hexagon Transportation Consultants, Inc., August 1, 2017

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

XVI-1 *Prior to the approval of the building permits, the project applicant shall submit, for review and approval by the City of Antioch Engineering and Development Services Division, project plans that specify median striping modifications to remove the left-turn pocket taper striping, as described in the TIA, dated August 1, 2017, prepared by Hexagon Transportation Consultants, Inc.*

c. The proposed project is not located near an airport, and does not include any improvements to airports or a change in air traffic patterns. The nearest airstrip to the site is the Funny Farm airstrip in Byron, located approximately 15.6 miles southeast of the site. Therefore, because the proposed project would not result in a change in air traffic patterns, including either an increase in air traffic levels or a change in location that results in substantial safety risks, ***no impact*** would occur.

d, e. The site access, circulation, and parking for the proposed project pose potential transportation issues associated with the project. Unlike the LOS impact methodology, which is adopted by the City Council, site access and circulation are evaluated by Hexagon using commonly accepted traffic engineering principles.

Project Driveway Operations

Site access was evaluated to determine the adequacy of the site's driveways with regard to traffic volume, delays, vehicle queues, geometric design, and corner sight distance. Vehicular access to the project site would be provided via one full-access driveway and two one-way driveways on Cavallo Road. In addition, the project would have access via the adjacent parcel owned by the County per the access agreement between the two properties. During the peak pick-up and drop-off periods before and after school, parents would enter the northern driveway on the adjacent County parcel and circulate along the western edge of the property before exiting from the one-way, exit-only driveway at the southeastern edge of the project site.

The full-access driveway would be located along the northeastern edge of the project site, and provide access to the northern parking lot. The full-access driveway would have a width of 26 feet. The one-way driveways would be located along the southeastern edge of the project site and provide access to the southern parking lot and egress for vehicles exiting the student loading zone along the western edge of the site. While the entry-only driveway would allow both right and left turns into the site, the exit-only driveway would be restricted to right turns only. Because the traffic volumes on Cavallo Road are moderate and the exit driveway would be restricted to right turns only, delay and queues for exiting vehicles are expected to be minimal. The entry-only and exit-only driveway would have a width of 20 feet and 17 feet, respectively. The City of Antioch requires a minimum of 15 feet for a one-way driveway, and 26 feet for a two-way driveway. Therefore, the project would meet the City's design standards for driveway widths.

On-Site Circulation

The on-site circulation was reviewed in accordance with the City of Antioch Zoning Code and generally accepted traffic engineering standards. Generally, the proposed plan would provide vehicle traffic with adequate connectivity through the parking areas. During school hours, when the gates to the outdoor play area west of the school building would be closed, the northern parking lot would have a single two-way dead-end drive aisle with 90-degree perpendicular parking spaces. The drive aisle width (26 feet) provides sufficient space for vehicles to back out of the parking stalls. However, given that insufficient space is available at the end of the aisle for vehicles to turn around if the northern parking lot is full, Hexagon recommended mitigation to ensure these parking spaces be reserved for staff parking only. The project plans include four feet between the last parking space at the end of the aisle and the gate, thus facilitating vehicle maneuvers in and out of these parking spaces. The northern parking lot also includes 45-degree angled parking spaces adjacent to a 20-foot drive aisle that would be accessed via the easement through the adjacent County parcel. The proposed site plan also shows four 90-degree tandem spaces within the northern parking lot. Hexagon additionally recommended mitigation to require these tandem spaces be converted to standard 90-degree spaces with two spaces accessed via the adjacent County parcel and two spaces accessed via the two-way project driveway.

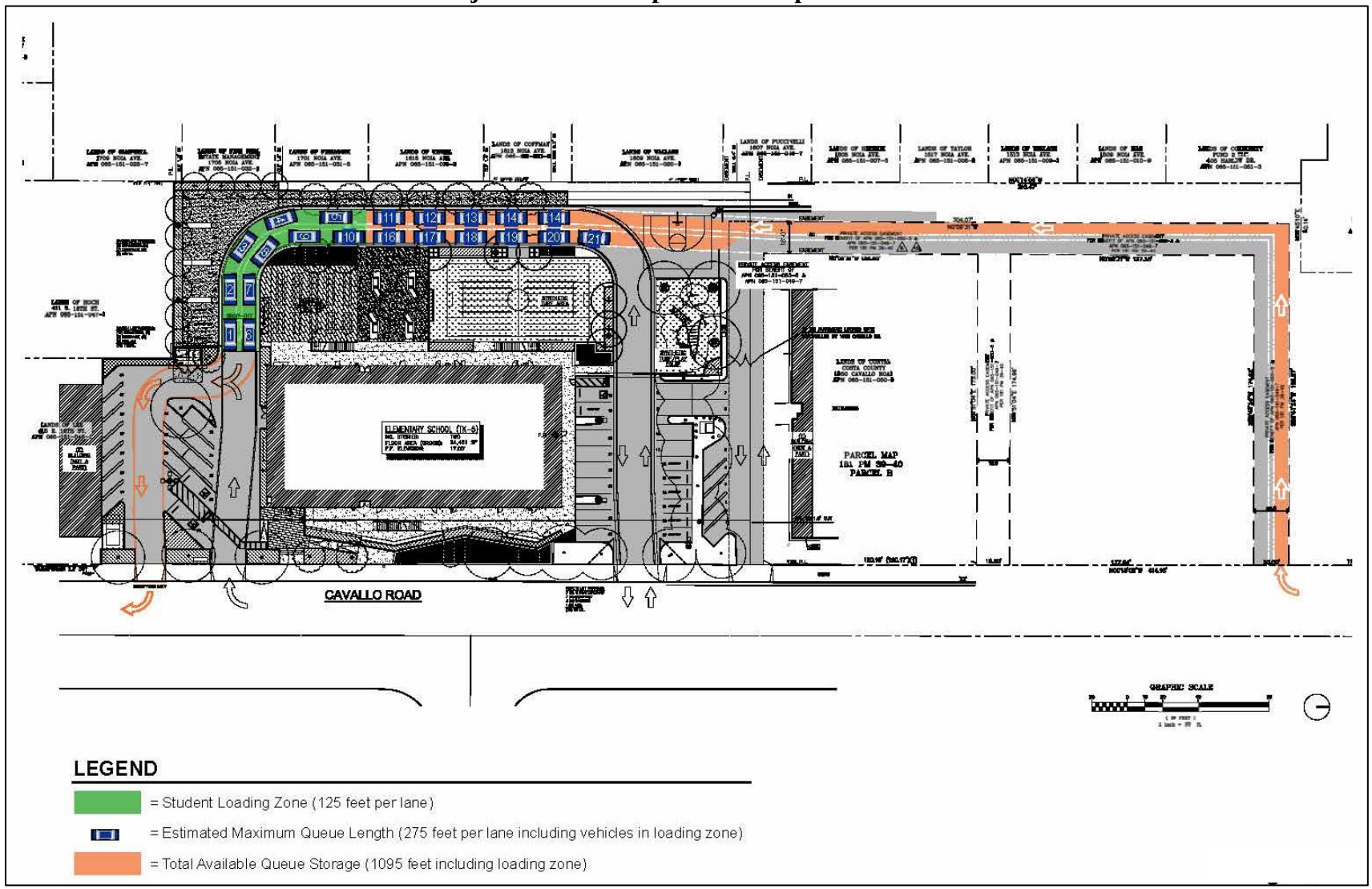
Vehicles traveling within the southern parking area would circulate in a counterclockwise manner from the entrance-only driveway located at the northern edge of the lot on County property to the exit-only driveway at the southern edge of the lot. The southern parking lot would provide 45-degree parking adjacent to one-way drive aisles that range from 18 to 25 feet wide. The proposed aisle width meets the City's standards.

The southwest corner of the site additionally provides 90-degree parking spaces adjacent to the student pick-up and drop-off zone. Gates would block access to these spaces during the school day, thus they would only be used for overflow parking during events outside regular school hours.

Student Pick-up and Drop-off

Student pick-up and drop-off and queue storage of vehicles would occur in the one-way drive aisle along the western edge of the project site. During the peak periods before and after school, parents would access the student pick-up and drop-off zone via the northern driveway on the adjacent County property. It should be noted that the County driveway is a gated driveway that would remain open for student pick-up and drop-off. Parents would then proceed in a single lane west and then south through the County parking lot before entering the project site via a gate near the basketball court at the northwest corner of the project site. Within the project site, vehicles would be permitted to proceed in either of two lanes along the western edge of the site (see Figure 10). The student loading zone would begin adjacent to the covered lunch area and extend approximately 125 feet in length to the southern exit gate adjacent to the trash enclosure. The student loading zone would allow up to five vehicles in each lane to load simultaneously.

Figure 10
Project Student Drop-Off/Pick-Up Circulation



Source: Hexagon Transportation Consultants, Inc., August 1, 2017

Approximately 175 feet of space would be available for vehicles to queue in the southern parking lot after exiting the loading zone while waiting to turn out onto Cavallo Road. The queue storage space for outbound vehicle would be sufficient to prevent queues from backing up into the student pick-up and drop-off zone.

The length of vehicle queues at the project site was estimated based on Hexagon's observations at existing Rocketship schools in San Jose. The estimates take into account the projected enrollment (600 students) and the length of the student loading zone (125 feet in each of two lanes). Approximately 525 feet of queuing space is estimated to be needed for drop-off operations and 450 feet of queue storage would be needed for pick-up operations. Longer queues were observed during the morning drop-off period than the afternoon pick-up period because all grades start at the same time in the morning, whereas dismissal times in the afternoon vary by grade level and some students remain on site to participate in after school programs. Including the storage space within and upstream of the student pick-up and drop-off zone and excluding the vehicle stacking space downstream of the loading zone, the site plan shows that on-site queue storage usable for drop-off and pick-up operations would total 650 feet. Thus, pick-up and drop-off queues during the peak periods before and after school are expected to be contained within the project site and not extend onto the County parcel. Nevertheless, approximately 450 of additional queue storage space is available within the easement on the adjacent County property. Thus, queues associated with the proposed project is not expected to extend on to Cavallo Road.

It is important to note that the drive aisles on the adjacent County property range from approximately 30 feet at the northern driveway to 21 feet behind the County building. Given the drive aisle width on the County property and that vehicle queues are not expected to extend beyond the project site, use of the access easement is not expected to substantially affect on-site circulation within the adjacent County property.

Although pick-up and drop-off queues are expected to be contained within the project site and are not expected to substantially affect circulation within the adjacent County property, school staff/volunteers would be present to ensure traffic is properly and efficiently directed through the pick-up and drop-off zones. School staff/volunteers would direct traffic and place cones in the drive aisles during pick-up and drop-off, to be stationed along the length of the student loading zone to assist students in and out of vehicles and ensure student safety, as well as monitor parents to ensure parents do not leave their vehicles unattended in the loading zone. Hexagon determined additional measures would be necessary to monitor the entry-only driveway at the southern on-site parking lot to prevent parents from using the parking area as a student pick-up and drop-off zone and to avoid hazards with vehicles exiting the designated student pick-up and drop-off zone.

Conclusion

Adjacent to the project site, the vision of exiting drivers is not obstructed by any roadway curves, on-street parking, nor landscaping features. The site plans do not show any landscaping features that would interfere with the sight distance at any of the site

driveways. However, as previously discussed, Hexagon identified additional measures to ensure safe practices within the pick-up and drop-off zones during school operations in order to reduce potential hazards. Therefore, impacts related to the increase in hazards due to design features or incompatible uses would be considered ***potentially significant***.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a ***less-than-significant*** level.

XVI-2 *Prior to the approval of the building permits, the project applicant shall submit, for review and approval by the City of Antioch Community Development Department, proposed parking lot signage that specify the northern parking lot would be reserved for staff parking only.*

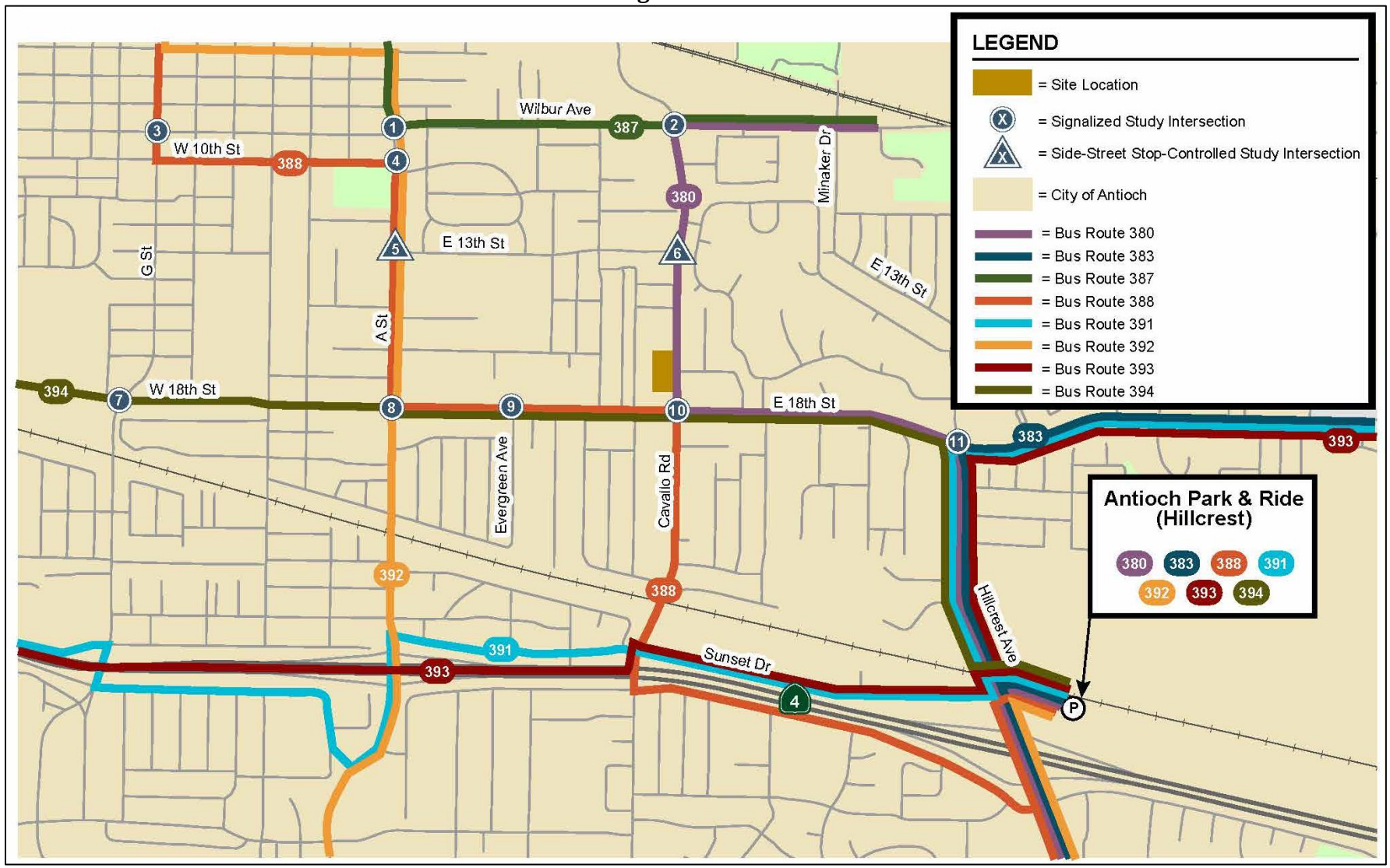
XVI-3 *Prior to the approval of the building permits, the project applicant shall submit, for review and approval by the City of Antioch Community Development Department, site plans indicating the four 90-degree tandem spaces within the northern parking lot have been converted to standard 90-degree spaces.*

XVI-4 *Prior to the approval of the building permits, the project applicant shall submit, for review and approval by the City of Antioch Community Development Department, an operations plan that specifies the means by which school staff or volunteers will direct traffic during student pick-up and drop-off periods according to the following specifications:*

- *Parents that need additional time will be directed to park in the designated on-site parking spaces to ensure the loading zone is available for its intended purpose;*
- *The entry-only driveway at the southern on-site parking lot should be monitored by staff or volunteers to prevent parents from using the parking area as a student pick-up and drop-off zone and to avoid conflicts with vehicles exiting the designated student pick-up and drop-off zone; and*
- *Staff and/or traffic cones should be positioned adjacent to the exit gate at the end of the student pick-up and drop-off zone to instruct vehicles to merge into one lane and direct traffic flow toward the exit-only driveway.*

f. The study area is served directly by eight local bus routes, three of which provide service within 0.5 mile of the project site: Local Route 380, Local Route 387, and Local Route 388 (see Figure 11). Combined, all three routes provide service between the Pittsburg/Bay Point BART Station, Deer Valley Kaiser Medical Center, and the Tri Delta Transit Station. Hexagon anticipated that the proposed project would generate 43 transit trips during the AM and 24 transit trips during the PM peak commute hours. According

Figure 11
Existing Transit Services



Source: Hexagon Transportation Consultants, Inc., August 1, 2017

to the Tri Delta Short Range Transit Plan, bus fleet capacity ranges between 44 and 56 seats per vehicle.

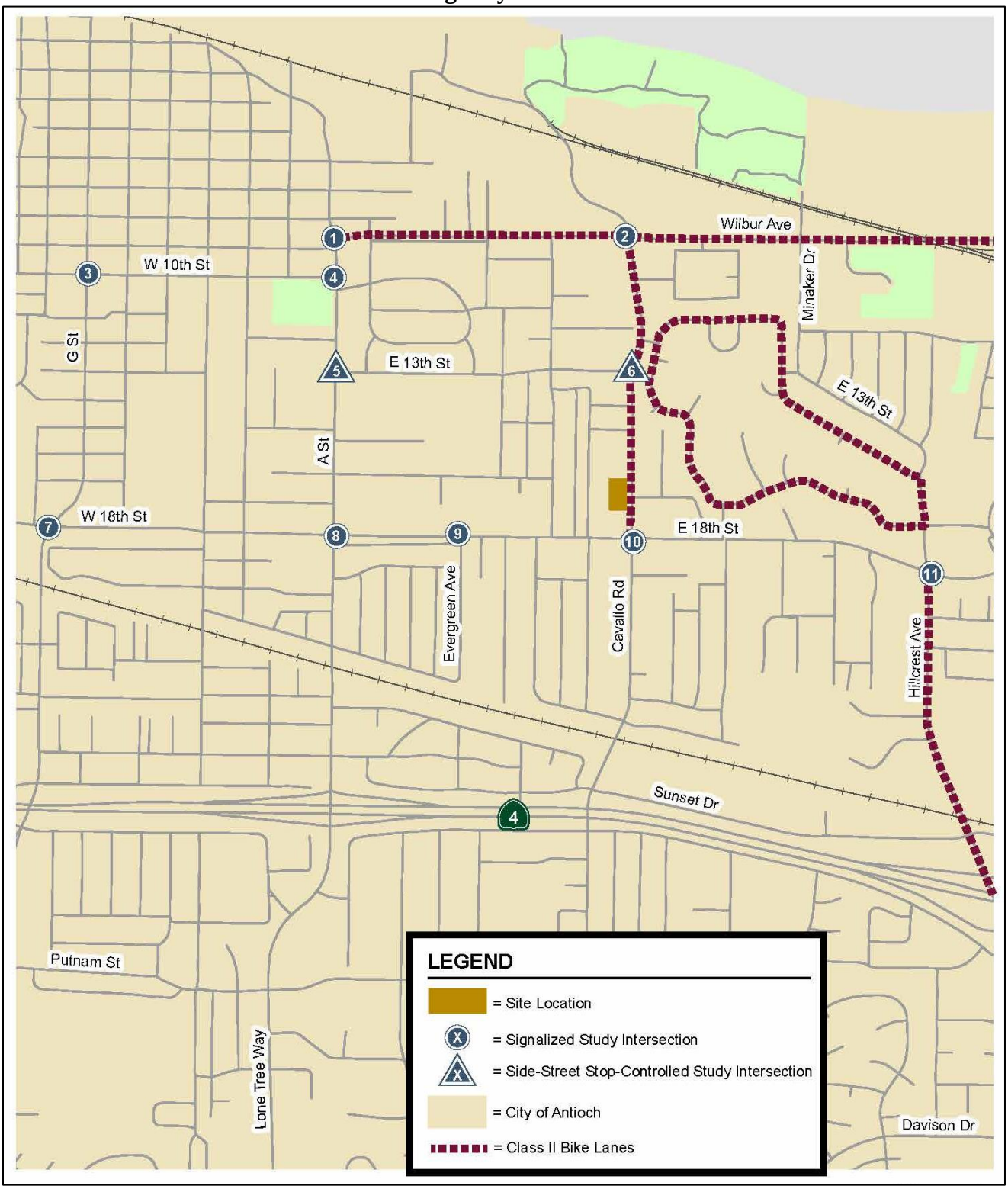
With one or two bus trips in each direction on every route during commute hours, and given that the estimated transit volume of riders would be dispersed among the different routes, the project-generated riders would not exceed the carrying capacity of the existing bus service near the project site. In addition, the City received a comment from Tri Delta Transit, dated May 18, 2017, stating Tri Delta Transit does not currently have any comments on the project given the proposed site is already served by the weekday Route 380 with a bus stop on the corner of Cavallo Road and Amber Drive, as well as the weekday Route 388 with a stop on East 18th Street and Cavallo Road.

Pedestrian facilities within the project vicinity, such as sidewalks, are located on both sides of Cavallo Road and other nearby neighborhood roadways in the vicinity of the project, including on East 13th Street, Noia Avenue, and East 14th Street. Pedestrian facilities also consist of marked crosswalks with pedestrian signal heads and push buttons at all but one approach at the signalized study intersections, and marked crosswalks along all stop-controlled approaches at the two TWSC intersections. Although one crosswalk connection is missing, the overall network of sidewalks and crosswalks in the study area has good connectivity and provides pedestrians with safe routes to the proposed school, nearby transit stops, and other points of interest in the vicinity of the project site. In addition, the proposed project includes off-site road improvements to construct a crosswalk at the intersection of Amber Drive and Cavallo Road along the project frontage. During pick-up and drop-off operations, a trained staff crossing-guard would be monitoring the Amber Drive crosswalk.

Bicycle lanes are present on portions of Wilbur Avenue, on Cavallo Road, Hillcrest Avenue, and Lake Drive (see Figure 12). Although none of the adjacent residential streets have striped bike lanes, the low traffic volumes make these roadways conducive to bicycle traffic. In addition, bikes and pedestrians could also use the Delta de Anza Regional Trail, which connects to Hillcrest Avenue. The sidewalks and bikeways in the school vicinity are adequate to serve students who may walk or bike to school.

The proposed project would not include alterations to the existing circulation system or current transit options available to the area. Therefore, the proposed project would not conflict with alternative transportation routes or policies resulting in a ***less-than-significant*** impact.

Figure 12
Existing Bicycle Facilities



Source: Hexagon Transportation Consultants, Inc., August 1, 2017

XVII. 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, the proposed project site does not contain any known resources 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). In compliance with Assembly Bill (AB) 52 (Public Resources Code Section 21080.3.1), a project notification letter was distributed to the Amah Mutsun Tribal Band of Mission San Juan Bautista, the Indian Canyon Mutsun Band of Costanoan, the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area, the Ohlone Indian Tribe, the Wilton Rancheria, and the Ione Band of Miwok Indians. The letters were distributed on May 25, 2017. The mandatory 30-day response period for consultation under AB 52 closed on June 26th, 2017 and requests for consultation were not received.

In addition, given similar environmental factors of the proposed project site to known Native American resource sites within Contra Costa County, there is a moderate potential for unrecorded Native American resources to exist within the project area. Although the project site is currently developed and the ground previously disturbed, the possibility exists that construction of the proposed project could result in a substantial adverse change in the significance of a tribal cultural resource if previously unknown cultural resources are uncovered during grading or other ground-disturbing activities. Thus, a ***potentially significant*** impact to tribal cultural resources could occur.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

XVII. Implement Mitigation Measures V-1 and V-2.

XVIII. UTILITIES AND SERVICE SYSTEMS. *Would the project:*	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	✖	☐
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	✖	☐
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	✖	☐
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	✖	☐
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	✖	☐
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	✖	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	✖	☐

Discussion

a, b, e. The City maintains and owns the local sewage collection system and is responsible for the collection and conveyance of wastewater to the Delta Diablo Wastewater Treatment Plant (WWTP). Delta Diablo owns and operates the regional interceptors and wastewater treatment plant. The project site is located within the Delta Diablo service area. As proposed, the City of Antioch is responsible for the wastewater collection system from the project site to the designated Delta Diablo regional wastewater conveyance facility. The regional conveyance facilities transport wastewater to the WWTP located at 2500 Pittsburg-Antioch Highway, Antioch. After secondary treatment, the effluent is either discharged through a deep-water outfall to New York Slough or further processed through the Recycled Water Facility. The WWTP NPDES Permit allows an average dry weather flow of 16.5 mgd. An EIR for the expansion of the wastewater treatment plant capacity to an average dry weather flow of 22.7 mgd was completed in April 1988. During the most recent reporting period, 2012, the average dry weather flow influent to the treatment plant was 12.7 mgd. In 2000 and 2005, the average dry weather flow influent to the treatment

plant was 13.5 mgd and 14.2 mgd, respectively.[21] The wastewater treatment plant is currently operating at little over 50 percent capacity, and the project applicant would be required to pay sewer connection fees.

The proposed project would include the construction of a school anticipated to serve a maximum of 600 students with 32 full-time staff. Although the school use would have the potential to generate more wastewater that the previously approved uses, the student population would consist of existing residents in the immediate vicinity of the proposed project site and thus, are already served by the existing treatment plant. In addition, the wastewater generated by the project would be collected by an internal sewer system, which would connect to the existing sewer line in Cavallo Road. Furthermore, the project applicant would be required to pay sewer connection fees, which work to fund needed sewer system improvements.

Therefore, a ***less-than-significant*** impact would occur related to requiring or resulting in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

c. As previously mentioned in the Hydrology and Water Quality section of this IS/MND, the required SWCP for the proposed project conforms with the most recent Contra Costa Clean Water Program Stormwater C.3 Guidebook and verifies that the proposed project complies with all City stormwater requirements. In compliance with the C.3 Guidebook, the proposed project would include four bio-retention facilities throughout the site, which would be sized to exceed the minimum volume requirement necessary to adequately treat all runoff from the proposed impervious surfaces. Runoff would gravity flow to the bio-retention area where the stormwater would be able to infiltrate the soil in a similar manner to what currently occurs on the project site prior to entering the conveyance system before discharging into the City's storm drain system. Because the proposed bio-retention facility would be designed with adequate capacity to capture and treat runoff from proposed impervious surfaces, the proposed project would not alter the existing drainage pattern of the site. In addition to reducing runoff and allowing for groundwater recharge, the bio-retention area would treat incoming runoff by filtering stormwater through permeable soil layers. The process of stormwater moving through the soil layers would remove pollutants from the stormwater before further subsurface infiltration or discharge to City infrastructure. As a result, the proposed project would not lead to the degradation of water quality or the violation of water quality standards due to operational stormwater runoff. Therefore, the proposed project would have a ***less-than-significant*** impact with respect to requiring or resulting in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

d. Principal sources of raw water supply to the City of Antioch are the local surface water withdrawn from the Sacramento/San Joaquin Rivers Delta and imported surface water purchased from Contra Costa Water District (CCWD) through the Contra Costa Canal and

[21] Delta Diablo. *Proposed Tuscany Meadows Subdivision Letter Addressed to Nick Pappani, Vice President Raney Planning and Management.* October 3, 2013.

stored in the Los Vaqueros Reservoir. The City additionally relies on recycled water from Delta Diablo. According to the analysis included in the City of Antioch *2015 Urban Water Management Plan* (2015 UWMP)[22], the City determined the quantity of water supply depending on three hydrologic conditions: a normal water year, a single dry year, and multiple dry years. According to normal year projections, the City's supplies are anticipated to be as follows: approximately 2,460 million gallons per year (MG/yr) from the Sacramento/San Joaquin Rivers Delta; approximately 326 MG/yr of recycled water in 2020 and 489 MG/yr in 2025 and subsequent years; and purchased supplies from the CCWD are assumed to provide 100 percent of the City's remaining demand. Thus, the City anticipates a total water demand of 7,993 MG by 2040, which is anticipated to be 100 percent supplied in a normal year.

The proposed project site currently includes an existing commercial building, which was anticipated in the water demand analysis in the 2015 UWMP. The proposed project would require a rezone from C-3 to C-0, and the water demand for an elementary school would be slightly higher than a typical commercial use. However, the City anticipates that any demand beyond the anticipated supply from the Sacramento/San Joaquin Rivers Delta and recycled water from Delta Diablo would be purchased from the CCWD. The water supply reliability goal approved by the CCWD's Board of Directors is to meet 100 percent of demand in normal years and at least 85 percent of demand during drought conditions. The following table provides an overview of the percent of the water demand available to be met by the CCWD.

Table 16
CCWD Water Supply Reliability Information (percent of Demand)

Year Type	2020	2025	2030	2035	2040
Normal Year	100%	100%	100%	100%	100%
Single-Dry Year	100%	100%	100%	100%	100%
Multi-Dry Year, Year 1	100%	100%	100%	100%	100%
Multi-Dry Year, Year 2	100%	100%	100%	98%	94%
Multi-Dry Year, Year 3	90%	90%	90%	88%	85%

Source: City of Antioch. 2015 Urban Water Management Plan. [pg. 7-4]. May 2016.

Therefore, sufficient water supplies would be available to serve the proposed project from existing entitlements and resources, and new or expanded entitlements would not be needed. Thus, a ***less-than-significant*** impact would occur.

f, g. Republic Services provides solid waste collection, disposal, recycling, and yard waste services to the City, including the project site. Solid waste and recyclables from the City are taken to the Contra Costa Transfer and Recovery Station in Martinez. Solid waste is transferred from the Transfer and Recovery Station to the Keller Canyon Landfill in Pittsburg. The Keller Canyon Landfill site is 1,399 acres, 244 of which comprise the actual current disposal acreage. The landfill is permitted to accept 3,500 tons of waste per day and has a total estimated permitted capacity of approximately 75 million cubic yards, with

[22] City of Antioch. *2015 Urban Water Management Plan*. May 2016.

only approximately 12 million cubic yards (16 percent of total capacity) used to date.[23] Due to the substantial amount of available capacity remaining at Keller Canyon Landfill, sufficient capacity would be available to accommodate the project's solid waste disposal needs. Therefore, a ***less-than-significant*** impact related to solid waste would occur as a result of the proposed project.

[23] California Department of Resources Recycling and Recovery (CalRecycle). *Solid Waste Information System*. Available at: www.calrecycle.ca.gov/SWFacilities/. Accessed July, 2016.

XIX. 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 degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	✖	☐
b. Does the project have impacts that are individually limited, but 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 described throughout this IS/MND, implementation of the proposed project would have the potential to adversely impact the environment by reducing available habitat for migratory birds, as well as the potential release of hazardous material. The proposed project would implement and comply with applicable City of Antioch General Plan and Municipal Code policies, as discussed throughout this IS/MND. With implementation of the mitigation measures required by this IS/MND, compliance with General Plan policies, Municipal Code sections, and application of standard Best Management Practices during construction, development of the proposed project would not result in any of the following: 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*** would occur.

b. The potential impacts of the proposed project would be individually limited and would not be cumulatively considerable. 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 with implementation of project-specific mitigation measures and compliance with applicable General Plan policies. When viewed in conjunction with other closely related past, present or reasonably foreseeable future

projects, development of the proposed project would not contribute to cumulative impacts in the City of Antioch and the project's cumulative impact would be ***less than significan***t.

c. As described in this IS/MND, implementation of the proposed project could result in temporary impacts related to noise and the release of hazardous materials during the construction period. However, the proposed project would be required to implement the project-specific mitigation measures within this IS/MND, as well as applicable policies of the City of Antioch General Plan, to reduce any potential direct or indirect impacts that could occur to human beings or various resources and, as demonstrated in this IS/MND, with implementation of the identified mitigation measures, all impacts would be reduced to less-than-significant levels. Therefore, a ***less than significant*** impact would occur related to causing substantial adverse effects on human beings.