Alverno Heights Academy Master Plan Update

Proposed Addendum
to the Mitigated Negative Declaration
for the Alverno High School Master Plan
(SCH No. 2011031033)

Prepared for:

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INTRODUCTION

This Addendum to the Mitigated Negative Declaration and Initial Study for the Alverno High School Master Plan[1] (2011 IS/MND) analyzes the potential for the Alverno Heights Academy Master Plan Update (2021 refined project) to result in new impacts, substantially more adverse impacts, substantial changes in circumstances, and/or new information of substantial importance, such that the findings of the certified 2011 IS/MND would change, in accordance with Section 15162(3) of the State of California Environmental Quality Act Guidelines (State CEQA Guidelines). Consistent with the provisions of Section 15164(d) of the State CEQA Guidelines, this Addendum to the ISMND (Addendum) has been prepared for consideration by the City of Sierra Madre (City) in conjunction with approval of the Alverno Heights Academy Master Plan Update. An Addendum has been prepared instead of a subsequent or supplemental environmental document because, in accordance with Sections 15162 and 15164 of the State CEQA Guidelines, the 2021 refined project has been determined to be consistent with the findings and assumptions made for the approved project such that none of the conditions described in Section 15162 calling for preparation of a subsequent or supplemental environmental document have occurred. As with the approved project, implementation of the mitigation measures specified in the Mitigation Monitoring Program for the 2011 IS/MND that are relevant to the 2021 refined project would be required as a Condition of Approval for the 2021 refined project.[2] Technical reports were prepared in conjunction with the Addendum, including the Tree Preservation Report for Alverno Heights Academy dated January 20, 2021 (Appendix A), the Cultural Resources Technical Report for the Alverno Heights Academy Addendum dated July 26, 2021 (Appendix B), the Alverno Heights Master Plan Update – Noise Analysis dated June 30, 2021 (Appendix C), the Alverno Heights Academy – Traffic Circulation Analysis Memorandum date April 30, 2020 (Appendix D), and the Alverno Heights Academy Parking Analysis dated May 28, 2021 (Appendix E).

PURPOSE AND NEED

The purpose of this Addendum is to document the substantial evidence that was reviewed to support the City of Sierra Madre's (City) determination that the 2021 refined project does not trigger the conditions for preparation of subsequent or supplemental environmental document, as specified in Section 15162 of the State California Environmental Quality Act (CEQA) Guidelines calling for preparation of subsequent environmental documentation. The applicant, Alverno Heights Academy, has recommended refinements to the approved project to better accommodate the evolving needs of the students, teachers, administration, parents, and the surrounding community. The goal of preparing this Addendum is to support the City fulfilling its responsibilities as the Lead Agency pursuant to Section 15367 of the State CEQA Guidelines. The Addendum will be used to support the City's decision-making process in relation the 2021 proposed refinements to the approved project, described in the Alverno Heights Academy Master Plan Update (refined project). The Appendix G checklist for an Initial Study was modified for use in the Addendum analysis.

[1] City of Sierra Madre. July 2011. the Mitigated Negative Declaration and Initial Study for: Alverno High School Master Plan. SCH #2011031033. Prepared by The Planning Center.

[2] City of Sierra Madre. July 2011. the Mitigated Negative Declaration and Initial Study for: Alverno High School Master Plan. SCH #2011031033. Prepared by The Planning Center.

MASTER PLAN UPDATE GOALS AND OBJECTIVES

The goals and objectives for the 2021 refined project remain mostly unchanged and consistent with the approved project:

- Design facilities to a college preparation experience for the Upper School students.
- Preserve the historic nature of the Villa, including the historic gates on the school's perimeter.
- Enhance the adaptive reuse of the historic Villa Del Sol D'Oro, including reopening of the chapel, for general administrative offices, an activity center for the Upper School and other compatible uses.
- Site the buildings and structures on the campus sensitive to the neighbors' concerns regarding mitigating noise, ingress and egress and night-time lighting impacts.
- Enhance the open space feel of the campus by preserving and improving the campus's open spaces.
- Design the campus to be sensitive to the City's protected trees where feasible.
- Design educational facilities that provide flexibility to meet future educational needs.
- Recognize financial responsibility in development of new planning and architecture which considers initial cost and life cycle cost.

In addition, the 2021 refined project identifies the following goal and objective:

- Implement the vision for Alverno Heights Academy to provide a superior learning experience and facilities for young women in the Upper School and for the students in the co-ed TK-8th Grade Lower School.

BACKGROUND

In 2011, a Master Plan was developed for the Alverno Heights Academy to provide facilities to meet the educational and athletic needs of the school. An IS/MND was prepared evaluating the proposed Master Plan and subsequently approved on July 7, 2011. The adopted 2011 IS/MND evaluated four constituent components of the Master Plan: Multipurpose Building, Outdoor Amphitheater, Parking, and Athletic Facilities. The 2021 refined project addresses the variable status of the four constituent components, as either (1) not constructed, (2) construction partially implemented, or (3) construction implemented.

Multipurpose Building (not constructed). A two-story building to be located on the western part of campus. The approved building consisted of a combination gymnasium, auditorium, and performing arts facility, to be used for events such as worship services, athletic events, and school plays and productions. This building was intended to be 12,860 square feet, large enough to hold the entire student body under one roof.

Outdoor Amphitheater (not constructed). A 2,900-square-foot amphitheater in the central portion of the campus. This area was intended to provide an outdoor instructional area. No large-scale musical performances would be staged at this location due to the small size of the planned facility.

Parking (partially implemented in 2019). A reconfiguration of the two existing parking areas by reducing the size of the Wilson Street parking lot and enlarging the parking lot off Michillinda Avenue; implementation would result in a total number of 112 marked spaces.

This proposed reconfiguration also included the addition of 52 tandem parking spaces next to an existing drive aisle in the southwestern part of the campus; direct access would be from West Highland Avenue. Tandem spaces will be used for special events such as school dances. Only changes to the Wilson Street parking lot were implemented with the 2011 Master Plan buildout.

Athletic Facilities (implemented in 2019). Augmentation of the existing non-regulation softball field to create a multipurpose field in the southeastern part of the campus on the sites of the existing field and parking lot; no field lights would be provided. The improved field would accommodate a regulation softball field and a regulation soccer field. The field also included installing a two project "betterments" of new perimeter fencing the entire length of Wilson Street and Highland Avenue and two major low-impact development (LID) devices that capture and infiltrate runoff from approximately one-half of the campus.

Landscaping and Fencing (implemented in 2019). Michillinda view fence and perimeter landscaping and landscaping and walkway on Grandview Avenue were constructed. The approved project included Phase II internal landscaping improvements to the campus, which included major internal campus landscape renovations, the Prayer Garden, parking area landscaping and additional trees on campus.

The 2011 approved project also included a reduction of the maximum permitted enrollment from 500 high school students to 400 high school students. The 2011 IS/MND considered buildout of all facilities included in the approved project; however, the only elements implemented, as of 2021, are the augmentation of the athletic facilities and a partial reconfiguration of the parking facilities.

PROJECT DESCRIPTION

The 2021 refined project elements would refine the approved improvements for the Alverno Heights Academy campus as described in the 2021 Master Plan Update, including the Lower School near the southwest quadrant of campus:

New Buildings. The 2021 refined project buildout would include the construction of 21,090 feet of new classroom buildings and administrative space (a 20 percent grossing factor was added to the Master Plan to account for a total of 25,308 square feet in area).

Flex Classroom Space. The existing Caretaker Cottage Building (2,090 square feet) will be renovated with new flexible classroom space.

Wilson Street Parking/Centralized Faculty Parking Area. The 2021 refined project includes a new centralized faculty parking area (the existing non-historic office structure will be demolished and existing faculty parking made more efficient).

In addition, the 2021 refined project proposes minor changes to upper school buildings, and anticipates completion of the previously approved multipurpose building, and parking facilities improvements:

Changes to Upper School Buildings. A 1,200-square-foot art classroom expansion to the existing visual/performing arts building. The existing Cottage is also planned to be converted to a flexible classroom building. The rest of the Upper School Campus (used by high school students) will remain the same.

Multipurpose Building. No change to the approved Multipurpose Building.

Parking Facilities. The Michillinda parking area would accommodate the addition of a second driveway to allow for ingress only to the campus, while the existing driveway would be converted to egress only. No other changes or expansions would occur at the approved Michillinda Parking Lot.

Access. In addition, a new internal drop-off zone and firetruck access is proposed.

As with the approved project providing capacity for 400 High School aged girls, the 2021 refined project would provide for the current maximum capacity at Alverno Heights Academy to remains at 400 students, with the school enrollment now consists of an approximately 50-50 split of high school girls and elementary school students (transitional kindergarten to eighth grade). Further, the hours of operation would remain consistent with the approved project.

Parking

Existing Parking

The project site currently has 114 on-site parking stalls, located in two main parking areas, and adjacent to the Business Office/Faculty Lounge. The school has a total of three American with Disability Act (ADA) parking stalls. In addition to these stalls, an ADA drop-off area was constructed in the summer of 2020 with the modular classroom project (Table 1, *Existing Parking*).

Table 1
Existing Parking

Parking Area Location	Total Parking Stalls
Michillinda Parking Lot	47 stalls (1 ADA)
Wilson Parking Lot	41 stalls (2 ADA)
ADA Drop-Off	1 drop-off area
Faculty Parking (various locations)	24 stalls
Grandview Parking	2 stalls
Total Current Parking Stalls	**114 stalls**

Per Section 17.68.020 D.7 of the Sierra Madre Municipal Code (SMMC), elementary and junior high schools must provide 1.5 parking stalls per classroom and one parking stall per two employees and faculty. High schools must provide one parking stall per every five students and one parking stall per two employees/faculty. The parking analysis is based on the maximum number of 200 high school students.

Existing Parking	114 parking stalls
Code Required:	81 parking stalls
Total Parking:	33 parking stall surplus

Parking Demand

As with the approved project, the campus will continue to provide a surplus of parking spaces until the Multi-Purpose Building is constructed. The approved project required that an additional 52

parking stalls be provided with the construction of the Multi-Purpose Building. The 2021 refined project includes six phases, which each phase meeting the City's parking requirements (Table 2, *Future Parking Demand*). The approved project required that the school complete a parking analysis with each proposed phase to ensure that the code required parking is provided.

Table 2
Future Parking Demand

2021 Refined Project Future Phases	Parking Proposed by Phase
Conversion of Chapel to Storage Building/ Relocation of Chapel to the Villa	No new parking proposed (surplus of 33 stalls)
Conversion of Caretaker Residence	
Demolition of Business Office/Relocation to Villa	
Construction of Faculty Parking Lot to be replaced with centralized parking lot	Existing faculty parking of 22 stalls to be replaced with 31 centralized stalls (surplus of 41 stalls)
Construction of Lower School Campus	7 parking stalls required (surplus of 49 stalls)
Michillinda Parking Lot Project/ Construction of the Lower School Campus	54 parking stalls required (surplus of 56 stalls)
Multi-Purpose Building Overflow Parking/Per Approved 2011 Master Plan	52 parking stalls required

The 2021 refined master plan would provide 133 on-site parking stalls at build-out in four parking areas, in conformance with the parking code requirements.

Michillinda Lot = 54 stalls
Wilson Lot = 41 stalls
Faculty Parking Lot = 31 stalls
Lower School Parking = 7 stalls

In addition, as with the approved project, during night-time events hosted at the campus Multi-Purpose Building, the school's parking areas would be available for event parking under the 2021 refined project.

Tree Preservation

The City code establishes legacy tree requirements. Based on a survey by a qualified arborist (Appendix A), there are no legacy trees exist on the campus. Alverno embraces the tree protection goals, as the campus has one of the largest collections of private trees in the community.

Section 12.20.020 – Definitions of the Sierra Madre Municipal Code (SMMC) states that protected species to be included in the tree survey are *Quercus agrifolia,* coast live oak; *Quercus engelmannii,* mesa oak; *Juglans californica, S*outhern California black walnut; and *Platanus racemose,* western sycamore. No protected trees would be removed as a result of the 2021 refined project in the northwest portion of the campus.

Approximately 47 trees are within the development footprint of the Lower Campus. As with the approved project, the large Moreton Bay Fig tree would be preserved as a central focal point of the Lower School campus and campus open space area. Fourteen coast live oak trees are within the survey area. There would be no change in the net removal of trees covered pursuant to the SMMC in the 2021 refined project.

No other trees requiring specialized attention or protection are located within the 2021 refined project area. In addition, as with the approved project, any trees removed for the refined project would be replaced per the requirements in the SMMC.

Construction Scenario

The development of the 2021 refined project would require approximately 67 weeks to complete, with the anticipated construction schedules dependent upon available funding from major capital campaigns (Table 3, *Anticipated Construction Schedule for 2021 Refined Project Element*).

The 2021 refined project element would be implemented in three phases: the construction of the Lower School, Faculty Parking Lot, and Sports Courts.

Table 3
Anticipated Construction Schedule for 2021 Refined Project Elements

Construction Phases	Lower School Duration	Faculty Parking Lot Duration	Sport Courts Duration
Demolition	3 weeks	2 weeks	2 weeks
Grading and Site Prep	4 weeks	2 weeks	6 weeks
Finishing	36 weeks	4 weeks	8 weeks
Total (months)	**43 weeks**	**8 weeks**	**16 weeks**

As with the approved project, no road closures would be required during construction activities for the 2021 refined project. All construction-related activities would be scheduled in compliance with the City Noise Ordinance, which are exempt from the City's noise standards, provided said activities take place only between the hours of 7:00 AM and 7:00 PM on Monday through Saturday, between the hours of 10:00 AM and 6:00 PM on a Sunday or holiday, and provided noise levels outside the property do not exceed 85 A-weighted decibels (dBA). Further, as with the approved project, the 2021 refined project would not require the use of pile drivers to complete the required construction activities. The anticipated type of equipment and duration of use would remain consistent with the approved project (Table 4, *Anticipated Construction Equipment for 2021 Refined Project*; Table 5, *Anticipated Construction Equipment for 2021 Refined Project – Faculty Parking Lot*; and Table 6, *Anticipated Construction Equipment for 2021 Refined Project – Sports Courts*).

Table 4
Anticipated Construction Equipment for 2021 Refined Project – Lower Campus

Type of Equipment or Vehicle	Approximate Quantity	Approximate Duration (weeks)
Pickup truck	3	43
Hand compactor	1	10
Backhoe	1	24
Crew members	12	43
Crew vehicles (maximum)	6	43
Dozer	1	8
Front-end loader	1	8
Water truck	1	43
Grader	1	8
Dump truck	1	12
Concrete mix truck	1	4
Roller	1	1

Table 5
Anticipated Construction Equipment for 2021 Refined Project – Faculty Parking Lot

Type of Equipment or Vehicle	Approximate Quantity	Approximate Duration (weeks)
Pickup truck	1	8
Hand compactor	1	4
Backhoe	1	2
Crew members	4	8
Crew vehicles (maximum)	1	8
Dozer	1	2
Front-end loader	1	4
Dump truck	2	2
Concrete mix truck	1	1
Roller	1	1

Table 6
Anticipated Construction Equipment for 2021 Refined Project – Sports Courts

Type of Equipment or Vehicle	Approximate Quantity	Approximate Duration (months)
Pickup truck	2	16
Hand compactor	1	8
Backhoe	1	8
Crew members	8	16
Crew vehicles (maximum)	4	16
Dozer	1	12
Front-end loader	1	2
Water truck	1	16
Dump truck	1	12
Concrete mix truck	1	2

Grading

A with the approved project, the 2021 refined project grading plan includes a series of American with Disability Act (ADA) improvements, including ramps, which have resulted in additional

grading to meet code required gradients for walkways and parking areas. The total cut for the entire master plan update is 2,480 cubic yards, with 1,200 cubic yards of fill. This results in an excess of 1,280 cubic yards of earth export.

The grading is divided into phases, based on the likely construction scenario and timeline. The grading for the Lower School would result in 1,130 cubic yards of cut and 650 cubic yards of fill. This results in 480 cubic yards of export. The sport court and play area result in 100 yards of cut and 550 yards of fill, for 450 cubic yards of export. The northeast parking lot has the largest cut of 1,250 cubic yards, to meet ADA compliance for the parking area. This amount includes all export.

In addition, based on the construction phasing, the proposed construction would account for stock stockpiling of export material on campus, where feasible, to allow for lower number of truck trips related to export of material and cost-considerations.

Best Management Practices

As with the approved project, best management practices would be implemented during outdoor construction activities that coincide with avian breeding season (February 15–August 31) to ensure consistency with the Migratory Bird Treaty Act (MBTA). Mature trees would be surveyed by a qualified biologist with experience in conducting breeding bird surveys prior to construction, outside the breeding season, and removed when there is no occupied breeding habitat for birds afforded protection pursuant to the MBTA.

Mandatory compliance with National Pollutant Discharge Elimination System (NPDES) permit requirements through the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for construction activities, and compliance with the Municipal Separate Storm Sewer System (MS4) Permit requirements for the preparation and implementation of a Water Quality Management Plan (WQMP) for postconstruction activities, would require development BMPs to protect water quality. These BMPs would also be delineated on an Urban Runoff Mitigation Plan and a Low Impact Development Plan per City of Sierra Madre Municipal Code.

SUMMARY OF COMPARATIVE FINDINGS

The analysis undertaken in support of this Addendum has determined that the facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan improvements remain unchanged. Technical specialists reviewed the assumptions that were used in the impact analysis for the 2011 ISMND and validated that the proposed project refinements would not create new or substantially more adverse impacts. The draft and final approved 2011 ISMND—inclusive of the Initial Study, Mitigated Negative Declaration, and Mitigation Monitoring Program—were reviewed to characterize the assumptions and findings for 2011 approved project. Key sources of information used to review the project refinements included the Alverno Heights Master Plan Update (July 2021), Tree Preservation Report for Alverno Heights Academy (Appendix A), Cultural Resources Technical Report for the Alverno Heights Academy Addendum (Appendix B), Alverno Heights Master Plan Update – Noise Analysis (Appendix C), the Alverno Heights Academy – Traffic Circulation Analysis Memorandum (Appendix D), and the Alverno Heights Academy Parking Analysis (Appendix E).

As a result of the review and analysis of the refinements, the 2021 refined project would not result in new or substantially more adverse impacts than those evaluated for the approved project. All 18 of the mitigation measures involving 2011 approved project would be applicable to the 2021

refined project (Table 7, *Environmental Checklist and Analysis*). In addition, four mitigation measures have been added in relation to cultural resources to further reduce impacts to below the level of significance. However, there would be no new or substantially more adverse impacts resulting from the 2021 refined project compared to the project analyzed in the 2011 IS/MND.

Table 7
Environmental Checklist and Analysis

Environmental Issue State CEQA Guidelines – Appendix G Would the project:	2011 IS/MND Findings: No Impact (NI) Less than Significant Impact (LTS) LTS with Mitigation (LTSM) Page numbers refer to 2011 Draft IS/MND[i]	2011 IS/MND Required Mitigation Measures	§15162 Determinations for 2021 Refined Project: No New Impact	§15162 Determinations for 2021 Refined Project: No Substantially More Adverse Impacts	§15162 Determinations for 2021 Refined Project: No New Information or Change	Effects of 2021 Refined Project and Applicable Mitigation Measures	Mitigation Measures Applicable to 2021 Refined Project
1. AESTHETICS							
a) Have a substantial adverse effect on a scenic vista?	**LTS (p. 27)**	None.	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. As with the approved project, the 2021 refined project elements would not create new or substantially more severe significant impacts related to having a substantial adverse effect on scenic vistas and scenic resources. A review of the California State Scenic Highways Program, and the Angeles National Forest Resource Management Plan was conducted to verify that as with the approved project, the refined project is not visible from any proposed or designated scenic vista. Similarly, the refined project was evaluated with respect to the City of Sierra Madre General Plan, City's Hillside Management Zones (HMZ) for protecting and preserving views in hillside areas, and Chapter 17.20 of the City's lighting ordinance to verify that as with the approved project, the 2021 refined project would have less than significant effect on scenic vistas, scenic resources within a designated scenic highway corridor, or the visual character of the area, or daytime or nighttime light and glare. The 2021 refined project elements would not create new or have a more substantial adverse effect on aesthetics and scenic resources than those identified in the 2011 IS/MND. The 2021 refined project includes three project elements that would alter the exterior areas of the campus, visible from public rights of way: the lower school campus with a new playground and sport court, minor changes as part of the upper school campus with a small addition on the northern façade of the existing visual/performing arts building, and new surface parking. As with the approved project, the proposed refinements are not visible from designated scenic vistas. There are no scenic vistas within the vicinity of the site that would be obstructed. The nearest designated scenic highway is State Route 2 (SR 2) at over 6 miles away to the north of the 2021 refined project, at a distance where the project site would not likely be discernable due to distance, intervening development, and mountainous terrain. As with the 2011 approved project, the 2021 refined project remains outside of a designated HMZ and does not need to comply with HMZ requirements. As with the approved project, the 2021 refined project exterior project elements are consistent with the visual character of the Alverno Heights Academy and surrounding residential and commercial land uses. As with the approved project, the 2021 Master Update requires comparable levels of exterior lighting, in compliance with the City's lighting requirements. Lighting fixtures and existing mature trees would shield and direct lighting downward to prevent light trespass in and around the 2021 refined project element site. As with the approved project, the tallest proposed building is below the maximum allowable stories, heights, and areas per the California Building Code chapter 5, at 40 feet high, and set back behind the property line approximately 35 feet and the existing mature trees along the property that will continue to provide screening of the proposed buildings. Therefore, as with the approved project, the 2021 refined project elements would not affect scenic vistas, damage scenic resources within a designated scenic highway corridor, change the visual character of the area, or adversely affect daytime or nighttime views, and no impact would occur. Therefore, there is no potential for the 2021 refined project elements to result in changes to the findings.	None
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	**LTS (p. 27)**		☒	☒	☒		
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	**LTS (p. 27)**		☒	☒	☒		
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	**LTS (p. 28)**		☒	☒	☒		
2. AGRICULTURE AND FORESTRY RESOURCES							
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	**NI (p. 28)**	None.	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. As with the approved project, the 2021 refined project elements would not create new or substantially more severe significant impacts related to converting Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program (FMMP). According to the most recent FMMP maps, the proposed project site is mapped as Urban and Built Up land. The nearest Farmland is Unique Farmland located approximately 1.6 miles east near Eaton Canyon. The nearest Prime Farmland is over nine miles south near Montebello and Whittier Narrows.[ii] Therefore, no Farmland would be converted, and no new or substantially more adverse impacts would occur. As with the approved project, the 2021 refined project elements would not create new or substantially more severe significant impacts related to existing zoning for agricultural use, a Williamson Act contract, forest land, timberland, or a Timberland Production Zone. The project site is an existing school and has served as a school since 1959. It does not serve as agricultural or	None
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	**NI (p. 28)**		☒	☒	☒		
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as	**NI (p. 33)**		☒	☒	☒		

Table 7
Environmental Checklist and Analysis

Environmental Issue State CEQA Guidelines – Appendix G Would the project:	2011 IS/MND Findings: No Impact (NI) Less than Significant Impact (LTS) LTS with Mitigation (LTSM) Page numbers refer to 2011 Draft IS/MND[i]	2011 IS/MND Required Mitigation Measures	§15162 Determinations for 2021 Refined Project: No New Impact	§15162 Determinations for 2021 Refined Project: No Substantially More Adverse Impacts	§15162 Determinations for 2021 Refined Project: No New Information or Change	Effects of 2021 Refined Project and Applicable Mitigation Measures	Mitigation Measures Applicable to 2021 Refined Project
defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?						forestry land. The existing zoning on the project site is Institutional, and the existing General Plan land use designation is also Institutional. There are no Williamson Act contracts in effect on campus. Therefore, there would be no conflict with zoning, and no new or substantially more adverse impacts would occur.	
d) Result in the loss of forest land or conversion of forest land to non-forest use?	**LTS (p. 33)**		☒	☒	☒	As with the approved project, the 2021 refined project elements would not create new or substantially more severe significant impacts related to the loss of forest land or conversion of forest land to non-forest use, as it would result in no impacts. The entire campus is developed as a school and is not managed for forest uses. The existing trees on the site are ornamental and do not serve as a forestry resource. As stated in the project description, any trees removed for the refined project would be replaced.	
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	**NI (p. 33)**		☒	☒	☒	As with the approved project, the 2021 refined project elements would not create new or substantially more severe significant impacts related to the conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. Therefore, there is no potential for the 2021 refined project element to result in changes to the findings to agricultural and forestry resources, and no mitigation measures are required.	
3. AIR QUALITY							
a) Conflict with or obstruct implementation of the applicable air quality plan?	**LTS (p. 34)**	None.	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. The 2021 refined project elements would not create new, or substantially more severe significant impacts related to having a substantial adverse effect on air quality, and impacts would remain less than significant consistent with the findings of the approved project. As with the approved project, construction and operation of the 2021 refined project elements would result in less than significant impacts with regard to conflicting with or obstructing implementation of the applicable air quality plan. Similar to the approved project, the proposed project is not a regionally significant project that would warrant Intergovernmental Review by the Southern California Association of Governments (SCAG). Therefore, the proposed project does not have the potential to substantially affect housing, employment, or population projections in southern California, which are the basis of the Air Quality Management Plan (AQMP) projections. Emissions generated by construction and operation of the proposed project would also be less than SCAQMD emissions thresholds on both a regional and local level, and would not be considered by SCAQMD to be a substantial source of air pollutant emissions. CalEEMod was run for the 2021 refined project elements and resulted in consistency with the findings of the approved project (Appendix F, *CalEEMod Report*). Consequently, the 2021 refined project elements would not exceed the assumptions in the AQMP. Similar to the approved project, the 2021 refined project elements would not conflict or obstruct implementation of the AQMP, and impacts remain less than significant in this regard. As with the approved project, construction and operation of the 2021 refined project elements would result in less than significant impacts with regard to violation of any air quality standard or contribute substantially to an existing or projected air quality violation. Construction of the 2021 refined project elements would result in the generation of air pollutants. These emissions would primarily be 1) exhaust emissions from powered construction equipment; 2) dust generated by demolition, grading, earthmoving, and other construction activities; 3) motor vehicle emissions; and 4) emissions of volatile organic compounds (VOC) from the application of asphalt, paints, and coatings. Construction emissions were estimated using the CalEEMod inventory model. Development of the of the 2021 refined project elements would occur in four phases. However, as a worst-case scenario, construction emissions were modeled as if all construction activities were conducted in one phase. Where specific information was not available, construction assumptions were based on CalEEMod defaults. Results of the modeling are included in Appendix F, which shows that construction activities would not exceed the SCAQMD regional significance thresholds. Therefore, as with the approved project, air quality impacts from project-related construction activities would be less than significant. As with the approved project, long-term air pollutant emissions generated by the 2021 refined project elements are associated with new stationary sources (natural gas use, etc.) and mobile sources. According to Section 3.16, Transportation and Traffic, of the approved 2011 IS/MND, the approved project would result in an additional 210 vehicle trips during the morning peak hour, 170 trips during the afternoon peak hour, and 460 trips per day. Similar to the approved project, the 2021 refined project elements would not exceed the SCAQMD's regional emissions thresholds for operational activities and would remain unchanged from the	None
Violate any air quality standard or contribute substantially to an existing or projected air quality violation? **[Not in 2021 Appendix G]**	**LTS (p. 34)**		☒	☒	☒		
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	**LTS (p. 36)**		☒	☒	☒		
c) Expose sensitive receptors to substantial pollutant concentrations?	**LTS (p. 36)**		☒	☒	☒		
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	**LTS (p. 38)**		☒	☒	☒		

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Environmental Checklist and Analysis

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			No New Impact	No Substantially More Adverse Impacts	No New Information or Change		
						approved project. Therefore, impacts would continue to be less than significant. As with the approved project, construction and operation of the 2021 refined project elements would result in less than significant impacts with regard to resulting in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard. The South Coast Air Basin (SCAB) is designated as nonattainment for O3 and PM2.5 under the California and national Ambient Air Quality Standards (AAQS), and for PM10, NOx, and lead (Los Angeles County only) under the California AAQS. In accordance with SCAQMD methodology, any project that does not exceed or can be mitigated to less than the daily threshold values does not add significantly to a cumulative impact. Similar to the approved project, the CalEEMod modeling for the 2021 refined project elements demonstrates that construction and operational activities would not result in emissions in excess of SCAQMD's threshold values, and therefore the project does not add significantly to any cumulative impact. As with the approved project, impacts would be less than significant. As with the approved project, construction and operation of the 2021 refined project elements would result in less than significant impacts with regard to exposing sensitive receptors to substantial pollutant concentrations. Sensitive receptors surrounding the site include residents adjacent to the project site. Emissions generated by construction activities are anticipated to cause temporary increases in pollutant concentrations. The CalEEMod modeling of the 2021 refined project elements shows that emissions would not exceed LST screening level criteria for CO, NOX, PM10, or PM2.5 (Appendix F). Because the 2021 refined project element's stationary-source emissions would not exceed the LST screening level criteria, no air pollutant concentrations from project-related operational activities would exceed the California or federal AAQS, and no significant air quality impact would occur from exposure of persons to substantial air pollutant concentrations. As with the approved project, construction and operation of the 2021 refined project elements would result in less than significant impacts with regard to creating objectionable odors affecting a substantial number of people. Potential odors resulting from the 2021 refined project elements would occur during the construction phase and would be associated with the application of asphalt and paint and the emission of construction vehicle exhaust. Nuisance odors would be confined to the immediate vicinity of the construction equipment. An occasional whiff of diesel exhaust from passing equipment and trucks accessing the site from public roadways may result. Such odors are considered adverse, but do not constitute a public nuisance and consequently are not considered to result in a significant air quality impact. As with the approved project, no objectionable odors are anticipated to result from the operational phase of the 2021 refined project elements. Furthermore, odor complaints are subject to SCAQMD Rule 402, Nuisance, which requires that odors not result in a nuisance or annoyance to the public. Similar to the approved project, the 2021 refined project elements would not create objectionable odors affecting a substantial number of people, and impacts remain less than significant in this regard.	
4. BIOLOGICAL RESOURCES							
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?	**LTSM (p. 38)**	MM 1 MM 2 MM 3 MM 4	☒	☒	☒	The facts upon which the findings were based in the 2011 approved IS/MND improvements remain unchanged. The 2021 refined project would not create new or substantially more severe significant impacts related to biological resources compared to the approved project. A nine 7.5-minute quadrangle California Natural Diversity Database (CNDDB) query search was conducted. Suitable habitat to support candidate, sensitive, or special-status species is absent; thus, no substantial adverse effect for sensitive species is expected. The 2021 refined project element is set within an urbanized developed area with no plant communities or natural aquatic resources. The 2021 refined project would refine elements of the Alverno Heights Academy campus through the preparation of a Master Plan update.	None
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	**NI (p. 39)**		☒	☒	☒	The temporary classrooms would be replaced with a permanent Lower School campus, a courtyard would be constructed around the Moreton Bay fig tree (*Ficus macrophylla*) for its preservation, and a sports court would be constructed on the Lower School campus, which would call for the removal of protected coast live oak trees (*Quercus agrifolia*). The City code establishes legacy tree requirements. Based on a survey by a qualified arborist (see Appendix A), no legacy trees exist on the campus. Section 12.20.020 – Definitions of the Sierra Madre Municipal Code (SMMC) – states that protected species to be included in the tree	

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c) Have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	**NI (p. 39)**		☒	☒	☒	survey are coast live oak (*Quercus agrifolia*), mesa oak (*Quercus engelmannii*), Southern California black walnut (*Juglans californica*), and western sycamore (*Platanus racemose*). No protected trees would be removed from the Northwest portion of the campus due to the 2021 Master Plan Update. In the development footprint of the proposed Lower Campus, there are 14 coast live oak trees (see Appendix A). Four of these trees are governed under the 2011 Master Plan (Trees #32, 42, 46 and 47) and are located north of the modular classrooms. The 2011 Master Plan designates this area for special attention during the design of the landscape area north of the future Multi-Purpose Building and the parking area. This condition would remain in place in the 2021 Master Plan Update. Of the remaining 10 coast live oak trees on the Lower Campus, 5 trees are preserved and not impacted by the campus site plan (see Appendix A). Two oak trees are proposed for removal for the TK classroom. The final three smaller oak trees adjacent to the lower school sports court will require special consideration and may be eligible for boxing and transplanting on campus under review and recommendation by the project arborist (see Appendix A). There would be no change in the net removal of trees covered pursuant to the SMMC in the 2021 Master Plan Update. Additionally, the removal of a coast live oak would conflict with local polices or ordinances protecting biological resources, as it is a protected species in the City of Sierra Madre. Any project on private property that would adversely affect a protected tree, such as removal, must be submitted via application to be reviewed by the Department of Public Works (DPW) in order to receive a permit. Removal due to construction activity will likely involved mitigation as determined by the DPW. The 2021 refined project element would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other local, regional, or state habitat conservation plan. Therefore, there is no potential for the 2021 refined project element to result in changes to the findings. As with the approved project, the 2021 refined project elements would not create new or substantially more severe significant impacts related to biological resources. Therefore, there is no potential for the 2021 refined project element to result in changes to the findings to biological resources, and no mitigation measures are required.	
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	**LTS (p. 40)**		☒	☒	☒		
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	**LTSM (p. 40)**		☒	☒	☒		
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	**LTSM (p. 41)**		☒	☒	☒		
5. CULTURAL RESOURCES							
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	**LTSM (p. 41)**	MM 5 MM 6 MM 7 MM 8 MM 9 MM 10 MM 11	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. A records search of the USGS 7.5-minute series Mt. Wilson, California, topographic quadrangle in which the project site is located, was conducted on June 2021 at the South Central Coastal Information Center (SCCIC). As part of the records search, the California State Resources Inventory, the National Register of Historic Places, the listing of California Historical Landmarks, the California Points of Historical Interest, and City list of Historical Landmarks were searched to determine the presence of historical and archeological resources that could potentially be impacted as a result of implementation of the approved project. The 2021 refined project elements would be located within the same area previously analyzed for the 2011 IS/MND. The 2021 refined project elements would not create new, or substantially more severe significant impacts related to having a substantial adverse effect on historical resources. The 2021 refined project elements would include the construction of three new buildings in the southwest corner of the campus known as the lower school with new playground and sport court, a small addition on the northern façade of the detached Villa garage (known as the Fine Arts building), the interior conversion of the caretaker's cottage to flexible classroom space, new surface parking, and interior use changes to the Villa. The approved project, which included new surface parking and the construction of a multi-purpose building along the western boundary of the project site, would result in less than significant adverse impacts to historical resources with mitigation, with the same results for the 2021 refined project elements. The construction of the 2021 refined project elements would avoid known historical resources within the project site and a 0.25-mile radius. Construction of the 2021 refined project elements that do not avoid known historical resources will comply with the Secretary of the Interiors Standards for the *Treatment of Historic Properties* to ensure a less than significant impact with those resources or character-defining resources of the resources.	MM-5
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	**LTSM (p. 47)**		☒	☒	☒		
c) Disturb any human remains, including those interred outside of formal cemeteries?	**LTS (p. 48)**		☒	☒	☐		

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						The 2021 refined project elements would not result in new significant impacts or substantially more adverse significant impacts to cultural resources related to a substantial adverse change in the significance of an archaeological resource. Potential impacts to cultural resources, including archaeological resources, were investigated in the 2011 IS/MND. Information presented in the 2011 IS/MND resulted in the conclusion that there are no known archaeological resources within the 2021 project area. No archaeological resources were identified within the 2021 refined project element area as a result of the updated records search. The 2021 refined project elements would not result in new significant impacts or substantially more adverse significant impacts to human remains, including those interred outside of formal cemeteries. The 2011 IS/MND did not identify the presence of human remains within the proposed project site. Although the 2011 IS/MND concluded that no known human remains exist within the project site, the possibility for the unexpected discovery of human remains exists. Mitigation measures specified in the 2011 IS/MND, which are in accordance with Health and Safety Code Sections 7050 and 7052, would mitigate the unexpected discovery of human remains. The mitigation measures specify that, in the event of the discovery of human remains outside of a dedicated cemetery, all ground disturbances would cease, and the County Coroner would be notified. Furthermore, in accordance with Public Resources Code Section 5097.98, the Native American Heritage Commission would be notified in the event that the Coroner determines that the remains are of Native American origin. Implementation of mitigation measures would reduce impacts related to the disturbance of human remains to below the level of significance. Therefore, the refined project would not result in new significant or substantially more adverse significant impacts to cultural resources related to the disturbance of human remains, including those interred outside formal cemeteries. As specified in the 2011 Mitigation Monitoring Plan, implementation of Mitigation Measure 5 is required. As specified in the 2011 Mitigation Monitoring Plan, implementation of Mitigation Measures 6 through 11 are no longer required as these are specific to project elements that have been refined and/or changed. In addition, the 2021 Cultural Resources Technical Report (Appendix B) identified four additional mitigation measures, MM-CULTURAL-1 through MM-CULTURAL-4, that shall be monitored and enforced by Alverno Heights Academy and the City as the lead agency: **Mitigation Measure MM-CULTURAL-1:** *Avoidance of Historical Resources.* Prior to the initiation of ground-disturbing activities, the School shall review the construction plans to ensure that any known cultural resources that are required to be avoided have been marked as "off-limits" areas for construction and construction staging. **Mitigation Measure MM-CULTURAL-2:** *Archaeological and Historical Resources – Avoidance and Monitoring*. Completion of a Worker Education and Awareness Program (WEAP) for all personnel who will be engaged in ground-disturbing activities shall be required prior to the start of ground-disturbing activities. This shall include training that provides an overview of cultural resources that might potentially be found and the appropriate procedures to follow if cultural resources are identified. This requirement extends to any new staff prior to engaging in ground disturbing activities. In the event that previously unknown archaeological resources, historical resources, or tribal cultural resources (resource[s]) are encountered during construction, the resource(s) shall be flagged and avoided with a 50-foot buffer until a qualified archaeologist is contracted to evaluate the resource(s). Should the resource(s) be found to be significant, the resource(s) shall either be left *in situ* and avoided; or the resource(s) shall be salvaged, recorded, and reposited following standard archaeological procedures. Data recovery is not required by law or regulation. It is, however, the most commonly agreed-upon measure to mitigate significant impacts to archaeological sites eligible or listed in the California Register under Criterion D, as it preserves important information that would otherwise be lost.	

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						Mitigation Measure CULTURAL-3: *Compliance with the Secretary of the Interiors Standards for the Treatment of Historic Properties.* All work completed on the caretaker's cottage and associated detached garage, the detached Villa garage, and interior of the Villa will be completed in a way that complies with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*. Design review of the proposed additions to these buildings as well as any alterations to the interior of the Villa by a qualified Architectural Historian is required prior to the initiation of construction. **Mitigation Measure CULTURAL-4:** *Regulatory Requirements – Human Remains*. In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are encountered during excavation activities, the County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby areas reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined, within two working days of notification of the discovery, the appropriate treatment and disposition of the human remains. If the County Coroner determines that the remains are or are believed to be Native American, s/he shall notify the NAHC in Sacramento within 24 hours. In accordance with Section 5097.98 of the California PRC, the NAHC shall immediately notify the person(s) it believes to be the Most Likely Descendant of the deceased Native American. The descendants shall complete their inspection and make a recommendation within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the Los Angeles County Metropolitan Transportation Authority (Metro), the disposition of the human remains. The Most Likely Descendant's recommendation shall be followed if feasible and may include scientific removal and non-destructive analysis of the human remains and any items associated with Native American burials. If Metro rejects the Most Likely Descendant's recommendations, the agency shall rebury the remains with appropriate dignity on the property in a location that will not be subject to further subsurface disturbance (14 California Code of Regulations §15064.5(e)). Implementation of the identified mitigation measures would reduce impacts to cultural resources to less than significant. Therefore, there is no potential for the 2021 refined project elements to result in changes to the findings.	
6. ENERGY							
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	**Not evaluated in 2011 MND.**	None.	☐	☒	☐	The 2021 refined project elements would result in less than significant impacts related to having a substantial adverse effect on energy. Energy was not evaluated in the 2011 approved MND. However, energy use would not differ substantially from the approved project. The 2021 refined project elements would not result in an increase in the number of students, faculty, and staff permitted in the 2011 Master Plan. The 2021 refined project elements would result in less than significant impacts related to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. Construction of the 2021 refined project elements would require the use of energy, including electricity and carbon-based fuels, for construction equipment over the 67-week anticipated construction period. Electric power would be required for lighting and electrically powered hand tools as necessary. The majority of energy used for project construction would consist of petroleum-based fuels such as gasoline and diesel for on-road vehicles and off-road construction equipment. Construction workers would travel to and from the project site throughout the duration of construction. Heavy-duty construction equipment associated with construction activities, vendor trucks, and haul trucks would rely on diesel fuel. The amount of electricity used for construction would be minimal and of limited duration. Natural gas is not anticipated to be required for the construction of the proposed project. Petroleum-based fuels would be used during the entirety of construction of the proposed project. Diesel or gasoline consumed by construction equipment would be the primary energy resource expended. There would also be vehicle miles traveled (VMT) associated with the transportation of construction materials and construction worker commutes, which would result in petroleum consumption. It is assumed that construction workers would travel to and from the project site in gasoline-powered vehicles. Heavy-duty construction equipment of various types would be used during construction. The use of construction equipment is necessary to complete the required improvements;	None
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	**Not evaluated in 2011 MND.**		☐	☒	☐		
			☐	☒	☐		

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						therefore, it does not constitute a wasteful, inefficient, or unnecessary consumption of energy resources. Impacts would be less than significant. The 2021 refined project elements would not conflict with any adopted state or local plans related to use of renewable energy or energy efficiency, with adopted state and local plans including the State Renewable Portfolio Standards; 2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings; Southern California Association of Governments (SCAG) Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) Goals and Policies for Energy Efficiency; the County General Plan 2035 Conservation and Natural Resources Element; or the City of Sierra Madre General Plan Conservation Element. The state of California adopted the 2008 Building and Energy Efficiency Standards, which became effective on January 1, 2010. Because the project would be constructed after this date, the project would be constructed to achieve the energy efficiency standards of the 2008 Building and Energy Efficiency Standards. In addition, the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA) have adopted new fuel efficiency standards for model years 2012 through 2016. The Scoping Plan also calls for more stringent fuel efficiency standards for model years 2016 through 2020 under Pavley II. The proposed project would not have the potential to interfere with the State of California's ability to achieve energy efficiency goals and strategies. Therefore, there is no potential for the 2021 refined project elements to result in changes to the findings. Impacts would be less than significant.	
7. GEOLOGY / SOILS							
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:		None.				The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. The 2021 refined project element would not create new or substantially more severe significant impacts related to geology and soils. Given that the 2021 proposed project refinements are located in the same project area as what was evaluated in the 2011 IS/MND, the geologic conditions are comparable. Thus, the impacts are expected to be the same. Similar to the approved project, the 2021 refined project elements would not create new or substantially more severe significant impacts related to earthquake fault rupture, seismic ground shaking, liquefaction, or landslides. There are no known earthquake faults that pass through or next to the high school. The nearest fault to the high school is the Sierra Madre Fault, roughly 0.6 mile north of the site. The nearest Alquist-Priolo Earthquake Fault Zone to the site is along the Raymond Fault, about 1.6 miles south of the site. There are no known faults close enough to the site to pose a hazard of fault rupture, and no new or substantially more adverse impacts would occur. There are several faults in the project region that could generate strong ground shaking: the Sierra Madre Fault, the Raymond Fault, and the Clamshell-Sawpit Canyon Fault. The 2007 California Building Code (CBC; Title 14, California Code of Regulations, Part 2) contains seismic safety provisions with the aim of preventing building collapse during a design earthquake, so that occupants would be able to evacuate after the earthquake. Additionally, the project site is not within or next to a zone designated by the California Geological Survey for required investigation for liquefaction. Compliance with existing CBC regulations would limit hazards from strong ground shaking and liquefaction to less than significant, and no new or substantially more adverse impacts would occur, so no mitigation is needed. The project site is on a gentle southerly slope of about 6 percent grade. There are no slopes on or near the site that could pose a landslide hazard to the site. The site is not in or next to a zone of required investigation for earthquake-induced landslides. No new or substantially more adverse impacts would occur, and no mitigation is necessary. Similar to the approved project, the 2021 refined project elements would not create new or substantially more severe significant impacts related to soil erosion, unstable soil, expansive soil, or inadequate soils for alternative wastewater disposal. Common means of soil erosion from construction sites include wind, flowing water, and being tracked offsite by vehicles. Compliance with these BMPs is required by the federal Clean Water Act and, within the City of Sierra Madre, is administered by the City Department of Public Works. The project applicant would be required by Section 1802 of the CBC to have a preliminary soil report prepared and submitted to the City before the City issues a building permit. The soil report would need to conclude that site soils would be capable of supporting proposed structures after grading and compaction. The CBC includes a requirement that any	MM 11
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	**NI (p. 48)**		☒	☒	☒		
ii) Strong seismic ground shaking?	**LTS (p. 49)**		☒	☒	☒		
iii) Seismic-related ground failure, including liquefaction?	**LTS (p. 49)**		☒	☒	☒		
iv) Landslides?	**NI (p. 49)**		☒	☒	☒		
b) Result in substantial soil erosion or the loss of topsoil?	**LTS (p. 49)**		☒	☒	☒		
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?	**LTS (p. 50)**		☒	☒	☒		
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	**LTS (p. 50)**		☒	☒	☒		
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	**NI (p. 50)**		☒	☒	☒		

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f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	**Not evaluated in 2011 MND.**					City-approved recommendations contained in the soil report be made conditions of the building permit. The CBC requires special design considerations for foundations of structures built in soils with expansion indices greater than 20. The soil report would include testing of site soil samples for expansion potential.. The proposed project would not use septic tanks or alternative wastewater disposal systems, as it would extend City sewer infrastructure to the new buildings. Compliance with existing regulations would reduce hazards related to soil erosion, unstable soil, expansive soil, or inadequate soils to less than significant, and no mitigation is needed. Similar to the approved project, the 2021 refined project elements would not create new or substantially more severe significant impacts related to directly or indirectly destroying a unique paleontological resources or site or unique geologic feature. The campus has a uniform southerly slope from elevations of about 1,020 feet above mean sea level (amsl) at its northwestern corner to about 950 feet amsl along its southern boundary, and there are no unique geologic features within the project site or on the campus. Surface sediments from the project site and surrounding area are older Quaternary alluvial fan deposits derived from the San Gabriel Mountains. As evaluated in the 2011 IS/MND, no vertebrate fossil localities were identified within or near the project site in a paleontological records search by the Natural History Museum of Los Angeles County. The project site has not changed since 2011 with regard to paleontological or geologic resources. However, Mitigation Measure 11, as identified in the Cultural Resources section of the 2011 IS/MND, will be implemented for the 2021 proposed refined elements.	
8. GREENHOUSE GAS EMISSIONS							
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	**LTS (p. 51)**	None.	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. The 2021 refined project elements would not create new, or substantially more severe significant impacts related to having a substantial adverse effect on greenhouse gas (GHG) emissions, and impacts would remain less than significant consistent with the findings of the approved project. The 2021 refined project elements would include the construction of three new buildings in the southwest corner of the campus as the lower school with new playground and sport court, a small addition on the northern façade of the detached Villa garage, the interior conversion of the caretaker's cottage to flexible classroom space, new surface parking, and interior use changes to the Villa. As with the approved project, construction and operation of the 2021 refined project elements would result in less than significant impacts with regard to generating GHG emissions, either directly or indirectly, that may have a significant impact on the environment. CalEEMod was run for the 2021 refined project elements and resulted in consistency with the findings of the approved project (Appendix F). The operation phase of the 2021 refined project elements would remain unchanged from the approved project. An increase in student or faculty and staff is not proposed. As with the approved project, the 2021 refined project elements would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs, resulting in less than significant impacts. The state of California adopted the 2008 Building and Energy Efficiency Standards, which became effective on January 1, 2010. Because the project would be constructed after this date, the project would be constructed to achieve the energy efficiency standards of the 2008 Building and Energy Efficiency Standards. In addition, CARB and the EPA have adopted new fuel efficiency standards for model years 2012 through 2016. The Scoping Plan also calls for more stringent fuel efficiency standards for model years 2016 through 2020 under Pavley II. Table 6 is a year 2020 emissions inventory, which is approximately 11 percent less with reductions associated with the Scoping Plan. The proposed project would not have the potential to interfere with the State of California's ability to achieve GHG reduction goals and strategies. Therefore, there is no potential for the 2021 refined project elements to result in changes to the findings.	None
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	**LTS (p. 51)**		☒	☒	☒		
9. HAZARDS AND HAZARDOUS MATERIALS							
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	**LTS (p. 53)**	MM 12 MM 13	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. The 2021 refined project elements would not create new, or substantially more severe significant impacts related to creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. The construction activities for the 2021 refined project elements are comparable to what was evaluated in the 2011 IS/MND, for which there was a less than significant impact determination. Hazardous materials such as fuels, greases, paints, and cleaning materials would be used during project construction. The project applicant would be required to comply with existing local, state, and federal regulations of several agencies, including the EPA, the California Department of Toxic Substances Control	MM 12 MM 13
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of	**LTS (p. 54)**		☒	☒	☒		

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hazardous materials into the environment?						(DTSC), the U.S. Department of Transportation (DOT), the U.S. Occupational Safety and Health Administration (OSHA), the California Department of Transportation (Caltrans), and the California Department of Occupational Safety and Health (Cal/OSHA). Compliance with such regulations would reduce potential impacts arising from accidental releases of hazardous materials. For example, all spills or leakage of petroleum products during construction activities are required to be immediately contained, the hazardous material identified, and the material remediated in compliance with applicable state and local regulations regarding the cleanup and disposal of the contaminant released. All contaminated waste encountered would be required to be collected and disposed of at an appropriately licensed disposal or treatment facility. Additionally, the proposed project would be constructed and operated with strict adherence to all emergency response plan requirements set forth by the City of Sierra Madre, the Sierra Madre Fire Department, and the Los Angeles County Fire Department. Project-related hazards resulting from the transport, use, or disposal of hazardous materials would not be new or substantially more adverse , and no mitigation is needed.	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	**LTS (p. 55)**		☒	☒	☒		
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?	**LTS (p. 56)**		☒	☒	☒		
e) For a proposed project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	**NI (p. 56)**		☒	☒	☒	Similar to the approved project, the 2021 refined project elements would not create new, or substantially more severe significant impacts related to creating a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; emitting hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; or location on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The proposed project site was evaluated in the 2011 IS/MND using a search of environmental records for listings of hazardous materials sites and hazardous materials release sites on and within one mile of the Alverno High School campus, conducted by Environmental Data Resources (EDR). There was one listing of the school and a second listing offsite near the school, both determined to be less than significant. The listing at the school location was asbestos-containing waste that was shipped off campus and disposed in a landfill, and it is not considered to be an environmental concern to the proposed project. The off-site listing is for underground storage tanks (USTs) that have been removed. No releases of hazardous substances from this facility were reported in the EDR records search and it is not regarded as an environmental concern to the project site. Based on a review of EnviroStor, the Department of Toxic Substances Control's data management system for tracking hazardous waste facilities and sites with known contamination, there are no new listings for hazardous materials sites and hazardous materials at or within one-quarter mile of the school since the 2011 EDR report.[iii] Therefore, the impacts would be less than significant, as with the approved project. The schools within 0.25 mile of the project site include Alverno Academy, as well as LaSalle High School at 3880 East Sierra Madre Boulevard in the City of Pasadena, roughly 0.2 mile southwest of the project site. As discussed in the 2011 IS/MND, operation of the proposed multipurpose building, athletic facilities, and amphitheater would not involve substantial amounts of hazardous emissions, and the 2021 refined project elements would operate comparably. Therefore, the 2021 refined project elements would not create new or substantially more severe significant impacts related to creating a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; emitting hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; or location on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. As with the approved project, the 2021 refined project elements would not create new, or substantially more severe significant impacts related to a safety hazard or excessive noise due to location 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. There are no public use airports within 2 miles of the project site; the nearest such airport to the site is El Monte Airport roughly, 5.25 miles southeast of the site. There are no private airstrips or heliports in the vicinity of the project site. Project development would not cause a safety hazard for students or faculty of Alverno High School or anyone in the vicinity. No new or substantially more adverse impacts would occur, and no mitigation is needed. As with the approved project, the 2021 refined project elements would not create new, or substantially more severe significant impacts related to an adopted emergency response plan or emergency evacuation plan. There would be sufficient space	
For a proposed project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the proposed project area? **[Not in 2021 Appendix G]**	**NI (p. 57)**		☒	☒	☒		
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	**NI (p. 57)**		☒	☒	☒		
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	**LTSM (p. 57)**		☒	☒	☒		

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						surrounding the buildings for emergency vehicle access and for emergency evacuation of the building. All project elements would be sited with sufficient clearance from existing and proposed structures so that no interference with emergency access to and evacuation from campus facilities would occur. The project would comply with the California Fire Code (Title 24, California Code of Regulations, Section 9) and the Los Angeles County Fire Code (Title 32, Los Angeles County Code of Ordinances). The project would not alter roadways in the vicinity of the campus and so would have no impact on emergency evacuation from the surrounding neighborhood. No new or substantially more adverse impacts would occur, and no mitigation is required. As with the approved project, the 2021 refined project elements would not create new, or substantially more severe significant impacts related to wildland fires. As evaluated in Section 20, Wildfire, impacts would be reduced to below the level of significance with the incorporation of the original Hazards Mitigation Measures 12 and 13.	
10. HYDROLOGY AND WATER QUALITY							
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality??	**LTS (p. 58)**	None.	☒	☒	☐	The 2021 refined project element would not create new or substantially more severe significant impacts related to hydrology and water quality. The project site is existing school campus that consists of both impervious and pervious surfaces in the form of buildings, parking lots, paved paths, landscaping, a field, and other outdoor areas. The 2021 refined project elements include new the development impervious surfaces through addition of new buildings and parking lots on currently impervious and pervious surfaces. Similar to the approved project, mandatory compliance with National Pollutant Discharge Elimination System (NPDES) permit requirements through the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for construction activities, and a Water Quality Management Plan (WQMP) for postconstruction activities, would ensure that no water quality standards or discharge requirements are violated. Discharges into stormwater drains or channels from construction sites of one acre or larger are regulated by the General Permit for Storm Water Discharges Associated with Construction Activity (General Permit: Water Quality Order 99-08-DWQ) issued by the State Water Quality Control Board. The General Permit was issued pursuant to NPDES regulations of the EPA, as authorized by the Clean Water Act. Compliance with the General Permit involves developing and implementing a SWPPP specifying Best Management Practices (BMPs) that the project would use to minimize pollution of stormwater. Additionally, discharges to stormwater drains or channels from postconstruction activities are regulated by the Municipal Separate Storm Sewer System (MS4) Permit, issued by the Los Angeles Regional Water Quality Control Board, pursuant to NPDES regulations. A WQMP would be prepared and implemented for the proposed project specifying BMPs to be used in project design, operations, and maintenance to minimize pollution of stormwater. The WQMP-specified BMPs would follow the guidelines of the City of Sierra Madre Public Works Department. In addition, the City Municipal Code requires new developments to create an Urban Runoff Mitigation Plan, designed to reduce projected runoff for a project through incorporation of design elements or principles which maximize permeable surfaces and minimize runoff.[iv] Furthermore, per City Municipal Code, as a development that adds more than 500 square feet of impervious surface area, the project must develop a Low Impact Development (LID) Plan to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through biofiltration, bioretention, bioswale(s), green roof(s), infiltration, rainfall harvest and use, and/or any other appropriate LID BMPs.[v] As stated in the Master Plan, the LID measures will be implemented in the Lower School campus, and the school has sufficient open space to accommodate LID devices.[vi] Therefore, due to compliance with all of these regulations that require thorough evaluation of BMPs which protect water quality and manage erosion, runoff, and pollution, impacts would be less than significant. Additionally, although the project would increase impervious surfaces, the required LID partial or complete onsite retention and filtration would replenish groundwater supplies. Thus, compliance with these measures would result in no new or substantially more adverse impacts in relation to violating water quality standards; substantially decreasing groundwater supplies; or substantially altering the drainage pattern such that it results in substantial erosion or siltation, substantially increases the rate or amount of runoff, creates excessive or polluted runoff, or impedes or redirects flows.	None
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	**LTS (p. 58)**		☒	☒	☐		
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:			☒	☒	☐		
i) result in substantial erosion or siltation on- or off-site;	**LTS (p. 60)**						
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	**LTS (p. 60)**		☒	☒	☐		
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	**LTS (p. 60)**		☒	☒	☐		
iv) impede or redirect flows?	**Not evaluated in 2011 MND**						
Otherwise substantially degrade water quality? **[Not in 2021 Appendix G]**	**LTS (p. 60)**		☒	☒	☒		
Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? **[Not in 2021 Appendix G]**	**NI (p. 60)**		☒	☒	☒		
Place within a 100-year flood hazard area structures which would impede or redirect flood flows? **[Not in 2021 Appendix G]**	**NI (p. 61)**		☒	☒	☒		

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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? **[Not in 2021 Appendix G]**	**LTS (p. 61)**		☒	☒	☒	Similar to the approved project, the 2021 refined project element would not create new or substantially more severe significant impacts related to inundation by a flood, tsunami, or seiche. The project site is outside of the 100- and 500-year annual flood hazard zones, and therefore, is not a risk for flooding. The site is not at risk of inundation by tsunami due to its elevation (950 to 1,020 feet amsl) and its location about 28 miles inland from the Pacific Ocean. The project site is located outside of the inundation area of the Sierra Madre Dam and Big Santa Anita Dam. There is an aboveground reservoir in an enclosed structure on the west side of Grove Street south of Carter Avenue, roughly 0.5-mile northeast of the project site. Flooding from the reservoir due to a seiche is considered very unlikely due to the closed containment building. The City of Sierra Madre implements the 2020 Urban Water Management Plan (UWMP)[vii] for sustainable water management. The 2021 project element refinements would not conflict with the implement of the UWMP. The 2021 proposed refined elements would implement BMPs and LID technologies that would protect water quality and improve water conservation. Both new and current buildings on the school campus would be retrofitted with water conservation devices to reduce water usage. There are sufficient water supplies in the City to meet the project's estimated water demand. The project would not substantially deplete groundwater supplies, and impacts would not be new or substantially more adverse.	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	**LTS (p. 61)**		☒	☒	☐		
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	**Not evaluated in 2011 Appendix G**						
11. LAND USE AND PLANNING							
a) Physically divide an established community?	**NI (p. 61)**	None.	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. The 2021 refined project elements would not create new, or substantially more severe significant impacts related to having a substantial adverse effect on land use and planning. The 2021 refined project elements would include the construction of three new buildings in the southwest corner of the campus as the lower school with new playground and sport court, a small addition on the northern façade of the detached Villa garage, the interior conversion of the caretaker's cottage to flexible classroom space, new surface parking, and interior use changes to the Villa. As with the approved project, the 2021 refined project elements would result in no impacts with regard to the division of an established community as the revisions will take place entirely on the current school site. The refined project elements are consistent with the existing City zoning and General Plan designation of Institutional. The Institutional Zone permits the operation of schools, including private schools, with a conditional use permit (CUP). As with the approved project, the 2021 refined project elements would not conflict with zoning or General Plan land use designation on the site, and no impact would occur. Therefore, there is no potential for the 2021 refined project elements to result in changes to the findings.	None
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	**NI (p. 62)**		☒	☒	☒		
c) Conflict with any applicable habitat conservation plan or natural community conservation plan? **[Not in 2021 Appendix G]**	**NI (p. 62)**		☒	☒	☒		
12. MINERAL RESOURCES							
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?	**NI (p. 62)**	None.	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. As with the approved project, the 2021 refined project elements would result in no impacts to mineral resources in relation to the loss of availability of a known mineral resource or mineral resource recovery site. The project site is not located in a Mineral Resource Zone as identified in the Conservation Element of the Los Angeles County General Plan 2035.[viii] According to the maps prepared by the Division of Mines and Geology, the project site is located within an MRZ-3, containing minerals the significance of which has not been determined.[ix] Therefore, the are no known mineral resources or mines. Additionally, the project site is part of the developed high school campus and is not available for mineral resource extraction. Mining at the school would be incompatible with the school due to its operation, its status as a landmark for the City of Sierra Madre, and surrounding residential uses. Therefore, the 2021 refined project element would not result the new or substantially more adverse findings for mineral resources, and no mitigation measures are requ8ired.	None
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?	**NI (p. 62)**		☒	☒	☒		
13. NOISE							
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	**LTSM (p. 75)**	MM 14 MM 15	☒	☒	☒	The facts related to ambient noise levels and requirements for control of noise, pursuant to the City of Sierra Madre Noise Ordinance, Chapter 9.32, Noise, upon which the findings were based in the 2011 Master Plan MND improvements remain unchanged. As with the approved project, the 2021 refined project would result in less than significant impacts regarding exposure of persons to or generation of noise levels in excess of applicable standards during construction, operation, or maintenance of the project.	MM 14 MM 15

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b) Generation of excessive groundborne vibration or groundborne noise levels?	**LTSM (p. 85)**		☒	☒	☒	Construction noise for the 2021 refined project element was modelled to verify that there would be no new significant impacts related to noise, or no substantially more adverse impacts on ambient noise levels during construction of the proposed project (Appendix C, *Alverno Heights Master Plan Update – Noise Analysis*). As with the approved project, construction of the 2021 refined project would result in elevated noise levels in the vicinity of the project. Construction activities would be restricted to the daytime hours, consistent with Chapter 9.32, Noise of the City of Sierra Madre Municipal Code. Noise-sensitive uses would be exposed to elevated noise levels from construction activities for the elements of the refined project, that would be comparable to those evaluated for the approved project. The duration and intensity of anticipated noise levels for the 2021 refined project are comparable to those evaluated for the approve project. As with the approved project, , the operation of the 2021 refined project elements would result in less than significant impacts, with mitigation, generation of a substantial temporary or permanent increase in ambient noise levels, in excess of standards established in the City of Sierra Madre Noise Ordinance, Chapter 9.32, Noise. As with the approved project, the refined project requires implementation of Mitigation Measure 14. As with the approved Project, construction of the planned buildings that are part of the 2021 Master Plan Update, would attenuate noise from midday elementary school lunch/break periods. As with the approved project, the operational noise levels of the refined project are estimated to not exceed any of the existing ambient noise levels at nearby residential receivers (please refer to Section 4.0, the 2021 Master Plan). As with the approved project, the refined project would result in less than significant impacts with incorporation of mitigation measure 15 regarding exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. As with the approved project, the use of pile drivers would be prohibited during construction of the elements of the refined project. As with the approved project, the 2021 refined project would generate vibration during construction activities from use of vibration producing construction equipment such as rollers; however, these levels would minimal and would not result in excessive vibration levels over those analyzed in the approved project. Generally, only construction equipment generating extremely high levels of vibration, such as pile drivers, has the potential for vibration-induced structural damage. Fragile historic structures, such as the Villa, may be more susceptible to structural damage caused by vibration and a lower threshold is used. Levels of vibration produced by construction equipment are evaluated against the FTA's significance threshold for vibration structural damage of 0.12 in/sec for structures extremely susceptible to vibration damage. Residential structures have an FTA significance threshold for vibration structural damage of 0.2 in/sec. As shown in this table, with the exception of the Villa, vibration levels from even the most vibration-intensive equipment would be below the FTA criteria at offsite residential uses for vibration-induced structural damage and no significant impact would occur. As with the approved project, the Villa may be exposed to vibration that causes structural damage, which would result in significant vibration impacts prior to the implementation of mitigation measures. However, implementation of Mitigation Measure 15 would reduce potential construction vibration impacts to the Villa to less than significant. Operation of the project would not generate substantial levels of vibration due to the lack of vibration-generating sources, and therefore, no further analysis of groundborne vibration is warranted. As with the approved project, the 2021 refined project element would result in no impacts to private or public airports or airstrips because the Alverno Heights Academy is not located within 2 miles of a private or public airport. Consistent with the project approvals for 2011 Master Plan and related Mitigation Monitoring Plan, the refined project would require implementation of Mitigation Measures Noise 14 and 15, and shall be monitored and enforced by City of Sierra Madre. Therefore, there is no potential for the 2021 refined project element to result in new or substantially more adverse impacts in relation to noise.	
A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? **[Not in 2021 Appendix G]**	**LTS (p. 93)**		☒	☒	☒		
A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? **[Not in 2021 Appendix G]**	**LTS (p. 93)**		☒	☒	☒		
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	**NI (p. 94)**		☒	☒	☒		
For a project within the vicinity of a private airstrip, would the proposed project expose people residing or working in the proposed project area to excessive noise levels? **[Not in 2021 Appendix G, combined with Question C]**	**NI (p. 94)**		☒	☒	☒		

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14. POPULATION AND HOUSING							
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	**NI (p. 95)**	None**.**	☒	☒	☒	The 2021 refined project elements would not create new or substantially more severe significant impacts related to population and housing than the 2011 IS/MND for the Alverno Heights Academy Master Plan. Similar to the approved project, the 2021 refined project elements would not expand the school's classroom capacity. The project would involve the development of utility infrastructure to serve the proposed new buildings and expand parking. These elements would serve the school's existing operations and would not extend infrastructure elsewhere. The 2021 refined project elements would not increase the maximum permitted enrollment of 400 that was evaluated in the 2011 IS/MND. The project would not result in population growth in the area; therefore, no new or substantially more adverse impacts would occur. Contrary to the approved project, the 2021 refined project elements include the removal of the existing Caretaker Cottage Building (2,100 square feet) for renovation as new flexible classroom space. The Caretaker Cottage is currently a private residence that is occupied. Thus, the proposed project would displace the current resident(s). However, the currents resident(s) would not constitute a substantial number of people, such that replacement housing would need to be constructed elsewhere. According to the Housing Element of the City General Plan, housing availability has grown in the last decade, and the City plans to continue developing housing to meet the regional housing needs.[x] Therefore, the 2021 refined project element would not result in new or substantially more adverse findings for population and housing, and no mitigation measures are required.	None
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	**NI (p. 95)**		☒	☒	☐		
Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? **[Not in 2021 Appendix G, combined with Question B]**	**NI (p. 95)**		☒	☒	☒		
15. PUBLIC SERVICES							
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:						The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan have changed; however, the 2021 refined project element would not create a new or substantially more severe significant impacts related to public services. Similar to the approved project, fire protection is provided by the Sierra Madre Fire Department (SMFD), with one fire station at 242 West Sierra Madre Boulevard, roughly 0.4 mile southeast of the school. The SMFD staff is comprised of 17 full-time personnel: 1 fire chief, 1 administrative aide, 3 fire captains, 3 engineers, and 9 firefighter paramedics.[xi] Additionally, the department utilizes multiple part-time staff, include a volunteer deputy chief, 1 additional fire captain, 6 engineers, 14 volunteer firefighters, and 19 part-time paramedics.[xii] The 2021 refined project elements would not increase the maximum permitted enrollment of 400 that was evaluated in the 2011 IS/MND; therefore, it would not impact population such that service ratios of response times would be affected. As with the approved project, the 2021 refined project element could result in a small increase in calls for fire protection and emergency medical services during construction of new elements and operation of new buildings. Construction and school operations would comply with the California Fire Code (Title 24, California Code of Regulations, Section 9) and the Los Angeles County Fire Code (Title 32, Los Angeles County Code of Ordinances) as well as building codes and clearances. The SMFD station would respond to any fire or emergency response calls and would continue to adequately serve the project area. Additionally, as stated in the Master Plan, the school anticipates installing an additional on-site fire hydrant for the Lower School campus and other improvements to meet city fire department requirements. Both the temporary and permanent classrooms would be provided with fire alarms and fire sprinklers.[xiii] This would not require construction of new or expanded fire protection facilities, resulting in no new or substantially more adverse impacts. Similar to the approved project, police protection is provided by the Sierra Madre Police Department (SMPD). The SMPD staff comprises of 20 full-time members including the chief of police, a police captain, four sergeants, two corporals, nine officers (including detective & traffic), services division supervisor, and four dispatchers, in addition to part-time and volunteer staff. The SMPD Police Station is at 242 West Sierra Madre Boulevard about 0.5 mile southwest of the project site. The most recently available annual report (2018) reported 15,179 total calls for service with a response time of 2 minutes and 18 seconds for priority calls and 3 minutes and 23 seconds for non-priority calls.[xiv] The 2021 refined project elements would not increase the maximum	None
i) Fire protection?	**LTS (p. 95)**	MM 16	☒	☒	☒		
ii) Police protection?	**LTSM (p. 96)**		☒	☒	☒		
iii) Schools?	**NI (p. 96)**		☒	☒	☒		
iv) Parks?	**NI (p. 96)**		☒	☒	☒		
v) Other public facilities?	**NI (p. 97)**		☒	☒	☒		

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						permitted enrollment of 400 that was evaluated in the 2011 IS/MND; therefore, it would not impact population such that service ratios of response times would be affected. The 2011 IS/MND required Mitigation Measure 16: "Alverno High School shall retain a qualified officer for campus security and/or the Sierra Madre Police Department for traffic control assistance when special events in the multipurpose building are expected to be at full capacity. Alverno High School shall be responsible for the cost of the officer(s) time." The school is expected to retain this officer. The 2021 refined project elements would not require any mitigation, as the SMPD station would respond to any police response calls and would continue to adequately serve the project area. The 2021 refined elements would not require construction of new or expanded police protection facilities, resulting in no new or substantially more adverse impacts. The 2021 refined project element would not create new or substantially more severe significant impacts related to schools. While the 2021 refined project element would result in the provision of both new and physically altered school facilities, the construction of the improvements would not result in significant adverse environmental impacts. All construction proposed in this Addendum IS/MND would result in less than significant impacts to all twenty issues areas under CEQA or would be mitigated to below the level of significance. The 2021 refined project element would not create new or substantially more severe significant impacts related to parks. The 2021 refined project elements would not increase the maximum permitted enrollment of 400 that was evaluated in the 2011 IS/MND; therefore, project would not add residents to the area, and it is not expected to require the development of new park facilities. However, the proposed project includes the construction of a new Sports Court on the lower campus, thereby increasing the recreational benefit of the campus. The existing multipurpose field would remain available for City-requested team sports. The project would add a recreational facility to the school that would be available for some public use. Therefore, the 2021 refined project element would not result in no new or substantially more adverse impacts for public services, and no mitigation measures are required.	
16. RECREATION							
a) Would the proposed 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?	**NI (p. 97)**	None**.**	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. As with the approved project, there would be no impacts to recreation in relation to increasing the use of parks and recreation facilities, such that substantial physical deterioration of the facility would occur or be accelerated. The 2021 refined project elements would be limited to the existing school campus; it would not increase the use of neighborhood or regional parks outside of the school facility. Within the school campus, there is a multipurpose field that serves as a recreational facility, including for City-requested team sports. Its use would not be increased such that physical deterioration would occur or be accelerated, as the project would not increase the maximum permitted enrollment of 400 that was evaluated in the 2011 IS/MND. The 2021 refined project element also would not create new or substantially more severe significant impacts related to including recreational facilities. The proposed project includes the construction of a new Sports Court on the Lower Campus, which would be comparable to the recreational improvements in the approved project. The construction of this recreational facility would be primarily for school use and would be limited to development within the school campus. As discussed throughout this Addendum to the IS/MND, all impacts would be mitigated to below the level of significance. Thus, the proposed project would not include recreational facilities which would have an adverse physical effect on the environment. Therefore, the 2021 refined project element would not result in new or substantially more adverse impacts for recreation, and no mitigation measures are required.	None
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?	**NI (p. 97)**		☒	☒	☒		
17. TRANSPORTATION							
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	**LTSM (p. 97)**	MM 17 a/b MM 18	☒	☒	☒	As with the approved project, the refined project would require the implementation of Mitigation Measure 17 a/b and 18 to reduce construction impacts on traffic to a less than significant, in relation to conflicting with plans, ordinances, or policies that establish measures of effectiveness for the performance of the circulation system. The City carefully evaluated the effects of the refined	MM 17 a/b MM 18

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b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	**Not evaluated in 2011 MND.**					project on traffic and circulation (see Appendix D, Alverno *Heights Academy–Traffic Circulation Memo*). As with the approved project, construction of the 2021 refined project elements would generate additional vehicle trips to and from the Alverno Heights Academy with corresponding impacts to transportation and circulation on the surrounding streets. However, no new or substantially more adverse impacts would be anticipated as a result of the construction of operation of the refined project. The construction scenario for the refined project is able to phase construction to accommodate temporary on-site stock stockpiling of export material, thus allowing for more efficient transport of excess material, and resulting in a for lower number of truck trips. As with the approved project, mitigation measures 17a/b and 18 would be required for the refined project element to address transportation and traffic impacts during construction. To reduce construction impacts on local circulation, a Construction Traffic Management Plan would be implemented. Unlike the approved project, the 2021 refined project operation is anticipated to generate a net total decrease of trips during the peak hour. Existing School (High School) generates 172 vehicle trips during the morning peak hour (117 inbound and 55 outbound), 116 trips during afternoon peak hour (38 inbound and 78 outbound), and 823 trips per day. With the refined project, the trip generation rates for the school (trips per student) and the anticipated volumes of traffic that would be generated by the development (200 High School Students + 200 Elementary Students) would generate 176 vehicle trips during the morning peak hour (108 inbound and 68 outbound), 114 trips during afternoon peak hour (44 inbound and 70 outbound), and 727 trips per day resulting in a total net decrease of 96 trips per day when compared to the approved project (see tables below, from Appendix D, *Alverno Heights Academy–Traffic Circulation Memo*).	
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? **[Not in 2021 Appendix G]**	**LTS (p. 116)**		☒	☒	☒		
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? **[Not in 2021 Appendix G]**	**NI (p. 116)**		☒	☒	☒		
c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	**LTS (p. 116)**		☒	☒	☒		
d) Result in inadequate emergency access?	**NI (p. 117)**		☒	☒	☒		
Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? **[Not in 2021 Appendix G]**	**NI (p. 117)**		☒	☒	☒		
Result in inadequate parking capacity? **[Not in 2021 Appendix G]**	**LTS (p. 117)**						

Existing Condition School Generated Traffic

Name/Address	Land Use	Size: Quantity	Size: Unit	Vehicle Estimated Trip Generation: Daily Trips	AM (M-F) Drop off (7:00-8:00): In	AM (M-F) Drop off (7:00-8:00): Out	AM (M-F) Drop off (7:00-8:00): Total	PM (M-TH) Pick-up (3:00-4:00): In	PM (M-TH) Pick-up (3:00-4:00): Out	PM (M-TH) Pick-up (3:00-4:00): Total	PM (Friday) Pick- up (1:30-2:45): In	PM (Friday) Pick- up (1:30-2:45): Out	PM (Friday) Pick- up (1:30-2:45): Total
Alverno High School	ITE 530	400*	Students	823	117	55	172	38	78	116	38	78	116

SOURCE: Traffic Circulation Analysis (Appendix D).
*400 students high school previously approved in the 2011 Master Plan

Proposed Condition School Generated Traffic

Name/Address	Land Use	Condition	Size: Quantity	Size: Unit	Vehicle Estimated Trip Generation: Daily Trips	AM (M-F) Drop off (7:00-8:00): In	AM (M-F) Drop off (7:00-8:00): Out	AM (M-F) Drop off (7:00-8:00): Total	PM (M-TH) Pick-up (3:00-4:00): In	PM (M-TH) Pick-up (3:00-4:00): Out	PM (M-TH) Pick-up (3:00-4:00): Total	PM (Friday) Pick-up (1:30-2:45): In	PM (Friday) Pick-up (1:30-2:45): Out	PM (Friday) Pick-up (1:30-2:45): Total
Alverno High School	ITE 530	Proposed	200	Students	469	58	28	86	19	39	58	19	39	58
Alverno Elementary School	ITE 520	Proposed	200	Students	258	50	40	90	25	31	56	25	31	56
Total			400	Students	727	108	68	176	44	70	114	44	70	114

SOURCE: Traffic Circulation Analysis (Appendix D).

Impacts related to conflicting or inconsistency with CEQA Guidelines section 15064.3, subdivision (b) would be less than significant. In relation to vehicle miles traveled (VMT), the 2021 refined project, consistent with the approved project, would result in the expansion of educational and recreational facilities serving the local community and surrounding residences. Further, the

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Environmental Checklist and Analysis

Environmental Issue State CEQA Guidelines – Appendix G Would the project:	2011 IS/MND Findings: No Impact (NI) Less than Significant Impact (LTS) LTS with Mitigation (LTSM) Page numbers refer to 2011 Draft IS/MND[i]	2011 IS/MND Required Mitigation Measures	§15162 Determinations for 2021 Refined Project No New Impact	No Substantially More Adverse Impacts	No New Information or Change	Effects of 2021 Refined Project and Applicable Mitigation Measures	Mitigation Measures Applicable to 2021 Refined Project
						refined project would result in a change in student demographics from 400 all high school aged students (female) to a ratio of 200 high school students (female) and 200 K-8 aged students (co-ed), and thus, expanding the lower aged educational opportunities for the local residents and surrounding community reducing the needs for local residents to travel longer distances for lower school aged programs. As with the approved project, the 2021 refined project element would result in no impacts to private or public airports or airstrips because the Alverno Heights Academy is not located within 2 miles of a private or public airport and does not affect air traffic patterns. As with the approved project, the impacts of the refined project related to hazards due to a design feature or incompatible uses would be less than significant. As with the approved project, the 2021 refined project requires no change to the street system that surrounds, and provides access to the Alverno Heights Academy, with the project site served by a network of well-defined and pre-existing paved roads and would continue to be accessed by these roads following construction of the 2021 refined project. As with the approved project, the impacts of the refined project on traffic and circulation, in relation to emergency access would be less than significant. As with the approved project, the 2021 refined project site would conserve the existing street system that provides access to and egress from the Alverno Heights Academy which has provided adequate access for emergency response vehicles during the 21 years of operation of the site as a school. As with the approved project, the refined project would result in no impacts to adopted policies regarding alternative transportation. As with the approved project, the 2021 refined project is connected by a network of well-defined, pre-existing, and traffic-controlled paved roads which allow for alternative transportation methods, such as bicycles and buses, to share access to the existing site with automobile vehicles. In addition, existing pedestrian access points and sidewalks would remain accessible to pedestrians during construction and operation of the refined project. Consistent with the approvals for the 2011 Master Plan and related Mitigation Monitoring Plan, the refined project would require implementation of Mitigation Measure 17 a/b and 18, and shall be monitored and enforced by the City of Sierra Madre. Therefore, there is no potential for the 2021 refined project to result in new or substantially more adverse impacts in relation to traffic and circulation.	
18. 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:	**Not evaluated in 2011 MND.**	None	☐	☒	☐	As a result of the request for review of the Sacred Lands File (SLF) from the NAHC, it has been determined that there are sacred lands recorded on the same 7.5-minute-scale quadrangle (approximately 50 square miles) as the project site. Due to the large scale of the SLF check, it is unlikely that the sacred lands are on or in proximity to the project site. Outreach to Native American tribal entities identified by the NAHC was initiated by the City on July 7, 2021, and consultation results regarding tribal cultural resources are pending. There is a moderate probability to encounter tribal cultural resources based on the inherent characteristics and location of the project site.	None
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), or	**Not evaluated in 2011 MND.**	None	☐	☒	☐	The 2021 refined project elements would not result in new significant impacts or substantially more adverse significant impacts to cultural resources related to a substantial adverse change in the significance of a prehistoric archaeological resource (which may include tribal cultural resources). Potential impacts to cultural resources, including prehistoric archaeological resources, were investigated in the 2011 IS/MND. Information presented in the 2011 IS/MND resulted in the conclusion that there are no known archaeological resources within the 2021 project area. No archaeological resources were identified within the 2021 refined project element area as a result of the updated records search.	
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set	**Not evaluated in 2011 MND.**		☐	☒	☐	Pending results of Tribal Consultation efforts by the City.	

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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.							
19. UTILITIES AND SERVICE SYSTEMS							
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	**Not evaluated in 2011 MND.**	None.	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. As with the approved project, there would be no new or substantially more adverse impacts to utilities and service systems. As evaluated in the approved project, the addition of the multipurpose building would require the extension of water, wastewater, electric connections to the new building. As stated in the Master Plan, the lower campus would be served by an existing 8-inch sewer line at Highland Avenue.[xv] As stated in the General Plan, the City of Sierra Madre Public Works Department operates the City's water production and distribution and the sewer collection system. With regard to electric, natural gas, telecommunications, electrical power is provided by SoCal Edison (SCE), which provides adequate service throughout the City; natural gas is provided by SoCalGas; and Sierra Madre's public access channels available to Time Warner customers include Channel 3 and Channel 98. Internet is provided by various telecommunications companies such as Spectrum, Viasat, and Frontier.[xvi] Connections would be made to the new buildings as applicable. This would not result in new or substantially more adverse environmental effects as the improvements would be confined to the existing school campus which is already provided with these utilities. As with the approved project, water use by the proposed multipurpose building is estimated as 125 percent of forecast wastewater generation. The estimated wastewater generation by the proposed multipurpose building would be 350 gallons per day per 1,000 square feet. The building would be 12,860 square feet, for total wastewater generation of about 4,500 gallons per school day; therefore, water use by the building would be roughly 5,625 gallons per school day with available supply to serve the needs of the project site. As with the approved project, there are sufficient water supplies in the City to meet the project's estimated water demand. Water supply would be served the City's existing connections at the Michillinda water line, including a newly installed onsite fire hydrant connection, and sites at the southern end of the water pressure zones for the City. As with the approved project, the City has confirmed a 2,951 GPM at the Michillinda line at the Highland Avenue intersection with a static pressure of 160 psi, and residential pressure of 120 psi. Thus, consistent with the approved project, the 2021 refined project would not substantially deplete groundwater supplies, and impacts would not be new or substantially more adverse. As with the approved project, sewers services for the refined project would be served from the Highland Avenue 8-inch sewer line. Similar to the approved project, the multipurpose building would be the primary increase in wastewater. Sewers in the City are maintained by the City Public Works Department. Wastewater treatment is provided to the City by the Sanitation Districts of Los Angeles County (LACSD). The wastewater from the City's service area, which is estimated at approximately one million gallons per day (mgd) or 365 million gallons annually, primarily flows to the Whittier Narrows Water Reclamation Plant (WNWRP) located in South El Monte. The WNWRP has a treatment capacity of 15 mgd, serving over 20 cities.[xvii] As of 2010, it was estimated to have received 6 mgd. Projections estimate approximately 7.1 mgd through 2030, leaving 7.1 mgd of available capacity.[xviii] Based on calculations in the 2011 IS/MND, estimated wastewater generation by the proposed multipurpose building would be 350 gallons per day per 1,000 square feet. At a proposed 12,860 square feet, total wastewater generation would be approximately 4,500 gallons per day (gpd). The estimated 4,500 gpd increase in wastewater generation from the proposed multipurpose building would be less than 0.05 percent of the available capacity at WNWRP. There are adequate wastewater treatment facilities in the region to treat project-generated wastewater, and project development would not require the construction or expansion of	None
Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? **[Not in 2021 Appendix G]**	**LTS (p. 117)**						
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? **[Not in 2021 Appendix G]**	**LTS (p. 117)**		☒	☒	☒		
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? **[Not in 2021 Appendix G]**	**LTS (p. 118)**		☒	☒	☒		
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	**LTS (p. 118)**		☒	☒	☒		
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	**LTS (p. 119)**		☒	☒	☒		
Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? **[Not in 2021 Appendix G]**	**LTS (p. 119)**		☒	☒	☒		
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	**Not evaluated in 2011 MND.**						
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	**NI (p. 119)**		☒	☒	☒		

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						wastewater treatment facilities. With regard to solid waste, Sierra Madre has an exclusive franchise contract with Athens Services to collect all waste within the City. Sierra Madre is a member of the Scholl Canyon Wasteshed and much of the material collected by Athens Service is taken there. Scholl Canyon is expected to cease operations in 2030;[xix] thus, it has capacity for the construction of the proposed project, as well as operations until 2030, at which point Athens Services would dispose of solid waste at other landfills. As discussed in the City General Plan, the City complies with Assembly Bill (AB) 939 (Chapter 1095, Statutes of 1989), the Integrated Waste Management Act. It requires that every California city and county divert 50 percent of its waste from landfills starting in the year 2000. In addition, AB 939 requires a Countywide Integrated Waste Management Plan (CIWMP) for each county. The CIWMP must contain a Source Reduction and Recycling Element (SRRE) for the county and each city within the county, identifying waste characterization, source reduction, recycling, composting, solid waste facility capacity, education and public information, funding, special waste (asbestos, sewage sludge, etc.), and household hazardous waste. Additionally, the CIWMP must also incorporate a countywide siting element, specifying areas for transformation or disposal sites to provide capacity for solid waste generated in the jurisdiction that cannot be reduced or recycled for a 15-year period. The Sanitation Districts of Los Angeles County (Sanitation Districts) are responsible for implementation of the CIWMP and managing solid waste on a regional basis. The City of Sierra Madre is within the service boundary of District 15 (SDLAC). Therefore, it would result in less than significant impacts related to solid waste.	
20. WILDFIRE							
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	**Not evaluated in 2011 MND.**	None.	☒	☒	☒	The facts upon which the findings were based in the 2011 IS/MND for the Alverno Heights Academy Master Plan remain unchanged. As with the approved project, the 2021 refined project elements would not create new or substantially more severe significant impacts related to having a substantial adverse effect as a result of physical changes in the environment related to Wildfire. The review of the 2011 approved Alverno High School Master Plan Initial Study/MND (in particular questions G and H of the Hazards and Hazardous Materials), the City of Sierra Madre General Plan, the California Department of Forestry and Fire Protection's (CAL FIRE) Fire and Resource Assessment Program (FRAP) website as well as relevant data, maps, and other pertinent information such as the master plan and architectural drawings were used to assess impacts from the refined project. The assessment also helped confirm if the 2021 refined project site continued to be within a State Responsibility Areas (SRA) or lands classified as very high fire hazard severity zones (VHFHSZ) and whether the site had the potential for significant risk to obstructions to emergency response or evacuation plans; exposure to pollutants; exposure to risk due to natural factors such as terrain, winds, flooding, or landslides; require the need for infrastructure; or causing significant risk of loss, injury or death involving wildfires. Contrary from the 2011 IS/MND, the refined project site is no longer within a State Responsibility Area (SRA) nor a Very High Fire Hazard Severity Zone (VHFHSZ) but it is within a Local Responsibility Area (LRA) and designated as Moderate Fire Hazard Severity Zone (MFHSZ) and directly adjacent to a VHFHSZ within an LRA. As a result, the refined project is now designated at a lower-level of wildfire risk than assessed in the 2011 IS/MND. Grand View Avenue is the designated dividing line between the MFHSZ and the VHFHSZ as identified in Cal Fire's updated Fire Hazard Severity Zone (FHSZ) Maps. The Sierra Madre disaster routes consist of the Interstate 210 and New York Dr./N. Rosemead Blvd. to the south and west respectively which are approximately 1 mile to the south and west respectively. The refined project will not increase in attendance and will maintain the 2011 IS/MND allowable capacity enrollment of 400 students. The site terrain is on an approximately 6-percent southerly gradual slope with a moderately mild climate, will not produce enough airflow to generate a windstorm most of the year, and located within a in a highly urbanized approximately 0.6-miles south of the San Gabriel Mountains. In addition, there are two fire hydrants located along Michillinda Avenue, two are along Grand View Avenue, and one is along W. Highland Avenue along the surrounding right-of-way of the campus. Furthermore, all improvements will be within the existing property, comply with the California Fire Code (Title 24, California Code of Regulations, Section 9) and the Los Angeles County Fire Code (Title 32, Los Angeles County Code of Ordinances) as well as building codes and clearances. There will be no road closures or	MM-12 MM-13
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	**Not evaluated in 2011 MND.**		☒	☒	☒		
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	**Not evaluated in 2011 MND.**						
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	**Not evaluated in 2011 MND.**						
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	**Not evaluated in 2011 MND.**						

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			No New Impact	No Substantially More Adverse Impacts	No New Information or Change		
						alterations to roadways in the vicinity of the campus with no interference with emergency and evacuation ingress and egress so would have no impact on emergency or evacuation routes to the surrounding neighborhood. No impact would occur. The 2021 refined project elements would not create new or have a more substantial adverse effect as a result of physical changes in the environment related to Wildfire than those identified in the 2011 IS/MND. The 2021 refined project elements would include the construction of three new buildings as part of the lower school campus with a new playground and sport court; minor changes as part of the upper school campus with a small addition on the northern façade of the existing visual/performing arts building, the interior conversion of the caretaker's cottage to flexible classroom space, and new surface parking; and interior use changes to the Villa. The main Villa is a height of 45 feet high and the tower rounds off at approximately 60 feet tall, which are screened by existing mature trees along the perimeter of the property. The 2021 refined project is not within an SRA or lands classified as VHFHSZ; nor within a flooding, landslide, mudflow, or hillside areas; not anticipated to impair or obstruct emergency response or evacuation plans; and not anticipate significant impacts regarding wildfire pertaining to exacerbated wildfire risk or the potential for loss, injury or death. Therefore, as with the approved project, the 2021 refined project elements would not obstruct or impair emergency response or evacuation plans; expose people or structures to pollutants; exacerbate wildfire risk due to natural factors; require the need for infrastructure; or causing significant risk of loss, injury or death involving wildfires, and no impact would occur. Therefore, there is no potential for the 2021 refined project elements to result in changes to the findings based on Hazards and Hazardous Materials questions G and H or potential to exacerbated risk based on review for wildfire. As specified in the 2011 Mitigation Monitoring Plan, completion of the Mitigation Measures Hazards 12 and 13 shall be monitored and enforced by Alverno Heights Academy and the City as the lead agency.	

[i] City of Sierra Madre. March 2011. Mitigated Negative Declaration and Initial Study for: Alverno High School Master Plan. Prepared by: The Planning Center.

[ii] California Department of Conservation. 2018 data. California Important Farmland Finder. https://maps.conservation.ca.gov/DLRP/CIFF/

[iii] Department of Toxic Substances Control. EnviroStor - 200 N Michillinda Ave, Sierra Madre, CA 91024. Accessed July 21, 2021. https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=200+N+Michillinda+Ave%2C+Sierra+Madre%2C+CA+91024

[iv] City of Sierra Madre Municipal Code. Title 7 Stormwater Pollutant Elimination, Chapter 7.08 Pollutant Source Reduction. Accessed July 19, 2021. https://library.municode.com/ca/sierra_madre/codes/code_of_ordinances?nodeId=TIT7STPOEL_CH7.08POSORE_7.08.030NEDECO

[v] City of Sierra Madre Municipal Code. Title 15 Buildings and Construction, Chapter 15.58 Low Impact Development. Accessed July 19, 2021. https://library.municode.com/ca/sierra_madre/codes/code_of_ordinances?nodeId=TIT15BUCO_CH15.58LOIMDEPL_15.58.010PU

[vi] Alverno Heights Academy 2021 Master Plan Update. July 2021. W:\Projects\1485\1485-044\Data\2021 Master Plan Documents\Master Plan Update

[vii] City of Sierra Madre. July 2021. 2020 Urban Water Management Plan. https://www.cityofsierramadre.com/UserFiles/Servers/Server_212309/File/Departments/Public%20Works/Final%20Draft%20Sierra%20Madre%202020%20UWMP.pdf

[viii] Los Angeles County, Department of Regional Planning. May 2014. Figure 9.6: Mineral Resources. In the Los Angeles County General Plan 2035. https://planning.lacounty.gov/generalplan/figures2015

[ix] California Resources Agency, Division of Mines and Geology, State Geologist. 1994. Plate 1B: General Mineral Land Classification Map of Los Angeles County - South Half. In the Open File Report 94-1A. By Russel V. Miller

[x] City of Sierra Madre. Adopted January 28, 2014. 2014-2021 Housing Element. https://www.cityofsierramadre.com/cityhall/departments/planning_community_preservation_department/housing_element_update

[xi] City of Sierra Madre, Fire Department. 2020 Annual Report. https://www.cityofsierramadre.com/cityhall/departments/fire_department

[xii] City of Sierra Madre, Fire Department. Department Overview. Accessed July 19, 2021. https://www.cityofsierramadre.com/cityhall/departments/fire_department/administration

[xiii] Alverno Heights Academy 2021 Master Plan Update. July 2021. W:\Projects\1485\1485-044\Data\2021 Master Plan Documents\Master Plan Update

[xiv] City of Sierra Madre. Police Department Annual Report 2018. Accessed July 19, 2021. https://www.cityofsierramadre.com/services/public_information/annual_reports

[xv] Alverno Heights Academy 2021 Master Plan Update. July 2021. W:\Projects\1485\1485-044\Data\2021 Master Plan Documents\Master Plan Update

[xvi] Broadband Now. Internet Providers in Sierra Madre, CA (91024). Accessed July 19, 2021. https://broadbandnow.com/California/Sierra-Madre?zip=91024

[xvii] City of Sierra Madre. Adopted July 14, 2015. General Plan. https://www.cityofsierramadre.com/cityhall/strategic_planning/general_plan

[xviii] City of Sierra Madre. May 2015. Section 5.13 Utilities and Service Systems. In the Sierra Madre General Plan Update Draft EIR. State Clearinghouse No. 1995101004. https://www.cityofsierramadre.com/cityhall/strategic_planning/general_plan

[xix] CalRecycle. SWIS Facility/Site Activity Details Scholl Canyon Landfill (19-AA-0012). Accessed July 19, 2021. https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/3531?siteID=1000

Appendix A

Tree Preservation Report

Consulting Arborist's Report

Tree Preservation Report

For: Alverno Heights Academy

Prepared for: **Ms. Julia Fanara**
Alverno Heights Academy
200 N. Michilinda Ave
Sierra Madre, CA 91024

Prepared by: **Greg Applegate, ASCA**
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Tustin, CA 92780

Date: **January 20, 2021**

Table of Contents

Introduction

Project Background

This site has a long and interesting history and is now a registered historic property. Before the school, the site was a large residential estate. The Villa del Sol d'Oro was the stately home of Dr. & Mrs. Barlow, completed in 1928. Five years after his passing the property and residence was sold to the Sisters of St. Francis. It has been a school for the last 60 years.

Alverno Heights Academy is planning a number of changes that will impact adjacent trees, including several protected trees on the lower campus. This 13-acre site is located on Michilinda, between Highland, Wilson, and West Grandview, in the City of Sierra Madre. Many valuable old trees enrich the quality of this beautiful campus setting. The school wishes to better use the ample spaces provided here.

The school would especially like to protect larger specimens, unusual trees like the Morton Bay fig or Queensland Kauri, and, of course, the protected trees. The tree report will help planners and designers avoid the protected trees as much as possible. The City is requiring that parking be added adjacent to several oaks, so Arborgate Consulting was asked to document the trees north of the prayer garden. The City requires a "tree survey" to work around the "protected trees" and permits to remove or prune any.

The City Tree Advisory Commission requires: a site plan showing; the location of the trunks of all protected trees in the area impacted by the project; the tree species; their trunk diameter (DBH); their driplines measured at 4 compass points and drawn to scale; proposed treatments for the trees (pruning, removal, etc.); photographs of the site illustrating all the protected trees ; a professional report on the condition of the affected trees; an analysis of the impact on the trees; and recommended actions, mitigation measures, or construction monitoring of the trees. This report is intended to guide development safely around as many protected trees located on this site as possible.

The school is now planning to add a Lower School (TK-8th Grades) to the southwest portion of the campus, through an amendment to the 2011 Master Plan. The school requires an update to the Tree Preservation Report in the southwest portion of the campus. Tree Preservation Report will guide laying out the classrooms and facilities for the Lower School.

Assignment

This consultant was engaged by Ms. Julia Fanara, the Head of School, to provide this Tree Survey for the proposed construction at the lower west campus. Arborgate Consulting was retained to review and provide an arboricultural evaluation of about 80 trees' (<4" DBH) health and condition, professional opinions and report as appropriate for the City of Sierra Madre. The provided aerial was used to update the previous tree map. Actual surveyed locations are the responsibility of the school. Having experience in Sierra Madre, and using City of Sierra Madre's Tree Preservation and Protection Ordinance as a guide, special attention will be given to oaks and other "protected trees" as defined by the City Ordinance (12.20).

According to Chapter 12.20 of the City Code, "Tree Preservation and Protection", section 12.20.020 Definitions - The protected species required to be included in my site survey and this report are: *Quercus agrifolia*, coast live oak; *Quercus engelmannii*, mesa oak; *Juglans californica*, southern California black walnut; and *Platanus racemosa*, western sycamore. Only protected trees over four inches in trunk diameter at four feet above natural grade are required to be included.

Trees growing on school grounds could potentially fail and cause injury to the children or staff. However, I was not retained to perform a detailed hazard analysis of each tree. That work ought to be contracted for after the construction at the school is completed.

Executive Summary

Existing Conditions

There were 13 protected oak trees within the designated area, but no California sycamores or walnuts. The oaks are mostly in good health and condition. However, some surrounding conditions jeopardize their health. The irrigation of turf under the oaks, artificial turf under the oaks, and soil compaction can reduce their health, vigor and disease. Anything that harms the roots puts them at risk of disease. The 13 oaks are all in adequate to good health, but have various structural defects.

In addition, several large specimens are notable and worthy of special care and protection. They provide historical context and scale for the large historic villa. The huge Morton Bay fig, the rare Queensland Kauri, the large Indian laurel and several of the larger palms, particularly the Canary Island date palms and Pindo palms require specialized attention and protection.

On the other hand, many of the older carobs and crowded elms are detracting from the character of the overall property. The carobs have broken and split limbs and internal decay. The elms above the temporary classrooms have formed a crowded thicket.

Initial Recommendations

Considering the City's policy and ordinance, planning for construction should be prioritized to avoid impacting or removing the protected oaks, then unique specimens and then useful large trees. Locate new parking or new facilities away from the oaks and specimen trees as much as possible. Protect the oaks near construction, during construction with 6-foot-high fencing at least at the listed health clearance, and hopefully outside the dripline. The removal of any protected trees must be mitigated according to City guidelines. Consider that during your life time or mine, there is no way to replace these large specimens. New ones can be planted, but it will take a life time to reach the size they are now.

This may be the time to consider removal of broken and decaying carobs, or they could be removed gradually over time. The previously mentioned Pindo palms are valuable, but are crowded and suppressed by surrounding trees and are declining in health and appearance, but at the right time of year could easily be transplanted to better locations. The cluster of crowded elms above the temporary classrooms should be thinned and spaced this winter.

The artificial turf below some of the oaks north of the prayer garden should be removed immediately. Mulch makes a much better ground cover. Wherever children are invited to play below trees, such trees should be regularly inspected for risk. Pruning of such trees needs to focus on correcting structural weaknesses.

Findings

Guidelines, Standards, and Limiting Conditions

The following report contains the elements necessary to fulfill the City Tree Advisory Commission requirements: an attached site plan (to be drawn by others) with the location of the trunks of all protected trees in the area impacted by the project (to be surveyed by others); the tree species; their trunk diameter (DBH); their driplines at 4 compass points and drawn to scale; proposed treatments for the trees (pruning, removal, etc.); photographs of the site and all the protected trees. a professional report on the current condition of the trees; an analysis of the impact of construction on the trees; and recommended actions, mitigation measures, and/or construction monitoring of the trees.

American National Standards Institute (ANSI A-300) standards and International Society of Arboriculture (ISA) Best Management Practices shall guide pruning and general tree care. The ISA publication *Trees and Development*, by Nelda Matheny and James Clark was heavily relied upon for establishing clearance or protection zones.

Measurements of tree caliper were made four feet above grade using the City standard instead of the prevailing industry standard of four and a half feet. Measurements were made at various other heights as necessary to represent the most accurate trunk caliper if heavy lower branching or deformity made the standard inaccurate. In such cases, instructions in the Guide for Plant Appraisal, 9th edition, pages 45 to 49 were followed. A Biltmore stick or diameter tape was used for measurements of larger trees. Smaller trees were measured by calipers.

More intensive investigation of hidden conditions was not undertaken and the full extent of decay, root injury or deformity, and other hidden defects was not determined. A detailed risk assessment was not undertaken nor requested. The relative safety of each tree can only be estimated after all the effects of site construction are completed.

Conditions Affecting Tree Health

The school site is on an alluvial fan below the foothills. The site slopes gradually from north to south. Generally, being on an alluvial fan means good percolation rates, and therefor deeper rooting, except where there is turf irrigation.

The surrounding land use is residential. The school has gradually developed on the site of the earlier large estate. There is an attractive large old residence (Villa) on site below the main classroom buildings. Additional temporary classrooms have been added by the Prayer Garden.

Field data was collected on January 14, 2021. Thirteen protected coast live oaks, *Quercus agrifolia*, but no other protected species were found in the study area. No California sycamores or California black walnuts, *Juglans californica*; or Engelmann oaks, *Quercus engelmannii*, were observed on the subject portion of the site All the oaks are mature California live oaks, *Quercus agrifolia*. Many of these "native" trees appear to have been planted and irrigated by secondary water from the lawns, prior lawns, and other exotics that occupy or occupied this site. That is, I do not believe any of these oaks stood before the residence was built. I have documented coast live oaks up to 42" inches that were no more than 80 years old. The old home and other buildings that occupy this site have new surrounding ornamental plantings, which are being irrigated.

Most of the trees on site are in fair to good health. Very few have poor health. However, the crowded conditions in some of the groups have caused many of them to be misshapen, one-sided, shaded and sparse. Some limb failures have occurred in older carobs, which is not uncommon in carobs of this age. They also decay easily.

The 13 coast live oaks had fair to good average overall condition. The structural condition rating for coast live oaks ranged from fair to good (C- to B). An "A" is considered excellent condition, equal to nursery grown and trained trees. None were rated A. The average structural condition rating for the 13 coast live oaks was closer to B than C. The lowest condition rating was C-. Only one oak was rated as low as C- None of the foliage feeding insects commonly found on coast live oaks were observed. Oak root fungus, *Armillaria mellea*, is likely to be infecting most of these trees as a result of irrigation for the turf and other exotics. The main expert on oak root fungus believes that all oaks are infected to some degree. Typical structural defects included codominant branching, included bark, or one-sided branching due to crowding. They ranged in size from a trunk caliper of 6 inches to 39 inches diameter at breast height.

The primary factors reducing the protected trees' health are soil compaction and crowding. Years of foot and vehicle traffic over moist soil have caused soil compaction. Water penetration, root penetration and gaseous exchange are all hampered by soil compaction, but indications are that these trees are still in satisfactory health. The trees have formed their structure to conform to the proximity of each other, response to Santa Ana winds, and competing for sunlight. Removal of trees in the various groupings may leave a large gap or expose flat or bare sides on the remaining trees.

The protected trees near construction are described and discussed below, in the Matrix of Findings.

Health and Condition

There were no significant pest or disease problems observed. However, only five of the thirteen protected oak trees were found suitable for transplanting, but a serious effort to protect them in place must be made before deciding to transplant any. Almost all of the trees would be benefited by *professional* pruning this year, but they do not need *annual* pruning. The trees in irrigated areas have come to depend on some supplemental irrigation. Therefore, continuing occasional irrigation, depending on rainfall during fall and winter would benefit them. Those designated to remain should survive the stress of construction activity *if* sufficient clearance and protection is provided. Native oak trees of this size are highly valuable and loved by Californians. They also are protected by City ordinance, Chapter 12.20.

Matrix of Findings

Tree #	Species	DBH	Ht.	N	W	S	E	Health	Structure	Comments
27	Olea europea	12	20	10	8	10	8	B	C	Cod inc Sp leans
28	Olea europea	10+11+11	32	8	14	18	15	C	D	TO Xing split Sp
29	Pinus pinea	31	70	28	28	20	18	C	D	Paving damage cod OP Sp Lt
30	Olea europea	8+9	20	14	9	12	8	B	C-	TO epi topd
31	Eucalyptus globulus	38	65	7	15	16	9	C	C-	1sRF cod Hd OP Sp
32	Quercus agrifolia	20	30	12	26	23	18	C	C-	Cod in OP FC Lt
33	Ulmus parvifolia	16	28	18	18	23	18	C	C	Cod OP Hd Lt
34	Olea europea	6+7+9	24	14	15	16	14	C	C-	Cod Xing TO OP mDk epi
35	Ceratonia siliqua	18	20	5	16	16	20	C	D	B-canker cod S-crk DL Dk
36	Olea europea	5+4+4+4+3	20	9	14	12	6	A	D	Cod Xing epi 5"-T-inj
37	Jacaranda mimosifolia	7.5+4	30	8	14	10	1	C	D	1s Xing Cr#38 epi
38	Jacaranda mimosifolia	14"b	30	4	14	14	8	C	D	Cod inc LB epi DL Xing Cr#37 &39
39	Ulmus parvifolia	15	45	30	28	14	0	C	C-	Cod leans 1s Cr#38
40	Ulmus parvifolia	8.2	28	16	30	20	0	C	C-	1s leans T-bow
41	Ulmus parvifolia	13	40	8	25	20	20	C	B	Cod Cr
42	Quercus agrifolia	17	35	18	18	20	16	B	C	Old FC, cod
43	Ulmus parvifolia	13	30	0	12	10	8	C	D	Sup by #42 Hd topd
44	Ulmus parvifolia	9	35	0	10	18	14	C-	D	HANGER DW Cr
45	Ulmus parvifolia	19	45	30	18	24	24	C-	D	Hd Xing DL OP Sp
46	Quercus agrifolia	35	40	30	30	23	24	C	C	Cod inc OP Lt Sp, artificial turf on RZ
47	Quercus agrifolia	22	35	18	15	27	16	C	C	Cod OP Lt Sp, artificial turf over RZ
48	Ulmus parvifolia	10+4	30	3	0	20	25	C	D	Cod Xing 1s Cr
49	Schinus terebinthifolius	6+5+4+4+4+3	18	3	3	12	9	D	D	Sp thicket REMOVE weed
50	Olea europea	6.2+7.2	16	16	18	8	7	B	C	Cod Xing epi
51	Ceratonia siliqua	7+10	20	6	12	12	4	C-	D	Cod inc Dk, rodent inj, Hd Db epi

Tree #	Species	DBH	Ht.	N	W	S	E	Health	Structure	Comments
52	Cedrus deodara	15	50	9	14	20	6	A	A	NoRF - fill over RZ
53	Ceratonia siliqua	12+12+12	20	12	16	20	16	C	D	Bushy to the ground, Db Xing crk
54	Ceratonia siliqua	13+7+9	20	14	16	20	12	C	D	Bushy to the ground, Db Xing Dk
55	Quercus agrifolia	6	32	14	14	18	12	B	B	Cod
56	Ceratonia siliqua	12+16+24	40	12	16	16	14	B	D	TO Cod Dk Hd epi
57	Cedrus deodara	14	60	18	10	18	17	A	A	Cr#56
58	Ceratonia siliqua	6+8	18	6	9	9	9	D	D	Db SSpts DkB epi
59	Cedrus deodara	23	32	14	20	18	20	A	D	Topd 2long
60	Brachychiton populneus	7.2	24	7	4	7	8	B	C	Cod top bowed
61	Ceratonia siliqua	16+14+15	20	15	15	15	16	C	D	Dk Db epi, bushy to the ground, break
62	Eucalyptus viminalis	12+12+12	50	18	24	26	10	B	C	Cod inc 2long
63	Jacaranda mimosifolia	10	35	20	8	12	14	C	C-	TO cod Lt Sp Cr#64
64	Jacaranda mimosifolia	11+10+11+10	40	8	27	64	15	B	C	Cod inc Dk epi Cr#63
65	Ficus macrophylla columnaris	64	100	32	33	35	45	A	B	Cod inc Rinj DL long EH
66	Phoenix canariensis	18	80	12	12	12	12	B	C	Hourglass gaffed
67	Cinnamomum camphora	26+26+24+24+20	35	20	15	15	15	D	D	Topd Hd epi OP
68	Quercus agrifolia	7	20	7	6	7	8	C	C	Sup by #67 cod
69	Ulmus parvifolia	10 @ 3'	24	12	14	12	12	C	C-	Cod inc Db epi S-inj
70	Quercus agrifolia	21	50	22	22	33	12	B	C	Cod inc Cr#71 2long
71	Quercus agrifolia	36	60	30	30	36	6	B	C	Cod inc 1s 2long
72	Quercus agrifolia	12	42	6	27	22	6	B	C	Cod inc 1s
73	Ulmus parvifolia	13	42	18	10	18	16	C	C	Cod Hd, hanger
74	Agathis robusta	23	90	10	14	14	16	B	B	OL
75	Cinnamomum camphora	17	35	10	14	14	2	D	D	Brk Db sup by #76
76	Quercus agrifolia	39	50	30	32	36	32	B	C	Cod inc 2long
77	Lophostemon confertus	32	65	5	22	40	18	B	C	1s cod leans

Tree #	Species	DBH	Ht.	N	W	S	E	Health	Structure	Comments
78	Arbutus unedo	12+14+11	30	14	20	20	12	C-	B	mDb epi mDk
79	Ficus microcarpa nitida	34+16+16+14+16	60	55	51	50	45	B	C-	Cod inc Sh EH
80	Phoenix canariensis	18	24'th	12	12	12	12	B	C	Hourglass gaffed, mod skirt
81	Cedrus deodara	20	32	17	14	16	12	C	C	Cod inc LB Xing Sp 1sRF
82	Ficus sp.	24 @ 18"	30	10	20	18	16	D	D	Db crk Sun scald cod inc Dk
83	Phoenix canariensis	18	24'th	12	12	12	18	C	A	Sp thicket REMOVE weed
84	Citrus sinensis	15 @ 1`'	22	13	15	15	12	C	C-	Cod inc mDb chlor
85	Quercus agrifolia	10	30	13	16	14	14	B	B	NoRF 15g pots on RZ + fill
86	Morus alba	5+5+6	20	16	20	20	14	C-	D	Top split cod, sup by street trees
87	Quercus agrifolia	10	22	20	14	8	20	B	B	Cr#86 leans north
88	Quercus agrifolia	12	30	22	14	6	8	B	C	T-bow leans north
89	Ulmus parvifolia	23	50	30	30	25	14	C	D	Brk hanger crk cod
90	Butia odorata	13'th	13'th	7	7	7	7	B	B	Cr by surrounding trees
91	Butia odorata	13'th	13'th	7	7	7	7	B	B	Cr by surrounding trees
92	Butia odorata	14'th	14'th	7	7	7	7	B	B	Cr by surrounding trees
93	Butia odorata	12'th	12'th	7	7	7	7	B	B	Cr by surrounding trees
94	Butia odorata	12'th	12'th	7	7	7	7	A	A	Near perfect
95	Pinus canariensis	36	90	25	27	27	25	A	B	Lost top, 2long, base over curb
96	Pinus canariensis	39	100	25	22	25	27	B	B	SW lift, 2long Lt epi, base over curb
97	Pinus canariensis	44	90	28	30	28	25	A	B	SW lift, 2long, base over curb
98	Pinus canariensis	42	90	25	30	28	30	A	B	SW lift, 2long, base over curb
99	Phoenix canariensis	15'th	15'th	12	12	12	12	C	B	Cr by Washingtonia mSp fill in RZ

*Tree numbers start at 27. Arboricultural terms are explained in the Glossary

Abbreviations in the Matrix

Underlined abbreviations indicate severity. An "m" in front of an abbreviation indicates minor significance e.g., mDb = minor dieback. The previous matrix and the one found in Recommendations can also be presented as an Excel file, via e-mail or compact disk.

1s = one-sided
1sRF = one-sided root flare
2long = too long
Brk = broken
Chlor = chlorotic
Circ = circling roots
Cod = codominant
Cr=crowded
Crk = cracked limb
CrS = crowded limbs
Db=dieback
DBH – Diameter at breast height, i.e. 4.5'
Dk = decay, DkB = decayed base
DL = dogleg
DLS = dogleg scaffold limb
DLT = dogleg trunk
Dk=decay
EH = end heavy
Epi = epicormic shoots
FC = flush cut
Hd = headed back
Inc = included bark
Inj = injury e.g. Rinj = root injury
LB = low branched
Lt = lion-tailed
Mb = Mower damage
NoRF = no root flare
OL = over-lifted
OP = over-pruned
RZ= root zone
S = scaffold limb(s)
Sh = shallow rooted
Sp = sparse
SSpts = stump sprouts
Sup = suppressed
SW = sidewalk/walkway
T = trunk
T-bow'd = trunk bowed
Tinj = trunk injury
TO = tear out
Xing = crossing branches

Photographic Documentation

#27 Olive bows out toward the street

#28 Olive – note crossing trunk

#29 Italian stone pine

#30 Olive

#31 Blue gum

#32 Coast live oak

#33 Elm

#34 Olive

#35 Carob

#36 Olive

#37 & 38 Jacarandas

#39, 40 & 41 Elms

#46 Coast live oak

#46 Coast live oak

#47 Coast live oak

#47 Coast live oak

#42 Coast live oak

#42 Coast live oak

Trees #67 to 78 are in this grove. Pindo palms #90 to 94 are mixed in mostly under the larger trees.

#52 Deodar cedar and #53 & 54 carobs

#55 Coast live oak

#56 Carob

#57 Deodara cedar

#58 Carob

#59 Deodar cedar

#60 Bottle tree

#61 Carob

#62 Ribbon gums

#63 & 64 Jacarandas

#65 Morton Bay fig

Dead and rotten tree with bees inside.

#66 Canary Island date palm- note hourglass below the head

#67 Camphor, #68 Coast live oak on the right

#69 Elm

#70 & 71 Oaks

#72 Coast live oak

#72 Coast live oak

#72 Coast live oak

#73 elm, with Pindo palm #94 behind.

#74 Queensland kauri

#75 Camphor (left) #76 Coast live oak in the middle

#77 Red flowering gum

#78 Strawberry tree

#79 Indian laurel

South side of the Indian laurel root crown – note dead areas

North side of the root crown – note included bark between trunks

#80 Canary Island date palm

#81 Camphor

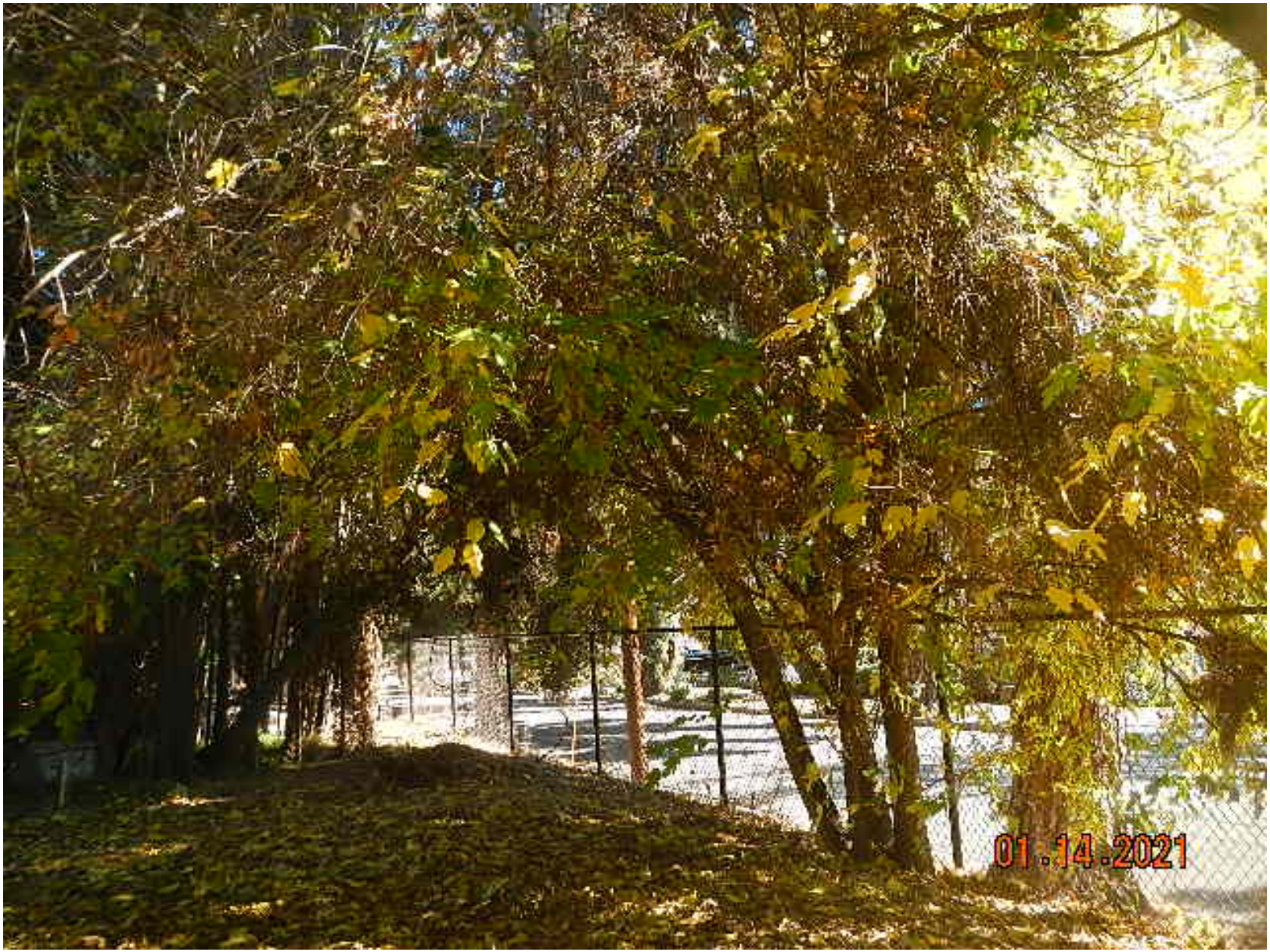
#82 Unknown Ficus species

#83 Canary Island date palm – note crowding Mexican fan palms

#84 Valencia orange

#85 Coast live oak

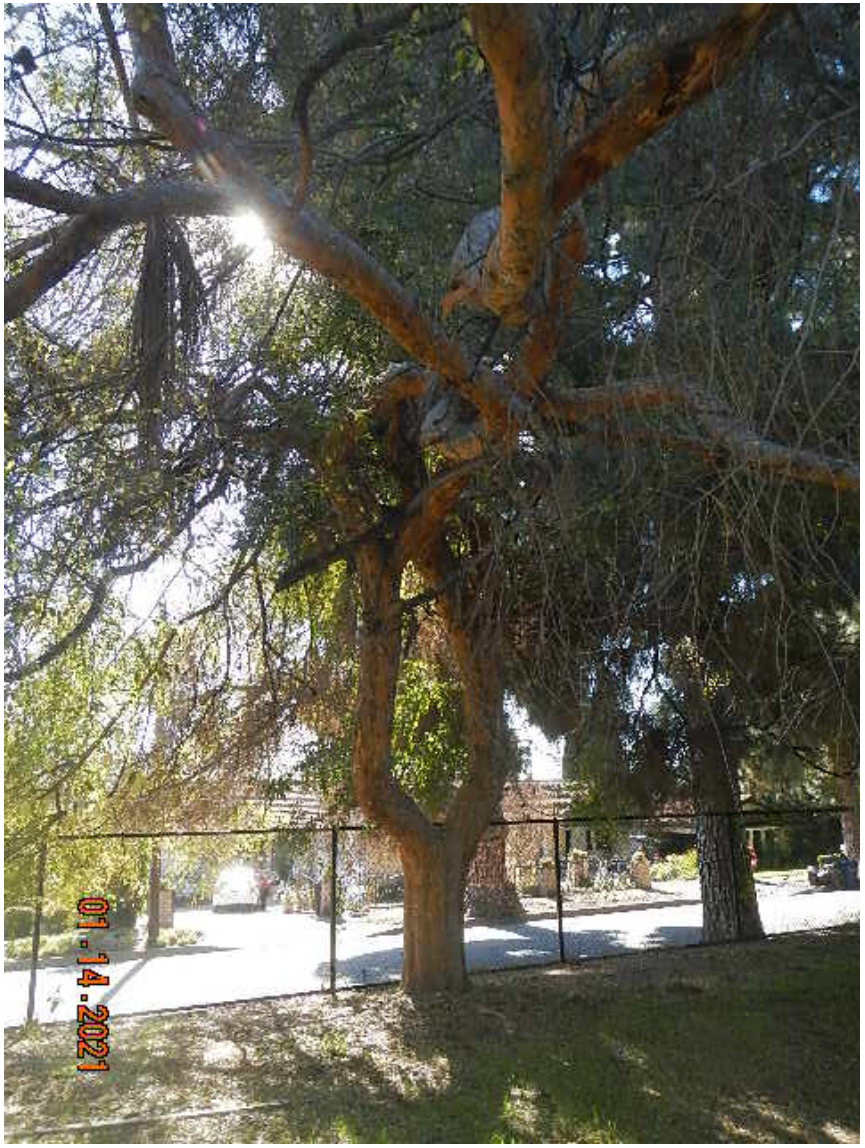
#85 Coast live oak



#86 Mulberry

#87 Coast live oak

#88 Coast live oak



#89 Elm

#89 Elm

#90, 91 & 92 Pindo palms

#98 to 95 Canary Island pines (left to right)

#97 Canary Island pine

#96 Canary Island pine

#95 Canary Island pine

#99 Canary Island date palm , California fan palms crowding

Recommendations

Summary Recommendations

Prioritize planning to avoid impacting or removing the protected oaks, then unique specimens and then useful large trees. Locate new parking and new facilities as far away from the oaks and specimen trees as possible.

Protect the oaks near construction, during construction with 6-foot-high fencing at least at the listed health clearance, and where possible, outside the dripline. The removal of any protected trees must be mitigated according to City guidelines. Consider that during your life time or mine, there is no way to replace these large specimens. New ones can be planted, but it will take a life time to reach the size they are now.

The oaks should only have mulch below their canopies. The artificial turf below some of the oaks north of the prayer garden should be removed immediately. Mulch makes a much better ground cover. Wherever children are invited to play below trees, such trees should be regularly inspected for risk. Pruning of such trees needs to focus on correcting structural weaknesses.

This may be the time to consider removal of broken and decaying carobs, or they could be removed gradually over time, but keep children away from them.

The Pindo palms are valuable, but are crowded and suppressed by surrounding trees and as a result are declining in health and appearance, but at the right time of year could easily be transplanted to better locations.

The cluster of crowded elms above the temporary classrooms should be thinned and spaced this winter.

Preservation Recommendations and Clearances

Coast live oaks have a large, spreading, but relatively shallow root system, for larger specimens often spreading 100 to 200 feet past the dripline. Most of the root system will be in the top two feet and it is unlikely that any significant amount of roots will be found below four feet deep. The most important roots are those in the top foot of soil. Unfortunately, contractors, architects, and excavators are largely unaware of this. A myth persists that oaks are immortal and have deep tap roots. While younger oaks have a high tolerance for construction impacts, protecting as much of the root zone as possible will be essential to preserve the health and beauty of these more mature oak trees.

Truly native oaks are adapted to dry conditions and can survive with only rainfall when they are not as crowded. It is possible that after construction, many of these oaks will not have their complete root system. To some degree, most of these oaks have also become dependent on irrigation. Some irrigation in the right season can assist oak growth and health, but frequent turf irrigation is a significant health risk. Frequent irrigation during the warm seasons can introduce conditions ideal for oak root fungus and similar diseases. The future landscape design must avoid planting turf, water loving plants or ground covers near these trees.

Many cities and counties establish protection zones based on the dripline of the tree. For example, Los Angeles County standards require a protection zone five feet outside the drip line. However, a protection zone based on the age of the trees, their health and trunk caliper is more realistic and effective. Consider that the most important roots for leaning trees are the roots opposite the lean, which a dripline-based standard would not protect. A standard based on protecting the dripline, or even five feet beyond it, will not protect the roots opposite the lean. Such a standard does protect a spreading tree's canopy. The clearance matrix to follow considers both protection of the canopy and important tension roots on leaning trees. If the protection zone protects the canopy and the root zone, the tree will be adequately protected. If an occasional long limb projects beyond a caliper-based protection zone, and it can be trimmed back, as long as more than 20 percent of the canopy isn't removed. For this reason and for access reasons, clearance pruning should be professionally done prior to fencing off the protection zone. Do not use gardeners or day laborers to do clearance pruning. All pruning must be supervised by a certified arborist.

Oaks are quite valuable. The company hired to do the recommended pruning is in the position of either helping them or possibly ruining them. Caution and skill are necessary to make the improvements to the oaks' canopies before the construction

begins. While many people consider clearance pruning to be a simple "no-brainer", all pruning done on these trees should be well planned and timed, and construction traffic well-routed to avoid undesirable long-term consequences. One afternoon of unskilled tree cutting can irrevocably deform a beautiful 100-year-old tree.

Clearance / Protection Zones

The City's Tree Preservation and Protection Ordinance 12.20.110.6 D.1 (pg 280-10) stipulates a minimum protection zone "of three times the trunk diameter unless because of the species affected, a lesser distance is adequate". This standard is not adequate for the long term survival of native trees.

The protection zone should be at least as large on the side opposite a leaning or one-sided canopy, more would be appropriate. The tension roots provide more support than the compression roots. The protection zone must be fenced early to keep contractors and others from driving, parking, storing, or dumping under protected trees. Fencing means 6-foot high chain-link fence around the tree.

Relatively, coast live oaks have good tolerance of root injury. Although they are drought tolerant, in nature they survive by having very long roots that draw water from a very large area. If roots are cut or the root zone reduced, supplemental irrigation may be necessary at least during the fall, winter, and spring. Running soaker hoses or drip systems for a few hours, not frequent light irrigations is best for the trees. Be very careful to avoid summer irrigation, unless they are newly planted.

Young vigorous coast live oaks can tolerate careful root cutting as close as six inches away for every inch of trunk caliper. Mature healthy coast live oaks should have nine inches of clearance for every inch of trunk diameter. An over-mature oak should have a foot and a quarter clearance for every inch of caliper. All cuts should be clean cuts, not torn or ragged.

Several trees in the following matrix have protection zones slightly less than the widest part of the canopy. In most cases, these are wide spreading trees that only need to have overly long end-heavy limbs "reduced" back to a significant side branch. (per ANSI A-300, part 1 standards and ISA Best Management Practices). The roots are out of sight, but a very real and necessary part of the tree!

The City focuses on native oak trees, which are wonderful trees, but this site has other wonderful and valuable trees that also need protection and care. No amount of words, spoken or in reports, provide as much protection as secure chain-link fencing. The construction supervisor also needs to be on-board with the protection of the trees.

Clearance / Protection Zone Matrix

The following clearances/protection zones are determined by health, trunk caliper, and species as per a chart found in *Trees and Development*, by Matheny and Clark, 1998, an ISA publication. Dripline based standards do not reflect the differences in the stature of trees, health, lean and species. A wide spreading oak has the same requirements as a more vertical oak of the same trunk diameter. For this reason, I prefer a standard based on trunk diameter, health, species and lean for clearance.

#	Species	DBH	Ht.	N	W	S	E	Comments	Clearance	Recommendations
27	Olea europea	12	20	10	8	10	8	Cod inc Sp leans	9	Prune as needed
28	Olea europea	multi	32	8	14	18	15	TO Xing split Sp	14	Prune as needed
29	Pinus pinea	31	70	28	28	20	18	Paving damage cod OP Sp Lt	23.25	Reduce pruning
30	Olea europea	multi	20	14	9	12	8	TO epi topd	11	Prune as needed
31	Eucalyptus globulus	38	65	7	15	16	9	1sRF cod Hd OP Sp	28.5	Prune less. Cr-res
32	Quercus agrifolia	20	30	12	26	23	18	Cod in OP FC Lt	15	Prune less. Cr-res
33	Ulmus parvifolia	16	28	18	18	23	18	Cod OP Hd Lt	12	Prune less. Cr-res
34	Olea europea	multi	24	14	15	16	14	Cod Xing TO OP mDk epi	15	prune less
35	Ceratonia siliqua	18	20	5	16	16	20	B-canker cod S-crk DL Dk	13.5	Remove
36	Olea europea	multi	20	9	14	12	6	Cod Xing epi 5"-T-inj	10	Delay Cr-res 1-2 yrs
37	Jacaranda mimosifolia	7.5+4	30	8	14	10	1	1s Xing Cr#38 epi	9	Remove
38	Jacaranda mimosifolia	14"b	30	4	14	14	8	Cod inc LB epi DL Xing Cr#37 &39	12	Cr-res
39	Ulmus parvifolia	15	45	30	28	14	0	Cod leans 1s Cr#38	11.25	Space - remove small elms
40	Ulmus parvifolia	8.2	28	16	30	20	0	1s leans T-bow	6.15	Remove
41	Ulmus parvifolia	13	40	8	25	20	20	Cod Cr	9.75	C-red
42	Quercus agrifolia	17	35	18	18	20	16	Old FC, cod	12.75	C-red to limit size
43	Ulmus parvifolia	13	30	0	12	10	8	Sup by #42 Hd topd	9.75	Space - remove small elms
44	Ulmus parvifolia	9	35	0	10	18	14	HANGER DW Cr	10	Remove hanger & DW ASAP
45	Ulmus parvifolia	19	45	30	18	24	24	Hd Xing DL OP Sp	14.25	Space - remove small elms

#	Species	DBH	Ht.	N	W	S	E	Comments	Clearance	Recommendations
46	Quercus agrifolia	35	40	30	30	23	24	Cod inc OP Lt Sp artificial turf on RZ	26.25	Remove turf and add mulch
47	Quercus agrifolia	22	35	18	15	27	16	Cod OP Lt Sp, artificial turf over RZ	16.5	Remove turf and add mulch
48	Ulmus parvifolia	multi	30	3	0	20	25	Cod Xing 1s Cr	12	Space - remove small elms
49	Schinus terebinthifolius	multi	18	3	3	12	9	Sp thicket REMOVE weed	N/A	Remove
50	Olea europea	multi	16	16	18	8	7	Cod Xing epi	12	Reduce Xing
51	Ceratonia siliqua	multi	20	6	12	12	4	Cod inc Dk, rodent inj, Hd Db epi	9	C-red
52	Cedrus deodara	15	50	9	14	20	6	NoRF - fill over RZ	11.25	Remove fill
53	Ceratonia siliqua	multi	20	12	16	20	16	Bushy to the ground, Db Xing crk	16	Remove dead
54	Ceratonia siliqua	multi	20	14	16	20	12	Bushy to the ground, Db Xing Dk	16	Remove dead
55	Quercus agrifolia	6	32	14	14	18	12	Cod	11	Train
56	Ceratonia siliqua	multi	40	12	16	16	14	TO Cod Dk Hd epi	26	C-red
57	Cedrus deodara	14	60	18	10	18	17	Cr#56	10.5	no pruning
58	Ceratonia siliqua	6+8	18	6	9	9	9	Db SSpts DkB epi	9	Remove
59	Cedrus deodara	23	32	14	20	18	20	Topd 2long	19	Remove
60	Brachychiton populneus	7.2	24	7	4	7	8	Cod top bowed	6	protect
61	Ceratonia siliqua	multi	20	15	15	15	16	Dk Db epi, bushy to ground, break	18	Remove
62	Eucalyptus viminalis	multi	50	18	24	26	10	Cod inc 2long	20	Reduce limbs
63	Jacaranda mimosifolia	10	35	20	8	12	14	TO cod Lt Sp Cr#64	7.5	Remove
64	Jacaranda mimosifolia	multi	40	8	27	64	15	Cod inc Dk epi Cr#63	22	Cr-res
65	Ficus macrophylla columnaris	64	100	32	33	35	45	Cod inc Rinj DL long EH	60	Lightly reduce limbs
66	Phoenix canariensis	18	80	12	12	12	12	Hourglass gaffed	5	cut dead only
67	Cinnamomum camphora	multi	35	20	15	15	15	Topd Hd epi OP	40	Remove
68	Quercus agrifolia	7	20	7	6	7	8	Sup by #67 cod	7	Train
69	Ulmus parvifolia	10 @ 3'	24	12	14	12	12	Cod inc Db epi S-inj	11	Cr-res
70	Quercus agrifolia	21	50	22	22	33	12	Cod inc Cr#71 2long	15.75	structural pruning only

#	Species	DBH	Ht.	N	W	S	E	Comments	Clearance	Recommendations
71	Quercus agrifolia	36	60	30	30	36	6	Cod inc 1s 2long	27	Subordinate & balance
72	Quercus agrifolia	12	42	6	27	22	6	Cod inc 1s	9	Subordinate & balance
73	Ulmus parvifolia	13	42	18	10	18	16	Cod Hd, hanger	9.75	Subordinate & cut hanger
74	Agathis robusta	23	90	10	14	14	16	OL	17.25	no pruning
75	Cinnamomum camphora	17	35	10	14	14	2	Brk Db sup by #76	12.75	Remove
76	Quercus agrifolia	39	50	30	32	36	32	Cod inc 2long	29.25	Subordinate & balance
77	Lophostemon confertus	32	65	5	22	40	18	1s cod leans	24	Subordinate & balance
78	Arbutus unedo	multi	30	14	20	20	12	mDb epi mDk	18	cut dead only
79	Ficus microcarpa nitida	multi	60	55	51	50	45	Cod inc Sh EH	40	Reduce end weight
80	Phoenix canariensis	18	24'th	12	12	12	12	Hourglass gaffed, mod skirt	5	cut dead only
81	Cedrus deodara	20	32	17	14	16	12	Cod inc LB Xing Sp 1sRF	15	structural pruning only
82	Ficus sp.	24 @ 18"	30	10	20	18	16	Db crk SunScald cod inc Dk	22	cut dead only
83	Phoenix canariensis	18	24'th	12	12	12	18	Sp thicket REMOVE weed	5	cut dead only. Remove Washingtonia
84	Citrus sinensis	15 @ 1`'	22	13	15	15	12	Cod inc mDb chlor	15	Water
85	Quercus agrifolia	10	30	13	16	14	14	NoRF 15g pots on RZ + fill	7.5	Remove pots and fill soil
86	Morus alba	multi	20	16	20	20	14	Top split cod, sup by street trees	11	Remove
87	Quercus agrifolia	10	22	20	14	8	20	Cr#86 leans N	7.5	structural pruning only
88	Quercus agrifolia	12	30	22	14	6	8	T-bow leans N	9	structural pruning only
89	Ulmus parvifolia	23	50	30	30	25	14	Brk hanger crk cod	17.25	Cut hanger and cracked limb
90	Butia odorata	13'th	13'th	7	7	7	7	Cr by surrounding trees	4	Transplant in May
91	Butia odorata	13'th	13'th	7	7	7	7	Cr by surrounding trees	4	Transplant in May
92	Butia odorata	14'th	14'th	7	7	7	7	Cr by surrounding trees	4	Transplant in May
93	Butia odorata	12'th	12'th	7	7	7	7	Cr by surrounding trees	4	Transplant in May
94	Butia odorata	12'th	12'th	7	7	7	7		4	cut dead only
95	Pinus canariensis	36	90	25	27	27	25	Lost top, 2long, base over curb	28	City property - leave alone

#	Species	DBH	Ht.	N	W	S	E	Comments	Clearance	Recommendations
96	Pinus canariensis	39	100	25	22	25	27	SW lift, 2long Lt epi, base over curb	30	City property - leave alone
97	Pinus canariensis	44	90	28	30	28	25	SW lift, 2long, base over curb	33	City property - leave alone
98	Pinus canariensis	42	90	25	30	28	30	SW lift, 2long, base over curb	31.5	City property - leave alone
99	Phoenix canariensis	15'th	15'th	12	12	12	12	Cr by Washingtonia mSp fill in RZ	5	City property - leave alone

Protected oaks are shown in green.

Secure chain-link fencing, around the suggested protection zone, is essential to protect trees preserved in place.

Pruning

Any clearance pruning of the oaks necessitated by the height and spread of the canopy to allow construction or traffic should be overseen by a certified arborist and should take place in late summer or winter, but definitely prior to new growth. All oak pruning should be done at that time and should be limited to a maximum of 20 percent foliage removal, less if the tree is not healthy. Correcting poorly attached limbs or cracked limbs should have priority, and shortening end heavy limbs done after correcting the priority limbs. Adhering to ANSI A-300, part 1 standards must be incorporated into any contract for this work.

Prune early to provide any necessary clearance for the particular construction equipment that will be used. Consult your general contractor for this information.

Safety pruning will also be needed to correct dead, end-heavy and poorly attached limbs. As with clearance pruning above, this work should be guided by ANSI A-300 standards and no more than 20 percent foliage removal should take place, except as necessary to reduce a significant hazard. All pruning should be supervised by a certified arborist. This consultant should be present for the pruning of the first tree to make certain that a clear understanding of the standards and the intent is understood before allowing the contractor to proceed.

Do not permit other subcontractors to trim at their discretion “to get the equipment through”. All pruning requires training *and* close supervision. The trees on this campus are worth hundreds of thousands of dollars and are truly irreplaceable.

Above Ground Surface Protection

Carefully remove weeds, ground cover perennials, and grasses within the protection zone. This should be hand work, not done using anything larger than a weed whip, and then only at a safe distance from the trunk. Then apply a 4-inch-deep layer of well-composted, coarse-textured organic matter to the entire surface of the protection zone. Also remove the artificial turf, which is reducing gaseuou exchange in the root zone. It also prevents mulching the soil, which helps return organic matter to the soil, which benefits symbiotic life in the soil. It also helps moderate soil temperatures.

In tree protection matters, good fences make for good contractors. Install 6-foot-high chain link fencing at least at the above specified protection radius or clearance. This prevents the natural inclination to park trucks in the shade, and to pile supplies nearby.

Future Landscape Guidelines

Turf and other water loving ground cover under oak trees create unacceptable health risks to these valuable trees, native or otherwise. Keep turf well outside the protection zone of all oaks, and use a separate valve and irrigation system for turf or other plantings. Irrigation for adjoining plantings should not spray within ten feet of any oak trunk. If any of the oaks need additional irrigation due to loss of portions of their root systems, the system must be separated tree by tree by separate valves.

The best ground cover under these trees is mulch. If under-plantings are necessary for aesthetic reasons, use a sparse planting of drought and shade tolerant plants. The California Oak Foundation publishes a good list called “Compatible Plants Under & Around Oaks.” Plant them from one-gallon containers and irrigate them by surface laid drip tubing. Trenching to install a buried irrigation line will sever the roots, which hold the tree upright and deliver water and nutrients to the tree.

General Recommendations

Leave the trees as undisturbed as possible and give them as much space as possible. Their roots grow much wider than the canopy. They respond slowly to sudden changes in their environment. They respond slowly to injury and they recover slowly. These new campus projects will soon be used by hundreds of students and staff whose safety depends on conscientious observance of these guidelines. Nothing done to the site should compromise the stability and structural integrity of these old, heavy, living organisms.

A licensed pest control advisor should be consulted on monitoring and controlling oak tree pests. Additional stress factors such as insects must be controlled to the greatest extent practical.

General Preservation Specifications

The following specifications should be printed on every page of plans for work around or affecting protected trees.

1. The protection zone shall be fenced off with a 6-foot high chain link fence. Fencing shall remain until the final landscape phase. Do not raise or lower the grade within the protection zone, except as approved by the project arborist.
2. When a tree is removed from a larger group the base should be stump ground only, not grubbed out, as adjoining trees' roots may be damaged.
3. Prior to applying mulch or any construction activities, existing grass and weeds should be removed and immediately a 4-inch thick layer of well composted, coarse textured, organic mulch shall be installed within the protection zone. Do not place mulch in contact with the trunk, but keep it 6 inches back. Turf within the protection zone may be sprayed with herbicide and left in place prior to placing the specified mulch.
4. An arborist should review the final site layout and landscape plans and make a preliminary evaluation of the likely impacts that would result.
5. If underplanting is desired, they must be plants whose irrigation and fertilization requirements are not in conflict with the oaks. Non-living ornament, such as boulders, river rock, or mulch are preferable to any planting within the dripline.
6. Any trenching or grading should stay as far away from the protected trees as possible and use tunneling below the root zone within the protection zone. If the grade *must* be lowered or over-excavated, use a trencher to make a preliminary cut along the edge. Roots encountered should be cut cleanly and covered to protect from desiccation. Trenching in the protection zone could immediately destabilize the tree.
7. If utility lines *must* come within the protection zone of the trees, provide tunneling under the root zone versus trenching.
8. Fertilization shall be per the recommendations of a soil lab, and based on a horticultural soil analysis.
9. Signs shall be placed on the fence, which indicates that no chemicals, machinery or materials shall be placed or stored within the confines of the fence.
10. The school should retain a registered consulting arborist to provide periodic inspections, enforce protection measures during construction and to speak for the trees' interests in interface with the architect, landscape architect and contractors.
11. Monitor the foliage for signs of pests frequently for at least two years after transplanting or root cutting.
12. Pruning should not be done well before or well after new growth begins. Excess pruning in summer may result in sun scald. Pruning should take place this winter or in August or September, or as close to it as possible. Remove all dead wood. Prune to provide essential clearance, remove broken or poorly attached limbs. Shorten overly long end-heavy limbs. No not remove more than 20 percent of the live growth. Work shall be performed by a firm drawn from a pre-qualified list of tree services. The selected firm shall provide a Certified Arborist to direct operations on site.
13. All pruning shall be in accordance with ANSI A-300, part 1 standards.

Construction monitoring

During most of the construction period the trades that will be on site are not familiar with the needs and tolerances of these trees. Construction monitoring will assist them in careful integration of the new site elements with the trees to remain. Construction monitoring will keep track of the condition of the fencing and protection measures, as well as keep track of the condition of the trees. Early signs of stress or insect attack can be caught and corrected before they become fatal or disfiguring to the tree.

Irrigation needs during construction should also be monitored, although this need can be *reduced* with a properly set-up automatic irrigation system. Even though it is "automatic" it still needs to be re-set seasonally and turned off during rainy periods and over the summer by the oaks.

I recommend a site meeting to before demolition and grading begin, and weekly visits the first month of site work. After the first month, I recommend monthly visits to monitor the trees and their protection.

Removals

Eleven non-protected trees should be removed, but are not covered by City ordinance and are not required to be reported. At this time, the construction plans are not complete. This report is to guide the designers so they can minimize protected tree removals. So far, no protected trees need to be removed. These non-protected trees are removed for health and safety reasons, not construction.

Tree #	Species
59	Cedrus deodara
35	Ceratonia siliqua
58	Ceratonia siliqua
61	Ceratonia siliqua
67	Cinnamomum camphora
75	Cinnamomum camphora
37	Jacaranda mimosifolia
63	Jacaranda mimosifolia
86	Morus alba
49	Schinus terebinthifolius
40	Ulmus parvifolia

Mitigation Guide

The school will be planting new trees as part of the development and the mitigation trees could easily be part of the future landscaping. The City has developed the following guide for the mitigation of protected tree species.

Mitigation Guide for Protected Trees

Quercus engelmannii, Quercus agrifolia, Juglans californica, and Platanus racemosa

Tree Advisory Commission; City of Sierra Madre

Code:

85-100% **Grade 1 Trees = Trees in good health and in good form, good esthetic value**

70-84% **Grade 2 Trees = Trees in good health or in good form, fair or good esthetic value**

55-69% **Grade 3 Trees = Trees in fair health and/or air form, fair or good esthetic value**

<55% **Grade 4 Trees = Trees in poor health and/or poor form, poor esthetic value**

DBH	Grade 1	Grade 2	Grade 3	Grade 4
4" - 5"	1 for 1 mitigation	1 for 1 mitigation	1 for 1 mitigation	1 for 1 mitigation
5" - 6"	1 for 1 mitigation	1 for 1 mitigation	1 for 1 mitigation	1 for 1 mitigation
6" - 7"	2 for 1 mitigation	1 for 1 mitigation	1 for 1 mitigation	1 for 1 mitigation
7" - 8"	2 for 1 mitigation	2 for 1 mitigation	1 for 1 mitigation	1 for 1 mitigation
8" - 9"	3 for 1 mitigation	2 for 1 mitigation	1 for 1 mitigation	1 for 1 mitigation
9" - 10"	3 for 1 mitigation	2 for 1 mitigation	1 for 1 mitigation	1 for 1 mitigation
10" - 11"	3 for 1 mitigation	2 for 1 mitigation	2 for 1 mitigation	1 for 1 mitigation
11" - 12"	4 for 1 mitigation	3 for 1 mitigation	2 for 1 mitigation	1 for 1 mitigation
12" - 13"	4 for 1 mitigation	3 for 1 mitigation	2 for 1 mitigation	1 for 1 mitigation
13" - 14"	4 for 1 mitigation	3 for 1 mitigation	2 for 1 mitigation	2 for 1 mitigation
14" - 15"	5 for 1 mitigation	3 for 1 mitigation	2 for 1 mitigation	2 for 1 mitigation
15" - 16"	5 for 1 mitigation	4 for 1 mitigation	3 for 1 mitigation	2 for 1 mitigation
16" - 17"	5 for 1 mitigation	4 for 1 mitigation	3 for 1 mitigation	2 for 1 mitigation
17" - 18"	6 for 1 mitigation	4 for 1 mitigation	3 for 1 mitigation	2 for 1 mitigation
18" - 19"	6 for 1 mitigation	4 for 1 mitigation	3 for 1 mitigation	2 for 1 mitigation
19" - 20"	6 for 1 mitigation	5 for 1 mitigation	3 for 1 mitigation	3 for 1 mitigation
20" - 21"	6 for 1 mitigation	5 for 1 mitigation	4 for 1 mitigation	3 for 1 mitigation
21" - 22"	Second Opinion ?	5 for 1 mitigation	4 for 1 mitigation	3 for 1 mitigation
22" - 23"	Second Opinion ?	5 for 1 mitigation	4 for 1 mitigation	3 for 1 mitigation
23" - 24"	Second Opinion ?	Second Opinion ?	4 for 1 mitigation	3 for 1 mitigation
24" and more	Second Opinion ?	Second Opinion ?	4 for 1 mitigation	3 for 1 mitigation

Disclaimer

Good, current information on tree preservation has been applied. However, even when every tree is inspected, inspection involves sampling, therefore some areas of decay or weakness may be missed. A complete tree hazard evaluation was not requested or performed. The degree of hazard a tree may constitute can only be estimated after the construction and landscaping process has ended. Weather, winds and the magnitude and direction of storms are not predictable and some failures may still occur despite the best application of high professional standards. Future tree maintenance will also affect the trees' health and stability and is not under the supervision or scrutiny of this consultant. Continuing construction activity such as trenching will also affect the health and safety, but are unknown and unsupervised by this consultant. Trees are living, dynamic organisms and their future status cannot be predicted with complete certainty by any expert. This consultant does not assume liability for any tree failures involved with this property.

Appendix

Resume

Glossary

Resume

PROFESSIONAL REGISTRATIONS:

American Society of Consulting Arborists - Registration #365
American Society of Consulting Arborists – Tree & Plant Appraisal Qualified
International Society of Arboriculture, Certified Arborist Number WE-0180a
International Society of Arboriculture, Tree Risk Assessment Qualified

EXPERIENCE:

Mr. Applegate is an independent consulting arborist. He has been in the horticulture field since 1963, providing professional arboricultural consulting since 1984 within both private and public sectors. His expertise includes appraisal, tree preservation, diagnosis of tree growth problems, construction impact mitigation, environmental assessment, expert witness testimony, hazard evaluation, pruning programs, species selection and tree health monitoring.

Mr. Applegate has consulted for insurance companies, major developers, theme parks, homeowners, homeowners' associations, landscape architects, landscape contractors, property managers, attorneys and governmental bodies.

Notable projects on which he has consulted are: Disneyland, California Adventure, Disneyland Hotel, Disney's Wild Animal Kingdom, DisneySeas-Tokyo, Knott's Berry Farm, Newport Coast, Crystal Court, Newport Fashion Island, Big Canyon Golf Course, Oakcreek Golf Course, Tustin Ranch windrows, Laguna Canyon Road and Myford Road for The Irvine Company, Loyola Marymount University, UCI, Universal City Station/MTA tree inventory and the State of California review of the Landscape Architecture License exam (plant materials portion)

EDUCATION:

Bachelor of Science in Landscape Architecture,
California State Polytechnic University, Pomona 1973
Arboricultural Consulting Academy (by ASCA)
Arbor-Day Farm, Kansas City 1995
Continuing Education Courses in Arboriculture
required to maintain Certified Arborist status and for ASCA membership

PROFESSIONAL AFFILIATIONS:

American Society of Landscape Architects (ASLA), Full Member
American Society of Consulting Arborists (ASCA), Full Member
Diplomate American Board of Forensic Examiners
International Society of Arboriculture (ISA), Regular Member
California Tree Failure Report Program, UC Davis, Participant
Street Tree Seminar (STS), Member

COMMUNITY AFFILIATIONS:

Guest lecturer at Cal Poly, Saddleback College, & Palomar Junior College
Landscape Architecture License Exam, Reviewer, Cal Poly Pomona (1986-90)
American Institute of Landscape Architects (L.A.) Board of Directors (1980-82)
California Landscape Architect Student Scholarship Fund - Chairman (1985)
International Society of Arboriculture - Examiner-tree worker certification (1990)

Glossary

ANSI-A300	American National Standards Institute performance standards for the care and maintenance of trees, shrubs and other woody plants.
ANSI-Z60-1	American National Standards Institute standards sizing and describing trees, shrubs and other site stock.
Arboricultural	Pertaining to the awareness, care, evaluation, identification, growing, maintenance, management, planting, selection, treatment, understanding, valuation and so forth of trees and other woody plants and their growing environments, particularly in shade and ornamental (non-crop/commodity) settings.
Arboriculture	The selection, cultivation, and care of trees, vines, and shrubs.
Arborist	A person possessing the technical competence through experience and related training to provide for or supervise the management of trees or other woody plants in a landscape setting.
ASCA	The American Society of Consulting Arborists, Inc. a professional society, as described in its by-laws.
Bark	Tissue on the outside of the vascular cambium. Bark is usually divided into inner bark - active phloem and aging and dead crushed phloem - and outer bark.
Basal flare	Most trees have a rapid increase in diameter as the trunk meets the soil line or root crown. This area is associated with both trunk and root tissue.
Canopy	The live, foliage-bearing part of a tree or palm.
Codominant	Leaders equal in size and relative importance, developed from 2 apical buds at the top of a stem. Each codominant stem is an extension of the stem below it. There are no branch collars or trunk collars at the bases of codominant stems.
Compaction	(Soil Compaction) The compression of soil, causing a reduction of pore space and an increase in the bulk density of the soil. Tree roots cannot grow in compacted soil.
Crotch	The union of two or more branches; the axillary zone between branches.
Crown	The upper portions of a tree or shrub, including the main limbs, branches, and twigs.
DBH	Diameter of the trunk, measured at breast height or 54 inches above the average grade. See caliper.

Decay	Progressive deterioration of organic tissues, usually caused by fungal or bacterial organisms, resulting in loss of cell structure, strength, and function. In wood, the loss of structural strength.
Dripline	A projected line on the ground that corresponds to the spread of branches in the canopy; the farthest spread of branches.
Evergreen	retains its leaves throughout the year.
Fertilization	The process of adding nutrients to a tree or plant; usually done by incorporating the nutrients into the soil, but sometimes by foliar application or injection directly into living tissues.
Foliage	The live leaves or needles of the tree - the plant part primarily responsible for photosynthesis.
Included bark	Bark or cortex tissue that is included or trapped between close-growing branches. Usually found in narrow or tight crotches.
Limb	A large lateral branch growing from the main trunk.
Mulch/Mulching	Substances spread on top of the ground to conserve water, protect against erosion, retain moisture, and protect the roots of trees from heat, cold or drought. The substances are typically organic, such as compost, manure or bark chips.
Over pruned	removal of more than 10 to 30 percent, depending on health, species and time of year – often evidenced by formation of epicormic shoots.
Percolation	The downward movement of water through soil.
Root system	The portion of the tree containing the root organs, including buttress roots, transport roots, and fine absorbing roots; all underground parts of the tree.
Root zone	The area and volume of soil around the tree in which roots are normally found. May extend to three or more times the branch spread of the tree, or several times the height of the tree.
Scaffold limb	Primary structural branch of the crown.
Stress	"Stress is a potentially injurious, reversible condition, caused by energy drain, disruption, or blockage, or by life processes operating near the limits for which they were genetically programmed." Alex Shigo
Vigor	Active, healthy growth of plants: ability to respond to stress factors.

Certification

I, Gregory W. Applegate, certify to the best of my knowledge and belief:

That the statements of fact contained in this report, are true and correct. That the report analysis, opinions, and conclusions are limited only the reported assumptions and limiting conditions, and are my personal unbiased professional analysis, opinions and conclusions.

That I have no present or prospective interest in the vegetation that is the subject of this report, and I have no personal interest or bias with respect to the parties involved.

That my compensation is not contingent upon the reporting or a predetermined outcome that favors the cause of the client, or the attainment of stipulated result.

That my analysis, opinions, and conclusions were developed, and this report has been prepared, in conformity with the standards of ASCA and customary arboricultural practice.

That I have made a personal inspection of the plants that are the subject of this report. No one provided significant professional assistance to the person signing this report.

Gregory W. Applegate, ASCA_____ Date: 1/20/2021
Registered Consulting Arborist #365

Appendix B

Cultural Resources Technical Report

ALVERNO HEIGHTS ACADEMY
MASTER PLAN ADDENDUM

Cultural Resources Technical Report

Prepared for:

Alverno Heights Academy
200 N. Michillinda Avenue
Sierra Madre, California 91204

Prepared by:

Sapphos Environmental, Inc.
430 North Halstead Street
Pasadena, CA 91107

July 26, 2021

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APPENDIX

EXECUTIVE SUMMARY

The Alverno Heights Academy (School) in cooperation with the City of Sierra Madre (city), has proposed to complete an upgrade to the School campus in support of the expansion to K–12 schooling. A Master Plan was completed in 2011 and was supported by an Initial Study/Mitigated Negative Declaration (IS/MND) with less than significant impacts to the designated City of Sierra Madre Historic Landmark and California Register of Historical Resource-eligible resource located on the school campus, the Barlow Villa (Villa). An Addendum to the 2011 approved Master Plan has been proposed by the School and thus, an update to the IS/MND is required.

The proposed project is located at 200 N. Michillinda Avenue in the City of Sierra Madre, within Los Angeles County, California. The proposed project is located within the Mount Wilson U.S. Geological Survey (USGS) 7.5-minute quadrangle map, on the western edge of the city. The site is operated by the Alverno Heights Academy, a private K–12 school.

The purpose of this Cultural Resources Technical Report (CRTR) is to provide the client with a cultural resources assessment for the project such that construction, operation, and maintenance may be undertaken in a manner that avoids known or observed cultural resources afforded consideration pursuant to the California Environmental Quality Act (CEQA) to the maximum extent feasible and practicable. The term cultural resources within this report refers to a historical resource under CEQA, defined as "a resource listed in, or determined eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources or a resource included in a local register of historical resources," including built and archaeological resources.[1] Where it is infeasible to avoid impacts, the consideration of mitigation measures and alternatives would be required.

Historical and Archaeological Resources

The consideration of potential impacts was based on an archives and records search; literature review; coordination with the Native American Heritage Commission (NAHC), and a site visit of the project area completed on May 28, 2021.

No previously recorded historical resources or archaeological sites, and no previously recorded prehistoric or historic isolates have been identified in the study area. One locally designated City of Sierra Madre (City) Historical Landmark is located within the proposed project site, and six (6) designated City Historical Landmarks are located within a 0.25-mile radius of the project site.

[1] California Environmental Quality Act Statue and Guidelines 2021, Section 15054.5 (a)(1)(2).

Cemeteries and Human Remains

There are no formal cemeteries located within the proposed action area. In addition, there are no known human remains, grave goods, or funerary objects within the proposed project area.

Tribal Cultural Resources

As a result of the request for review of the Sacred Lands File (SLF) from the NAHC, it has been determined that there are sacred lands recorded on the same 7.5-minute-scale quadrangle (approximately 50 square miles) as the project site. Due to the large scale of the SLF check, it is unlikely that the sacred lands are on or in proximity to the project site. Outreach to Native American tribal entities identified by the NAHC was initiated by the City on July 7, 2021, and consultation results regarding tribal cultural resources are pending. There is a moderate probability to encounter tribal cultural resources based on the inherent characteristics and location of the project site.

Recommendations

This CRTR resulted in the determination that the proposed project would result in less than significant impacts to listed or eligible for listing cultural resources from construction, operation, and maintenance of the proposed project.

SECTION 1.0
INTRODUCTION

The Alverno Heights Academy (School) in cooperation with the City of Sierra Madre (City), has proposed to complete an upgrade to the School campus in support of its expansion to K–12 schooling. To facilitate design of the proposed project, the School has retained GGA Architecture + (GGA) to develop the addendum to the 2011 Master Plan. Major elements of the proposed project include the addition of an approximately 25,000-square-foot Lower School in the southwest corner, with a new play and sport court, a 1,200-square-foot addition to the northside of the existing Fine Arts Building (detached Villa garage), a conversion of the interior of the caretaker's cottage to a flexible classroom space, and the demolition of the current business office/faculty lounge (see Section 2.2, *Project Description* for full project description).

1.1 GOAL OF THE CULTURAL RESOURCES TECHNICAL REPORT

This Cultural Resources Technical Report (CRTR) has been prepared to provide a cultural resources assessment for the proposed project such that construction, operation, and maintenance may be undertaken in a manner that avoids known or observed cultural resources afforded consideration pursuant to the California Environmental Quality Act (CEQA) to the maximum extent feasible and practicable. This analysis was undertaken to determine if the proposed project would result in significant impacts to cultural resources, requiring the consideration of mitigation measures or alternatives in accordance with CEQA Regulations.[2]

1.2 METHODS

This report was prepared by Sapphos Environmental, Inc. The identification of existing resources and evaluation of potential impacts is based on information gathered from published and unpublished literature, South Central Coastal Information Center (SCCIC) June 2021 record search results, databases, a review of current and historic maps and aerial photographs, and a site visit completed on May 28, 2021, to characterize the existing conditions relative to cultural resources.

Additionally, Sapphos Environmental, Inc. completed a CRTR in 2005 to determine impacts to the Villa which was used in support of the 2011 IS/MND which resulted in a finding of less than significant impacts. Sapphos Environmental, Inc. also completed a Design Review Memorandum for the Record (MFR) in 2020 to determine the impacts of the construction of the temporary classrooms on the Villa which results in a finding of no impacts. The results and information within the 2005 CRTR and 2020 MFR were reviewed for this report.

1.3 SCOPE OF INVESTIGATION

The investigation covers the areas required by CEQA including Historical Resources, Archaeological Resources, and Human Remains. Databases were reviewed for the project site and a 0.25-mile buffer.

[2] Section 15064.5 (b) CEQA Guidelines.

SECTION 2.0
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The proposed project is located within the boundaries of School, at 200 N. Michillinda Avenue, City of Sierra Madre, California, 91024 (Figure 2.1-1, *Vicinity Map*; Figure 2.1-2, *Project Area Map*). The property is bounded by W. Grand View Avenue to the north; Wilson Street to the east; W. Highland Avenue to the south, and N. Michillinda Avenue to the west. Specific project elements are contained to the boundaries of the School campus. The project site is situated in the western portion of the city and is surrounded by modest single-family residential development to the south, north, east, and west.

2.2 PROJECT DESCRIPTION

In 2011, a Master Plan was developed for the School to provide facilities to meet the educational and athletic needs of the school. An IS/MND was prepared evaluating the proposed Master Plan and was approved on July 7, 2011. The 2021 refined project (project) would refine elements of the School campus through the preparation of a Master Plan Update. The project would consist of the replacement of modular classrooms with a permanent Lower School campus of approximately 25,000 square feet with the construction of a sports court and playground. The teacher parking would be centralized in the upper campus, with the demolition of the existing business office/faculty lounge. The historic Villa on the property would be adaptively reused for these uses and the school chapel with no alterations to the exterior of the building. The existing 2,080-square-foot caretaker's cottage would be converted into flexible classroom space. The existing chapel (caretaker's cottage-associated detached garage) would be reconverted back to its original storage use. A 1,200-square foot addition will be added to the northern façade of the exiting Fine Arts building (detached Villa garage) which is currently being used as an art classroom space.

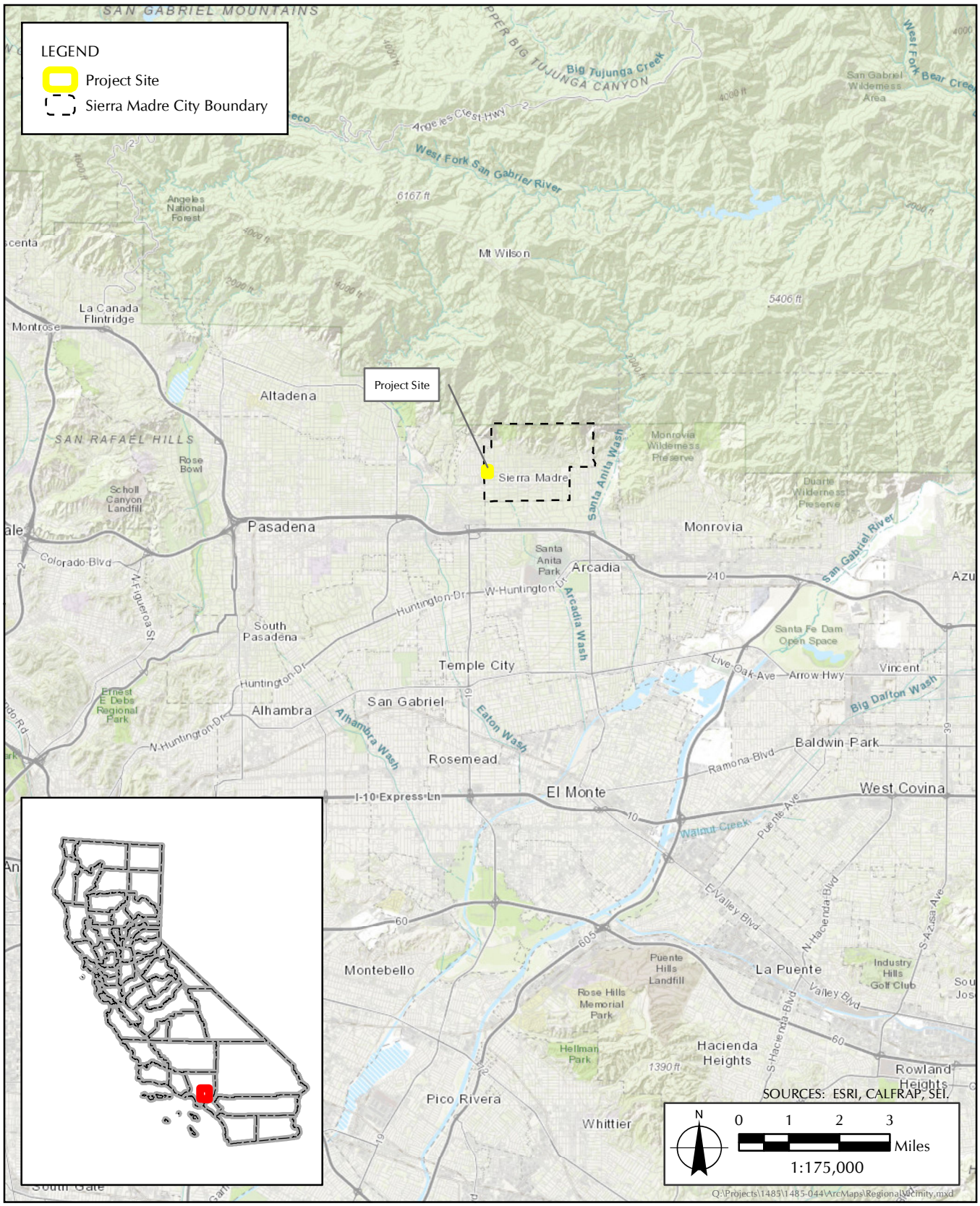

FIGURE 2.1-1

Regional Vicinity Map

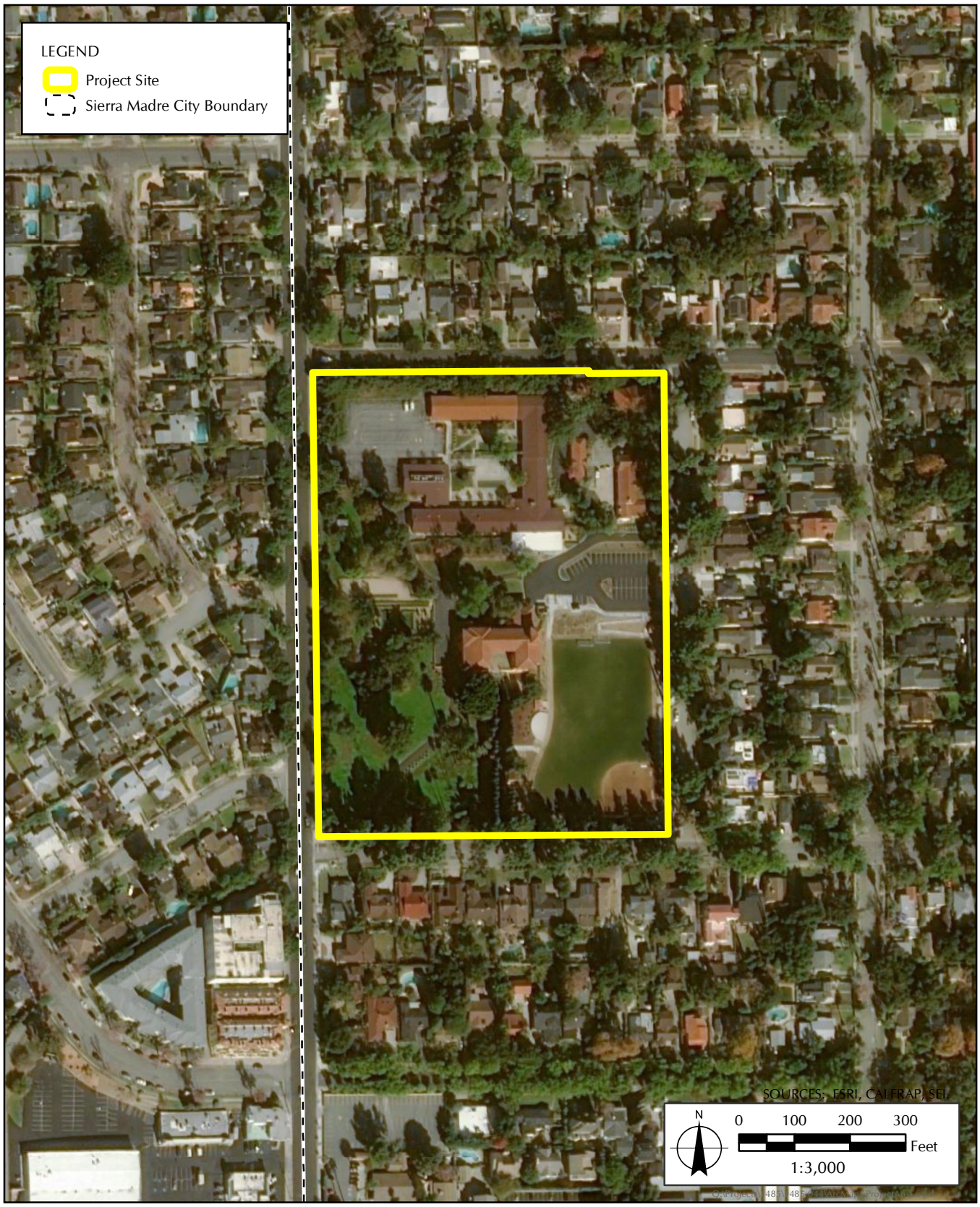

FIGURE 2.1-2
Project Area Map

SECTION 3.0
REGULATORY FRAMEWORK

This section of the report identifies the primary state laws and regulations that govern the conservation and protection of cultural resources that must be considered during the decision-making process for projects that have the potential to adversely affect cultural resources.

California Environmental Quality Act

Pursuant to CEQA, a *historical resource* is a resource listed in, or eligible for listing in, the California Register of Historical Resources (California Register). In addition, resources included in a local register of historic resources or identified as significant in a local survey conducted in accordance with state guidelines are also considered historical resources under CEQA, unless a preponderance of the facts demonstrates otherwise. According to CEQA, the fact that a resource is not listed in or determined eligible for listing in the California Register or is not included in a local register or survey shall not preclude a Lead Agency, as defined by CEQA, from determining that the resource may be a historical resource as defined in California Public Resources Code Section 5024.1.

CEQA applies to archaeological resources when (1) the archaeological resource satisfies the definition of a historical resource or (2) the archaeological resource satisfies the definition of a "unique archaeological resource." A *unique archaeological resource* is an archaeological artifact, object, or site that has a high probability of meeting any of the following criteria:

1. The archaeological resource contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.

2. The archaeological resource has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. The archaeological resource is directly associated with a scientifically recognized important prehistoric or historic event or person.

Appendix G of the CEQA Guidelines[3] provides a set of sample questions that guide the evaluation of potential impacts with regard to cultural resources.

Would the proposed project:

(a) Cause a substantial adverse change in the significance of an historical resource as defined in §15064.5?

(b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?

[3] California Code of Regulations, Title 14, Chapter 3. Amended 6 October 2005. Guidelines for the Implementation of the California Environmental Quality Act, Appendix G.

(c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

(d) Disturb any human remains, including those interred outside of formal cemeteries?

California Register of Historical Resources

Created in 1992 and implemented in 1998, the California Register is "an authoritative guide in California to be used by state and local agencies, private groups, and citizens to identify the State's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change." Certain properties, including those listed in or formally determined eligible for listing in the National Register of Historic Places (National Register) and California Historical Landmarks (CHLs) numbered 770 and higher, are automatically included in the California Register. Other properties recognized under the California Points of Historical Interest program, identified as significant in historic resources surveys, or designated by local landmarks programs may be nominated for inclusion in the California Register. A resource, either an individual property or a contributor to a historic district, may be listed in the California Register if the State Historical Resources Commission determines that it meets one or more of the following criteria, which are modeled on National Register criteria:

Criterion 1: It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

Criterion 2: It is associated with the lives of persons important in our past.

Criterion 3: It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.

Criterion 4: It has yielded, or may be likely to yield, information important in history or prehistory.

Resources nominated to the California Register must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. It is possible that a resource whose integrity does not satisfy National Register criteria may still be eligible for listing in the California Register. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data. Resources that have achieved significance within the past 50 years also may be eligible for inclusion in the California Register, provided that enough time has lapsed to obtain a scholarly perspective on the events or individuals associated with the resource.[4]

[4] Office of Historic Preservation. Undated. "Technical Assistance Bulletin 6: California Register and National Register, A Comparison (for purposes of determining eligibility for the California Register)." Available at: www.ohp.parks.ca.gov

California Historical Landmarks[5]

CHLs are buildings, structures, sites, or places that have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value and that have been determined to have statewide historical significance by meeting at least one of the criteria listed below. The resource must also be approved for designation by the County Board of Supervisors (or the City or Town Council in whose jurisdiction it is located), be recommended by the State Historical Resources Commission, and be officially designated by the Director of California State Parks. The specific standards in use now were first applied in the designation of CHL No. 770. CHLs No. 770 and above are automatically listed in the California Register. To be eligible for designation as a Landmark, a resource must meet at least one of the following criteria:

- The first, last, only, or most significant of its type in the state or within a large geographic region (Northern, Central, or Southern California)
- Associated with an individual or group having a profound influence on the history of California
- A prototype of, or an outstanding example of, a period, style, architectural movement or construction or one of the more notable works or the best surviving work in a region of a pioneer architect, designer, or master builder

California Points of Historical Interest[6]

California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the California Register. No historical resource may be designated as both a Landmark and a Point. If a Point is later granted status as a Landmark, the Point designation will be retired. In practice, the Point designation program is most often used in localities that do not have a locally enacted cultural heritage or preservation ordinance. To be eligible for designation as a Point of Historical Interest, a resource must meet at least one of the following criteria:

- The first, last, only, or most significant of its type within the local geographic region (city or county)
- Associated with an individual or group having a profound influence on the history of the local area
- A prototype of, or an outstanding example of, a period, style, architectural movement or construction or one of the more notable works or the best surviving work in the local region of a pioneer architect, designer, or master builder

[5] Office of Historic Preservation, Department of Parks and Recreation, State of California. "California Historical Landmarks Registration Programs." Available at: www.ohp.parks.ca.gov

[6] Office of Historic Preservation, Department of Parks and Recreation, State of California. "California Points of Historical Interest Registration Programs." Available at: www.ohp.parks.ca.gov

Native American Heritage Commission, Public Resources Code Sections 5097.9–5097.991

Section 5097.91 of the Public Resources Code established the NAHC, whose duties include the inventory of places of religious or social significance to Native Americans and the identification of known graves and cemeteries of Native Americans on private lands. Under Section 5097.9, a state policy of noninterference with the free expression or exercise of Native American religion was articulated along with a prohibition of severe or irreparable damage to Native American sanctified cemeteries, places of worship, religious or ceremonial sites or sacred shrines located on public property. Section 5097.98 specifies a protocol to be followed when the NAHC receives notification of a discovery of Native American human remains from a county coroner. Section 5097.5 defines as a misdemeanor the unauthorized disturbance or removal of archaeological, historic, or paleontological resources located on public lands.

California Native American Graves Protection and Repatriation Act of 2001

Codified in the California Health and Safety Code Sections 8010–8030, the California Native American Graves Protection and Repatriation Act (Cal NAGPRA) is consistent with the federal NAGPRA. Intended to "provide a seamless and consistent state policy to ensure that all California Native American human remains and cultural items be treated with dignity and respect," Cal NAGPRA also encourages and provides a mechanism for the return of remains and cultural items to lineal descendants. Section 8025 established a Repatriation Oversight Commission to oversee this process. The Act also provides a process for non-federally recognized tribes to file claims with agencies and museums for repatriation of human remains and cultural items.

Assembly Bill (AB) 52

AB 52 requires lead agencies to consult with California Native American Tribes that request such consultation prior to the agency's release of a Notice of Preparation of an Environmental Impact Report or Notice of Intent of a Mitigated Negative Declaration on or after July 1, 2015.

Under AB 52, a project that may cause a substantial adverse change in the significance of a tribal cultural resource is defined as a project that may have a significant effect on the environment. Where a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document must discuss the impact and whether feasible alternatives or mitigation measures could avoid or substantially lessen the impact.

Consultation with Tribes

Recognizing that tribes may have expertise with regard to their tribal history and practices, AB 52 requires lead agencies to provide notice to tribes that are traditionally and culturally affiliated with the geographic area of a proposed project if they have requested notice of projects proposed within that area. If the tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe. Consultation may include discussing the type of environmental review necessary, the significance of tribal cultural resources, the significance of the project's impacts on the tribal cultural resources, and alternatives and mitigation measures recommended by the tribe.

The parties must consult in good faith, and consultation is deemed concluded when either the parties agree to measures to mitigate or avoid a significant effect on a tribal cultural resource (if such a significant effect exists) or when a party concludes that mutual agreement cannot be reached.

Mitigating Adverse Changes to Tribal Cultural Resources

Mitigation measures agreed upon during consultation must be recommended for inclusion in the environmental document. AB 52 also identifies mitigation measures that may be considered to avoid significant impacts if there is no agreement on appropriate mitigation. Recommended measures include:

- Preservation in place
- Protecting the cultural character and integrity of the resource
- Protecting the traditional use of the resource
- Protecting the confidentiality of the resource
- Permanent conservation easements with culturally appropriate management criteria

Health and Safety Code, Sections 7050 and 7052

Health and Safety Code, Section 7050.5, declares that, in the event of the discovery of human remains outside a dedicated cemetery, ground disturbance must cease, and the county coroner must be notified. Section 7052 establishes a felony penalty for mutilating, disinterring, or otherwise disturbing human remains, except by relatives.

Penal Code, Section 622.5

Penal Code, Section 622.5, provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands but specifically excludes the landowner.

SECTION 4.0
HISTORIC CONTEXT

This section of the report characterizes the baseline conditions for cultural resources. This section includes information on prehistoric period context, regional ethnography, and regional and local historic context.

4.1 PREHISTORIC CONTEXT

Several prehistoric cultural chronologies have been proposed for the Southern California coast, with several of the most frequently cited sequences developed by William Wallace,[7] Claude Warren,[8] and Chester King.[9] Such chronologies provide a framework to discuss archaeological data in relation to broad cultural changes seen in the archaeological record. The chronological sequence presented herein represents an updated synthesis of these schemes as compiled by Glassow and others[10] for the Northern California Bight. This geographic area consists of the coastal area from Vandenberg Air Force Base south to Palos Verdes, as well as the Channel Islands and adjacent inland areas, including the Los Angeles Basin.[11] The prehistoric sequence can be divided into four broad temporal categories (Table 4.1-1, *Southern California Coastal Regional Chronology*). It should be noted that the prehistoric chronology for the region is being refined on a continuing basis, with new discoveries and improvements in the accuracy of dating techniques.

TABLE 4.1-1
SOUTHERN CALIFORNIA COASTAL REGIONAL CHRONOLOGY

Epoch	Coastal Region	Dates
Late Pleistocene / Early Holocene	Paleo-Coastal Period	Circa 9500 to 7000/6500 BC
Middle Holocene	Millingstone Period	Circa 7000/6500 to 1500/1000 BC
Late Holocene	Intermediate Period	1500/1000 BC to AD 750
Late Holocene	Late Period	AD 750 to Spanish contact

Terminal Pleistocene and Early Holocene: Paleo-Coastal Period (Circa 9500 to 7000/6500 BC)

Although data on early human occupation for the Southern California coast are limited, archaeological evidence from the northern Channel Islands suggests that initial settlement within the region occurred at least 12,000 years before present (BP). At Daisy Cave (CA-SMI-261) on San Miguel Island, radiocarbon dates indicate an early period of use in the terminal Pleistocene,

[7] Wallace, William J. 1955. "A Suggested Chronology for Southern California Coastal Archaeology." *Southwestern Journal of Anthropology*, 11:214–230.

[8] Warren, Claude M. 1968. "Cultural Tradition and Ecological Adaptation on the Southern California Coast." *In Archaic Prehistory in the Western United States*, ed. Cynthia Irwin-Williams. Portales, NM: Eastern New Mexico University Contributions in Anthropology No. 1.

[9] King, Chester. 1990. *Evolution of Chumash Society: A Comparative Study of Artifacts Used for Social System Maintenance in the Santa Barbara Channel Region before AD 1804*. New York, NY: Garland.

[10] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira, 191–213.

[11] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira, 191.

sometime between 9600 and 9000 calibrated (cal) BC.[12] Evidence of early human occupation in the Northern California Bight has also been found on nearby Santa Rosa Island, where human remains from the Arlington Springs Site (CA-SRI-1730) have been dated between 11,000 and 10,000 cal BC.[13] Archaeological data recovered from these and other coastal Paleoindian sites indicate a distinctively maritime cultural adaptation, termed the "Paleo-Coastal Tradition,"[14] which involved the use of seafaring technology and a subsistence regime focused on shellfish gathering and fishing.[15]

Relatively few sites have been identified in Los Angeles County that date to the terminal Pleistocene and early Holocene. Currently, the earliest reliable date for human occupation in the area derives from the La Brea Tar Pits (P-19-159), where human bone has been dated to 8520 cal BC.[16] Evidence of possible early human occupation has also been found at the sand dune bluff site of Malaga Cove (P-19-138), located between Redondo Beach and Palos Verdes.[17] Researchers have proposed that archaeological remains recovered from the lowermost cultural stratum at the site, which include shell, animal bone, and chipped stone tools, may date as early as 8000 cal BC.[18,19]

Middle Holocene: Millingstone Period (Circa 7000/6500 to 1500/1000 BC)

The Millingstone Period or Horizon, also referred to as the "Encinitas Tradition,"[20,21] is the earliest well-established cultural occupation of the coastal areas of the region. The onset of this period, which began sometime between 7000 and 6500 cal BC, is marked by the expansion of populations throughout the Northern California Bight. Regional variations in technology, settlement patterns, and mortuary practices among Millingstone sites have led researchers to define several local manifestations or "patterns" of the tradition.[22] Groups that occupied modern-day Los Angeles County are thought to have been relatively small and highly mobile during this time, with

[12] Erlandson, J.M., D.J. Kennett, B.L. Ingram, D.A. Guthrie, D.P. Morris, M.A. Tveshov, G.J. West, and P.L. Walker. 1996. "An Archaeological and Paleontological Chronology for Daisy Cave (CA-SMI-261), San Miguel Island, California." *Radiocarbon*, 38: 355–373.

[13] Johnson, J.R., T.W. Stafford Jr., H.O. Ajie, and D.P. Morris. 2002. "Arlington Springs Revisited." *In Proceedings of the Fifth California Islands Symposium*, ed. D. Browne, K. Mitchell, and H. Chaney. Santa Barbara, CA: USDI Minerals Management Service and The Santa Barbara Museum of Natural History, 541–5.

[14] Moratto, M.J. 1984. *California Archaeology*. New York, NY: Academic Press, 103–13.

[15] Rick, T.C., J.M. Erlandson, and R.L. Vellanoweth. 2001. "Paleocoastal Fishing along the Pacific Coast of the Americas: Evidence from Daisy Cave, San Miguel Island, California." *American Antiquity*, 66:595–614.

[16] Berger, R., R. Protsch, R. Reynolds, C. Rozaire, and J.R. Sackett. 1971. *New Radiocarbon Dates Based on Bone Collagen of California Indians*. Los Angeles, CA: Contributions to the University of California Archaeological Survey, 43–49.

[17] Walker, Edwin Francis. 1951. *Five Prehistoric Archaeological Sites in Los Angeles County, California*. Los Angeles, CA: Southwest Museum, F. W. Hodge Anniversary Publication Fund VI.

[18] Moratto, M.J. 1984. *California Archaeology*. New York, NY: Academic Press, 132.

[19] Wallace, W.J. 1986. "Archaeological Research at Malaga Cove." In *Symposium: A New Look at Some Old Sites*, ed. G.S. Breschini and T. Haversat. Salinas, CA: Coyote Press.

[20] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, 44(2&3): 1–54.

[21] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64.

[22] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64.

a general subsistence economy focused on the gathering of shellfish and plant foods, particularly hard seeds, with hunting being of less importance.[23]

Two temporal subdivisions have been defined for the portion of the Topanga Pattern falling within the Millingstone Period: Topanga I (circa 6500 to 3000 BC) and Topanga II (circa 3000 to 1000 BC).[24] Topanga I assemblages are characterized by abundant manos and metates, core tools and scrapers, charmstones, cogged stone, and discoidals; projectile points are quite rare with those present resembling earlier, large, leaf-shaped forms.[25] Secondary inhumations with associated cairns are the most common burial form at Millingstone sites, with small numbers of extended inhumations also identified. The subsequent Topanga II phase largely represents a continuation of the Topanga pattern with site assemblages characterized by numerous manos and metates, charmstones, cogged stones, discoidals, and some stone balls. A significant technological change in ground stone occurs at this time, with the appearance of mortars and pestles at Topanga II sites suggesting the adoption of balanophagy by coastal populations.[26] The quantity of projectile points also notably increases in Topanga II site deposits indicating that the hunting of large game may have played a greater role in the subsistence economy than in earlier times. While secondary burials continue to be quite common, a few flexed inhumations have also been recovered from archaeological contexts dating to the Topanga II phase.

A number of Millingstone sites have been identified in Los Angeles County. The lower component of the Tank site (P-19-1), located in the Santa Monica Mountains, was excavated in the 1940s and determined to be Topanga I in age.[27] In the San Fernando Valley, the Encino site (P-19-111) is thought to have contained a Topanga I component.[28] The artifact assemblage is definitive of the Topanga I period, containing many milling implements, but few projectile points. The presence of mortars and pestles alongside stemmed projectile points at the Chatsworth site (P-19-21), located at the western edge of the San Fernando Valley, suggests a Topanga II presence.[29] The Big Tujunga Wash site, located at the eastern edge of the San Fernando Valley, may have also contained a Topanga II component.[30]

[23] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira, 196.

[24] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64.

[25] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira, 194.

[26] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 41.

[27] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 8.

[28] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 8.

[29] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 8.

[30] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 8.

Late Holocene: Intermediate Period (1500/1000 BC to AD 750)

The Intermediate Period, which encompasses the early portion of the "Del Rey Tradition" as defined by Sutton,[31] begins around 3500 BP. At this time, significant changes are seen throughout the coastal areas of Southern California in material culture, settlement systems, subsistence strategies, and mortuary practices. These new cultural traits have been attributed to the arrival of Takic-speaking people from the southern San Joaquin Valley.[32] Biological, archaeological, and linguistic data indicate that the Takic groups who settled in the Los Angeles Basin were ethnically distinct from the preexisting Hokan-speaking Topanga populations and are believed to be ancestral to ethnographic Gabrielino groups.[33] While archaeological evidence indicates that "relic" Topanga III populations continued to survive in isolation in the Santa Monica Mountains, these indigenous groups appear to have been largely replaced or absorbed by the Gabrielino or Chumash by 2000 BP.[34]

Intermediate Period sites within the San Fernando Valley are represented by the "Angeles Pattern" of the Del Rey Tradition.[35] Three temporal subdivisions have been defined for the portion of the Angeles Pattern that falls within the Intermediate Period: Angeles I (1500 to 600 BC), Angeles II (600 BC to AD 400), and Angeles III (AD 400 to 750).[36] The onset of the Angeles I phase is characterized by the increase and aggregation of regional populations and the appearance of the first village settlements. The prevalence of projectile points, single-piece shell fishhooks, and bone harpoon points at Angeles I sites suggests a subsistence shift in the Intermediate Period with an increased emphasis on fishing and terrestrial hunting and less reliance on the gathering of shellfish resources. Regional trade or interaction networks also appeared to develop at this time with coastal populations in Los Angeles County obtaining small steatite artifacts and *Olivella* shell beads from the southern Channel Islands and obsidian from the Coso Volcanic Field.[37] Finally, marked changes are seen in mortuary practices during the Angeles I phase, with flexed primary inhumations and cremations replacing extended inhumations and cairns.

The Angeles II phase largely represents a continuation and elaboration of the Angeles I technology, settlement, and subsistence systems. One exception to this pattern is the introduction of a new funerary complex around 2600 BP, consisting of large rock cairns or platforms that contain abundant broken tools, faunal remains, and cremated human bone. These mortuary features have generally been thought to represent the predecessor of the Southern California Mourning

[31] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, 44(2&3): 1–54.

[32] Sutton, Mark Q. 2009. "People and Language: Defining the Takic Expansion in Southern California." *Pacific Coast Archaeological Society Quarterly*, 41(2&3): 31–93.

[33] Sutton, Mark Q. 2009. "People and Language: Defining the Takic Expansion in Southern California." *Pacific Coast Archaeological Society Quarterly*, 41(2&3): 31–93.

[34] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 17.

[35] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, 44(2&3): 1–54.

[36] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, 42(4): 1–64, 8.

[37] Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. "Complexity, Demography, and Change in Late Holocene Orange County." In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, ed. M. Erlandson and Terry L. Jones. Perspectives in California Archaeology, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

Ceremony.[38] Several important changes in the archaeological record mark the beginning of the Angeles III phase. At this time, larger seasonal villages characterized by well-developed middens and cemeteries were established along the coast or inland areas. Archaeological data from Angeles III sites indicate that residents of these settlements practiced a fairly diverse subsistence strategy that included the exploitation of both marine and terrestrial resources.[39] Notable technological changes occurred at this time with the introduction of the plank canoe and bow and arrow.[40] The appearance of new *Olivella* bead types at Angeles III sites indicates a reconfiguration of existing regional exchange networks with increased interaction with populations in the Gulf of California.[41] Finally, cremations increase slightly in frequency at this time, with inhumations no longer placed in an extended position.[42] Intermediate Period sites in Los Angeles County include P-19-2 and P-19-197, located in the Santa Monica Mountains. The formal cemeteries at these sites are representative of the increased sedentism that occurred during the Intermediate Period.[43]

Late Holocene: Late Period (AD 750 to Spanish Contact)

The Late Period dates from approximately AD 750 until Spanish contact at AD 1542. Sutton[44] has divided this period, which falls within the larger Del Rey Tradition, into two phases: Angeles IV (AD 750–1200) and Angeles V (AD 1200–1550). The Angeles IV phase is characterized by the continued growth of regional populations and the development of large, sedentary villages. Although chiefdoms appear to have developed in the northern Channel Islands and Santa Barbara region after 850 BP,[45,46] little direct evidence has been found to suggest this level of social complexity existed in the San Fernando Valley during the late prehistoric period.[47]

Several new types of material culture appear during the Angeles IV phase including Cottonwood series points, birdstone and "spike" effigies, *Olivella* cupped beads, and *Mytilus* shell disk beads. The presence of Southwestern pottery, Patayan ceramic figurines, and Hohokam shell bracelets at

[38] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, 44(2&3): 1–54.

[39] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, 44(2&3): 1–54.

[40] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira, 203–204.

[41] Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. "Complexity, Demography, and Change in Late Holocene Orange County." In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, ed. M. Erlandson and Terry L. Jones. Perspectives in California Archaeology, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

[42] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, 44(2&3): 1–54.

[43] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira, 202.

[44] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly,* 44(2&3): 1–54.

[45] Arnold, Jeanne E. 1992. "Complex Hunter-Gatherer-Fishers of Prehistoric California: Chiefs, Specialists, and Maritime Adaptations of the Channel Islands." *American Antiquity*, 57(1): 60–84.

[46] Gamble, Lynn H. 2005. "Culture and Climate: Reconsidering the Effect of Palaeoclimatic Variability among Southern California Hunter-Gatherer Societies." *World Archaeology*, 37(1): 92–108.

[47] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, 44(2&3): 1–54.

Angeles IV sites suggests some interaction between groups in Southern California and the Southwest. Notable changes are seen in regional exchange networks after 800 BP, with an increase in the number and size of steatite artifacts, including large vessels, elaborate effigies, and *comals*, recovered from Angeles V sites. The presence of these artifacts suggests a strengthening of trade ties between coastal Los Angeles populations and the southern Channel Islands.[48] Finally, Late Period mortuary practices remain largely unchanged from the Intermediate Period with flexed primary inhumations continuing to be the preferred burial method.

Late Period sites in Los Angeles County include P-19-227 and P-19-229, located in the Santa Monica Mountains. Both sites contain less millingstone artifacts than earlier sites, but more mortars, pestles, projectile points, drills, beads, pipes, and bone tools.[49] Although these sites represent a move toward centralized sedentary villages during this period, it is unclear whether they represent year-round occupation or semipermanent villages used as base settlements.[50]

4.2 REGIONAL ETHNOGRAPHY

The Tongva Indians

The Tongva Indians once occupied the entire Los Angeles Basin and the San Fernando Valley, including the watersheds of the San Gabriel, Santa Ana, and Los Angeles Rivers. They also inhabited the offshore islands of San Clemente, Santa Catalina, and San Nicolas.[51] The Tongva were traditionally hunters and gatherers who exploited native plants and animals and occupied small villages.

The material culture of the Tongva reflected an elaborately developed artistic style. Archaeological investigations have recovered day-to-day items elaborately inlaid with shell, rare materials, carvings, and paintings. Spears or atlatls, as well as bows and arrows, were used for hunting. Manos and metates, as well as mortars and pestles, were used for processing plant and animal material into food items. The Tongva were also known for their high quality of basketry, made from native grasses and rush stems.

The Tongva traditionally constructed two types of dwellings: the subterranean pit house and the thatched lean-to (wickiup). The pit house was constructed by excavating approximately 2 feet below the surface and constructing the walls and roof with wooden beams and earth around the excavation pit. The lean-to (wickiup) was constructed of thatched walls and thatched roof, surrounded by large converging poles. Cooking was generally conducted outside of the dwellings. Hearths located inside the structures were used for warmth.

Although the Tongva populated a large territory, they were quickly assimilated into the Spanish mission system during the 18th and 19th centuries. Because of this, the Tongva population of the

[48] Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. "Complexity, Demography, and Change in Late Holocene Orange County." In Catalysts to Complexity: Late Holocene Societies of the California Coast, ed. M. Erlandson and Terry L. Jones. Perspectives in *California Archaeology*, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology, 69.

[49] Moratto, M.J. 1984. *California Archaeology*. New York, NY: Academic Press, 141.

[50] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira, 210.

[51] Kroeber, A.L. 1952. *Handbook of Indians of California*. (Bureau of American Ethnology, Bulletin 78). New York, NY: Dover Publications, Inc.

Los Angeles basin became known as the Gabrieleno due to their assimilation into the Mission San Gabriel, while the Tongva of the San Fernando Valley became known as the Fernandeno due to their assimilation into the Mission San Fernando. It has been estimated from ethnographic and archaeological data that the Tongva population once ranged into the thousands. Spanish reports estimate that village populations ranged between 50 and 200 inhabitants. As many as 50 to 100 villages existed during the late 18th century in the San Fernando Valley and Los Angeles Basin. Early ethnographers believed that the last of the Tongva died about a century ago. Because of this, individuals claiming Tongva descent have never been granted federal recognition.

4.3 HISTORIC CONTEXT

Regional History

Spanish explorers entered the San Fernando Valley in August 1769, on their way to Monterey Bay from San Diego. Under the leadership of Gaspar de Portola, the exploration party entered the San Gabriel Valley in 1770. The San Gabriel Mission was established in 1771 near the present site of Montebello and was later relocated in 1776 due to a flood. The Mission was known as "Queen of the Missions." The San Gabriel Mission lands stretched from the San Gabriel Mountains to the north, to the San Juan Capistrano Mission to the south, and from the Los Angeles River on the west, to the San Gorgonio Pass to the east.[52] This territory encompassed the proposed project site and the present-day City of Sierra Madre.

Initially, little changed for the missions in 1822, when Mexico declared its independence from Spain. However, in 1834, the Mexican government secularized the California missions. In 1839, Hugo Reid petitioned for a portion of the San Gabriel Mission lands that became known as Santa Anita. In 1847, John C. Fremont signed the treaty of Guadalupe Hidalgo, thereby sealing California into American hands. In that same year, Mr. Harry Dalton purchased Rancho Santa Anita from Reid.

The majority of land that would become incorporated into the City of Sierra Madre is located within the original Rancho Santa Anita. The successful establishment of the city can be attributed to the management of the water supply into the area. The city is located in the foothills of the San Gabriel Mountains, approximately 7.0 miles northeast of the City of Pasadena and approximately 17 miles northeast of the City of Los Angeles.

In 1881, Mr. Nathaniel Carter bought 845 acres of the Rancho Santa Anita and named it the Sierra Madre Tract. Mr. Carter also purchased 150 acres from Mr. John Richardson and 108 acres from the Southern Pacific Railroad to add to the tract. In 1882, Mr. Carter began selling 10-, 20-, and 40-acre lots for the sum of $50 per acre.[53] Mr. Carter entered into an agreement with Lucky Baldwin for half of the water rights from Little Santa Anita Canyon and was able to provide water to his subdivision via the stream and tunnel from this canyon.[54] By the late 1880s, the demand for land in

[52] Kyle, D.E. 2002. *Historic Spots in California*. Stanford, CA: Stanford University Press.

[53] Carew, H.D. 1930. *History of Pasadena and the San Gabriel Valley, California*. Chicago, IL: S.J. Clarke Publishing Company.

[54] EIP Associates, Los Angeles, CA. 2000. *Historical Resources Impact Assessment, Maranatha High School, Sierra Madre, California*. Prepared by: Greenwood and Associates, Los Angeles, CA.

Southern California was such that individual lots in the Sierra Madre area, valued at $36,000, were sold within 24 hours of being put up for sale.[55]

During the late 1880s, several hotels and resorts were constructed in the city. The first hotel in the city, the Ocean View House, was built in 1886. This building is still standing. The city was promoted as a resort area for "health, wealth, and happiness" in the late 19th and early 20th centuries because of the pleasant climate.[56]

Development activities in the city began to increase just after the turn of the century. Mr. Carter's friendship with the Pacific Electric Railway president Mr. Henry Huntington was instrumental in bringing the Red Cars to the city; daily service began in 1906. The railway was instrumental in bringing a steady stream of weekend hikers to the area that frequented the trails and many resort camps that sprang up in the foothills.[57] The city was incorporated in 1907.[58]

A second housing boom occurred in the United States and especially in Southern California in the 1920s. This period is marked by the construction of historically influenced, revival-style homes.[59] The housing boom is evidenced in the number of churches that were constructed in the city in the 1920s. At least six large church construction projects culminated in the 1920s, which included the First Church of Christian Scientist in 1921, the Bethany Temple in 1922, the Nazarene Church in 1924, Sierra Madre Masonic Temple in 1925, St. Rita's (second structure) in 1925, and the new Congregational Church in 1928.

[55] Dumke, G.S. 1944. *The Boom of the Eighties in Southern California*. San Marino, CA: Henry E. Huntington Library and Art Gallery.

[56] Keith, E.P. 1976. *Sierra Madre Vistas: A Pictorial History of Sierra Madre*. Bicentennial edition. Sierra Madre, CA: Sierra Madre Historical Society.

[57] Robinson, J. 1991. *The San Gabriels: The Mountain Country from Soledad Canyon to Lytle Creek*. Arcadia, CA: The Big Santa Anita Historical Society.

[58] City of Sierra Madre. Accessed 21 December 2004. "Headline History of Sierra Madre." Available at: http//ci.sierra-madre.ca.us/departments/library/archives_history_headline.asp

[59] Poppliers, J.C., S.A. Chambers, Jr., and N.B. Schwartz. 1983. *What Style Is It?* New York, NY: Preservation Press, John Wiley & Sons, Inc.

SECTION 5.0
METHODS

This section of the report describes the methods employed in the characterization and evaluation of cultural resources within the proposed project study area. The study methods were designed to provide the substantial evidence required to address the scope of analysis recommended in Section 15064.5 of the CEQA regulations related to cultural resources, Native American sacred sites, and human remains.

5.1 RECORD SEARCH

Cultural Resources Record Search

A background record search was conducted to identify previously documented cultural resources within or near the project site. National, state, and local inventories of cultural resources were examined to identify significant events and personages, development patterns, and unique interpretations of architectural styles. The following inventories were consulted:

- National Register of Historic Places (2021)
- California Register of Historical Resources (2021)
- California Historical Landmarks
- California Points of Historical Interest
- City of Sierra Madre Historical Landmarks (Historical Landmarks)

Sapphos Environmental, Inc. conducted a record search at SCCIC on June 14, 2021, and included a 0.25-mile radius around the project site. The purpose of the literature search was to identify cultural resources previously recorded within and around the project site.

5.2 LITERATURE REVIEW

A literature review was completed to determine if the proposed project would have the potential to have a significant impact on previously recorded historical resources, thus requiring the consideration of avoidance and minimization measures, in accordance with CEQA Regulations. Research included the examination of published and unpublished literature, local libraries, historic context statements, databases of previously completed surveys in the area, and a review of current and historic maps and aerial photographs. Historic aerial photographs were available and reviewed for the years 1952, 1953, 1954, 1964, 1972, 1977, 1978, 1980, 1994, 2002, 2003, 2005, 2009, 2010, 2012, 2014, 2016, and 2018. Additionally, historic topographic maps were available and reviewed for the years 1894, 1896, 1898, 1900, 1904, 1907, 1910, 1913, 1915, 1920, 1927, 1928, 1931, 1933, 1940, 1941, 1947, 1958, 1964, 1967, 1974, 1988, 1994, 1999, 2012, 2015, and 2018.

5.3 RECONNAISSANCE FIELD SURVEY

All cultural resource work was carried out under the direct supervision of qualified architectural historians and archeologists who meet the Secretary of the Interior's *Professional Qualification Standards* for History, Architectural History, and Archeology and in accordance with the procedures for compliance with CEQA. Key cultural resources personnel who conducted and/or supervised the field survey and prepared the technical report include Ms. Kasey Conley, Ms. Carrie

Chasteen, and Mr. Daniel Woodward (Sapphos Environmental, Inc.; Attachment A, *Resumes of Key Personnel*).

Sapphos Environmental, Inc. (Ms. Conley) conducted the reconnaissance field survey of the project area on May 28, 2021, to document the existing conditions of the project site and adjacent parcels.

This section of the report characterizes the baseline conditions for cultural resources; evaluates the potential for the proposed project to result in significant direct, indirect, or cumulative impacts, and identifies feasible measures capable of avoiding or reducing the significant impacts to cultural resources that would result from reasonably foreseeable development of the proposed project.

6.1 SUMMARY OF FINDINGS

A records search was conducted at the SCCIC on June 14, 2021. Results of the records search indicated that there have been zero (0) resources identified within the project site or 0.25-mile buffer study area. Four (4) reports were identified within the 0.25-mile buffer study area (Table 6.1-1, *Previous Surveys within the Study Area*).

TABLE 6.1-1
PREVIOUS SURVEYS WITHIN THE STUDY AREA

Report No.	Year	Report Title	Within Project Site	Author
LA 11418	2011	Cultural Resources Study of the United Methodist Church Project, AT&T Mobility Site No. SV0013, 695 West Sierra Madre Boulevard, Sierra Madre, Los Angeles County, California 91024	No	Dana Supernowicz
LA 11380	2011	Verizon Wireless – Barhite-B (Sierra Madre Methodist) - Trileaf Project #315892 695 West Sierra Madre Boulevard, Sierra Madre, California 91024 Los Angeles County, Mount Wilson Quadrangle (DeLorme)	No	Emilie Eggemeyer
LA 08790	2007	Cultural Resources Records Search and Site Visit Results for Royal Streets Communications, Llc Candidates, La2292a (Sierra Madre Methodist United) 695 West Sierra Madre Boulevard, Sierra Madre, Los Angeles County, California	No	Wayne H. Booner
LA 09055	2005	Final Historic Resources Technical Report Rettig Development Project City of Sierra Madre, California	No	Laurie Solis and Harper Caprice

6.2 CULTURAL RESOURCES

The 2021 SCCIC record search indicated that there are no previously recorded cultural resources located within the project site or 0.25-mile buffer study area.

Local Agencies

City of Sierra Madre

The results of the inquiry of the City website indicated that six (6) City-designated Historical Landmarks are located within a 0.25-mile buffer study area of the proposed project site.[60] One Historical Landmark, the Villa, is located within the proposed project site. An additional Historical Landmark, a Spanish Colonial Revival house at 585 West Grandview Avenue, is located approximately 300 feet northeast of the proposed project site boundary. The six (6) City-designated Historic Landmarks are listed below.

- Caldwell House, 647 W. Sierra Madre Boulevard
- Bailey House, 470 W. Highland Avenue
- Barlow Villa, 675 W. Highland Avenue
- Decker House, 427 W. Highland Avenue
- Spanish Colonial Revival, 585 W. Grandview Avenue
- Wilson-Bixby House, 397 W. Montecito Avenue

6.3 BUILT ENVIRONMENT SURVEY

A built environment survey was conducted on May 28, 2021, to determine if any additional listed or eligible cultural resources were located within the project site or the study area. Fourteen (14) additional buildings were identified within the proposed project site. The identified buildings, along with an analysis of Historical Landmark and California Register eligibility, are summarized below.

Detached Villa Garage (one building): An original, detached, multi-car garage is extant in the northeast corner of the School campus and was constructed in 1926. The 3,506-square-foot garage was constructed to match the Villa, with a stucco exterior and cross-gabled roof clad in red clay tile. The main façade of the garage is located on the west side of the building and is characterized by deep inset, wood double doors with a hay hood above to the north, three large automobile bay-door openings at the center, and an office pedestrian door to the south. It appears that the northern portion of the building may have been used as a stable and the southern portion used as a "dwelling" as denoted in 1927 Sanborn Fire Insurance Maps. It is currently used as an art room for the School campus. The building is not individually associated with events that have made a significant contribution to the broad patterns of our history or events that are associated with the lives of significant persons in our past. The building does not embody the distinctive characteristics of a type, period, or method of construction; does not represent the work of a master; possesses high artistic values; and does not represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, the detached villa garage is not eligible for inclusion in the California Register pursuant to Criteria A, B, or C. The building is not a unique example of residential development and lacks the potential to yield additional important information concerning the history of the area; therefore, the building is not eligible for the CRHR pursuant to Criterion D. The building is not individually eligible for listing in the California Register or for designation as a City Historical Landmark. However, the detached Villa garage is a character-defining feature associated with the development of the Villa and therefore, is considered a historical resource under CEQA.

[60] City of Sierra Madre. Accessed July 2021. "Sierra Madre Designated Historical Landmarks, Updated March 2021." Available at: https://www.cityofsierramadre.com/cms/one.aspx?pageId=241800

Caretaker's Cottage and Associated Detached Garage (two buildings): The caretaker's cottage and associated detached garage are located in the northeast corner of the School campus. The caretaker's cottage faces east toward Wilson Street with a street-accessible entrance. The detached garage faces north to W. Grand View Avenue with a street-facing driveway which has been gated off. The caretaker's cottage is 1,586 square feet and is characterized by stucco cladding and a low-pitched, hipped tile roof. The detached garage, currently known as the chapel, is located just west of the caretaker's cottage. The detached garage is also characterized by stucco and a tile roof. The buildings are not individually associated with events that have made a significant contribution to the broad patterns of our history or events that are associated with the lives of significant persons in our past. The buildings do not embody the distinctive characteristics of a type, period, or method of construction; do not represent the work of a master; do not possess high artistic values; and do not represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, the buildings are not eligible for inclusion in the California Register pursuant to Criteria A, B, or C. The buildings are not a unique example of residential development and lack the potential to yield additional important information concerning the history of the area, and, therefore, the buildings are not eligible for the California Register pursuant to Criterion D. The buildings are not individually eligible for listing in the California Register or for designation as a City Historical Landmark. However, the buildings are a character-defining features associated with the development of the Villa; therefore, the buildings are considered historical resources under CEQA.

Upper School Campus (five buildings): Five buildings developed between 1960 and 1966 comprise the upper campus of the School and are located in the northwest portion of the property. The buildings include three rectangular buildings in a 'U' shape characterized by low-pitched gabled roofs, wide eave overhangs, exterior walkways, and stucco cladding. An additional building is located west of the three rectangular buildings with similar design characteristics. Additionally, an business office/faculty lounge building is located east of the classroom buildings and is designed to match the Villa and detached garage with stucco cladding, a low-pitched gable roof with red clay tiles, and decorative notched beams under the eaves. The buildings are not individually associated with events that have made a significant contribution to the broad patterns of our history or events that are associated with the lives of significant persons in our past. The buildings do not embody the distinctive characteristics of a type, period, or method of construction; do not represent the work of a master; do not possess high artistic values; and do not represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, the buildings are not eligible for inclusion in the California Register pursuant to Criteria A, B, or C. The buildings are not a unique example of institutional development and lack the potential to yield additional important information concerning the history of the area; therefore, the buildings are not eligible for listing in the California Register pursuant to Criterion D. Thus, the buildings are not considered historical resources under CEQA.

Training Field Bathroom and Concession/Storage Building (two buildings): The training field is located in the southeast corner of the campus and includes a one-story bathroom facility to the north and a one-story concession/storage building to the west. Both buildings are constructed with cinderblock walls with gable roofs clad in red clay tiles. The buildings do not appear to be 50 years of age or older and therefore, are not eligible for listing in the California Register or for designation as a City Historical Landmark. The training field bathroom and concession/storage building are not considered historical resources under CEQA.

Prefabricated Shed (one building): A detached prefabricated shed is located further west from the training field. The shed is characterized by T1-11 wood siding, a gabled roof clad in composition

shingles, and a large metal roll-up door on the northern façade. The building does not appear to be 50 years of age or older and therefore, is not eligible for listing in the California Register or for designation as a City Historical Landmark. The prefabricated shed is not considered a historical resource under CEQA.

Temporary Classrooms (three buildings): In 2020, three temporary classrooms were added west of the Villa on the western and northern edges of the prayer garden. The three rectangular classroom buildings are 24 feet wide and 60 feet long with T1-11 siding. Two classrooms are located on the northern edge of the prayer garden with the primary façade facing south, and the third classroom is located on the western edge of the prayer garden with the primary façade facing east. The classrooms are slightly elevated with entrance ramps. The building are not 50 years of age and therefore, are not eligible for listing in the California Register or for designation as City Historical Landmarks. The temporary classrooms are not considered historical resources under CEQA.

6.4 RESULTS OF THE PHASE I ARCHAEOLOGICAL RESOURCES SURVEY

The Phase I Archaeological Resources Reconnaissance Survey was not completed for the proposed project site for the 2011 IS/MND and was not competed as part of the current CRTR. A desktop review of historic aerial photographs, historic topographic maps, and a review of the SCCIC record search results resulted in no new findings of archaeological resources.

6.5 NATIVE AMERICAN SACRED SITES AND HUMAN REMAINS

As a result of the request for review of the SLF from the NAHC, it has been determined that there is potential sacred land within the project footprint. However, the SLF gives positive or negative results based on the entire USGS 7.5 minute-scale quadrangle map, which is an area of approximately 50 square miles. Therefore, it is unlikely that any actual sacred land is present in such a small area of that scale. Outreach to Native American tribal entities identified by the NAHC was initiated by the City on July 7, 2021, and AB 52 consultation results are pending. If there is a discovery of Native American tribal cultural resource during project construction, or if it is determined after consultation that the area is highly sensitive to tribal cultural resources, Native American monitoring of ground-disturbing activities will likely be required.

The record searches, supplemental research, and field surveys did not reveal any known cemeteries or burial sites within the action area.

6.6 IMPACT ANALYSIS

Based on the desktop review, record search results, site visit, and a review of Section 15064.5 (b) of the CEQA Guidelines, Sapphos Environmental, Inc. has determined that there would be a less than significant impact to cultural resources as a result of the proposed project.

Section 15064.5 (b) states "a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired."[61]

[61] Section 15064.5 (b)(1) CEQA Guidelines, 177. 2021.

One known historical resource, the Villa, a City-designated Historical Landmark and California Register-eligible historical resource, is located within the proposed project site. The Villa is a two-story, single-family, 15,758-square-foot residence constructed in 1926 for Dr. Jarvis Walter Barlow. The Villa is situated near the center of the project site, with a historical address of 675 W. Highland Avenue. The wood-framed, Italian Renaissance-style building is asymmetrical in plan with projecting wings and a low-pitched, asymmetrical hipped roof. The roof is clad in red ceramic tiles with wide, projecting eaves supported by decorative brackets, and the exterior walls are sheathed in stucco. The primary/southern façade is characterized by an open terrace clad in tile, which is bordered by the formal entryway and two wings of the house. Arched columns adorn the central portion of the southern façade. The main entrance and terrace are accessed by a 'Y'-shaped stairway located at the front of the building. The south terrace overlooks a rectangular-shaped subterranean concrete mirror pool that is bordered by a row of large Italian cypresses. Additional features which contribute to the significance of the Villa include the southern entrance gates, original driveway, detached multi-car garage, and caretaker's cottage with associated detached garage.

The proposed project will include the construction of three new buildings in the southwest corner of the campus as the Lower School with new playground and sport court, a small addition on the northern façade of the detached Villa garage, the interior conversion of the caretaker's cottage to flexible classroom space, new surface parking, and interior-use changes to the Villa. The construction, operations, and maintenance of the Lower School campus with new playground and sport court will have no direct impact on the Villa as no aspect of the Villa will be included in the new development. A low retaining wall on the western side of the original driveway east of the prayer garden will be removed, but this feature is not original to the development of the Villa and does not contribute to its significance. The two new lower campus buildings closest to the Villa to the southwest will be one-story in height and coupled with the elevation change within the campus which rises to the north, will ensure the massing, size, and scale of the new buildings do not impede on the two-story Villa. Additionally, the new buildings will be designed with compatible architectural features such as smooth stucco, exposed wood structural beams, and simple forms to ensure cohesiveness with the historical resources within the site. Due to the construction of the lower campus buildings within 100 feet of the Villa, there is a low potential for unanticipated damage to the Villa, and any unanticipated damage should be repaired in kind. All direct impacts to the Villa as described here can be mitigated with the implementation of Mitigation Measure MM-CULTURAL-1, Mitigation Measure MM-CULTURAL-2, and Mitigation Measure MM-CULTURAL-3.

There will also be less than significant indirect impacts to the Villa due to the construction of the lower campus buildings as the Villa is still visible from the original southern entrance gates and driveway. The lower campus buildings are located in the southwest corner of the lot, offset from the sightline of the Villa from W. Highland Avenue and sited at a lower elevation than the Villa. Heavy vegetation and gates surrounding the School on the southern and western boundaries already obscure the Villa from the public right-of-way and thus, no change to this view will occur. Based on these features, there will be no intrusion into the already existing viewshed of the Villa, yet since there will be additional development in the immediate area of the Villa, the indirect impact is less than significant.

The northern addition to the detached Villa garage will have a less than significant impact on the character-defining feature of the site as the proposed addition will be designed with compatible architectural features such as smooth stucco, exposed wood structural beams, and simple forms to ensure cohesiveness with the historical resource. The addition will comply with the Secretary of

the Interior's *Standards for the Treatment of Historic Properties* (Standards) in its style as stated above and will be compatible in massing and scale as the addition will match the existing height and width of the detached Villa garage. Additionally, the conversion of the interior of the caretaker's cottage to flexible classroom space and the associated detached garage to storage space will have no impact on the character-defining features of the site as the interior of the buildings are not significant to the historical resources.[62] Less than significant impacts to the Villa, detached garage and caretaker's cottage with associated detached garage can be ensured with the implementation of Mitigation Measure MM-CULTURAL-3.

Additionally, minor interior-use changes will occur within the Villa, yet these changes will not include structural changes or changes to the original historic fabric (woodwork, wall finishes, etc.). The building is currently, and has previously been, used for similar uses and thus, the changes will have no impact on the significance of the historical resource. Less than significant impacts to the interior space of the Villa can be ensured with the implementation of Mitigation Measure MM-CULTURAL-3.

The record search and desktop research did not result in any findings of archaeological resources. It is unlikely that new archaeological resources will be discovered as a result of the construction of the project. Furthermore, there is a low probability to encounter human remains based on the inherent characteristics and location of the project area. Due to the extensive grading occurring for the construction of the lower campus which has generally been *in situ* for more than 50 years, the impact for new archaeological findings or human remains is less than significant. Impacts to unknown archaeological resources and human remains can be avoided with the implementation of Mitigation Measure MM-CULTURAL-2 and Mitigation Measure MM-CULTURAL-4.

Additionally, there will be direct or indirect impacts to the six (6) identified Historical Landmarks within the 0.25-mile radius of the proposed site. The proposed project is contained to the boundaries of the School, and no aspect of the project extends beyond the School campus. The campus itself is generally shielded from the public right-of-way on its boundaries with vegetation, gates, and fencing; therefore, the proposed project will not have a visual impact on the neighborhood or the identified Historical Landmarks.

Thus, a finding of less than significant impacts is recommended for the proposed project.

[62] The caretaker's cottage is currently occupied, and an evaluation of the interior of the building was not completed.

SECTION 7.0
CONCLUSION AND RECOMMENDATIONS

This section of the report provides the conclusions and recommendations for minimizing potential impacts to cultural resources from the proposed project.

There are no previously recorded cultural resources on file with the SCCIC within the proposed project area or 0.25-mile buffer. The Villa, a City-designated Historical Landmark and a California Register-eligible historical resource, with character-defining features that include the detached Villa garage, caretaker's cottage and associated detached garage, and rectangular mirror reflecting pool with flanking Italian cypresses, is located within the proposed project site. The Villa is a known historical resource that should be avoided during construction activities. Prior to the initiation of work to the character-defining features of the Villa, a review of the proposed designs should be completed by a qualified Architectural Historian for compliance with the Standards. A review of the City-designated Historical Landmarks identified six (6) cultural resources within a 0.25-mile buffer of the proposed project site. As these resources are located outside the boundaries of the School, they will not be affected by the construction, operation, or maintenance of the proposed project and should be avoided during the project construction period.

Based on the data in the desktop analyses for archaeological resources and because no archaeological resources were identified through the SCCIC record search, there is a low to moderate probability to encounter historic-era archaeological resources based on the inherent characteristics and location of the project area. Current CRTR findings do not conflict with the findings of the 2011 IS/MND for archaeological resources.

There were no cemeteries or burial sites observed as a result of the review of historic aerial photographs and historic topographic maps. There is a low probability to encounter human remains based on the inherent characteristics and location of the project area based on this review. Additionally, the results of the SLF search determined that there are potential tribal cultural resources known or observed within the project site or 0.25-mile radius of the project site, and tribal consultation was initiated by the City on July 7, 2021.

Therefore, Sapphos Environmental, Inc. recommends the following mitigation measures be implemented for the project so that there are no significant impacts to cultural resources:

Mitigation Measure MM-CULTURAL-1: *Avoidance of Historical Resources.* Prior to the initiation of ground-disturbing activities, the School shall review the construction plans to ensure that any known cultural resources that are required to be avoided have been marked as "off-limits" areas for construction and construction staging.

Mitigation Measure MM-CULTURAL-2: *Archaeological and Historical Resources – Avoidance and Monitoring*. Completion of a Worker Education and Awareness Program (WEAP) for all personnel who will be engaged in ground-disturbing activities shall be required prior to the start of ground-disturbing activities. This shall include training that provides an overview of cultural resources that might potentially be found and the appropriate procedures to follow if cultural resources are identified. This requirement extends to any new staff prior to engaging in ground disturbing activities.

In the event that previously unknown archaeological resources, historical resources, or tribal cultural resources (resource[s]) are encountered during construction, the resource(s) shall be flagged and avoided with a 50-foot buffer until a qualified archaeologist is contracted to evaluate the resource(s). Should the resource(s) be found to be significant, the resource(s) shall either be left *in situ* and avoided; or the resource(s) shall be salvaged, recorded, and reposited following standard archaeological procedures. Data recovery is not required by law or regulation. It is, however, the most commonly agreed-upon measure to mitigate significant impacts to archaeological sites eligible or listed in the California Register under Criterion D, as it preserves important information that would otherwise be lost.

Mitigation Measure CULTURAL-3: *Compliance with the Secretary of the Interiors Standards for the Treatment of Historic Properties*. All work completed on the caretaker's cottage and associated detached garage, the detached Villa garage, and interior of the Villa will be completed in a way that complies with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*. Design review of the proposed additions to these buildings as well as any alterations to the interior of the Villa by a qualified Architectural Historian is required prior to the initiation of construction.

Mitigation Measure CULTURAL-4: *Regulatory Requirements – Human Remains*. In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are encountered during excavation activities, the County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby areas reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined, within two working days of notification of the discovery, the appropriate treatment and disposition of the human remains.

If the County Coroner determines that the remains are or are believed to be Native American, s/he shall notify the NAHC in Sacramento within 24 hours. In accordance with Section 5097.98 of the California PRC, the NAHC shall immediately notify the person(s) it believes to be the Most Likely Descendant of the deceased Native American. The descendants shall complete their inspection and make a recommendation within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the Los Angeles County Metropolitan Transportation Authority (Metro), the disposition of the human remains. The Most Likely Descendant's recommendation shall be followed if feasible and may include scientific removal and non-destructive analysis of the human remains and any items associated with Native American burials. If Metro rejects the Most Likely Descendant's recommendations, the agency shall rebury the remains with appropriate dignity on the property in a location that will not be subject to further subsurface disturbance (14 California Code of Regulations §15064.5(e)).

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APPENDIX A
RESUMES OF KEY PERSONNEL

Sapphos environmental inc.

Kasey M. Conley, MHC

Architectural Historian

Master of Heritage Conservation, USC, Los Angeles, CA

- *Identification and evaluation of built environment*
- *Cultural history*
- *History of California*
- *Archival documentation*
- *Historic preservation*

Years of Experience: 4+

Relevant Experience:

- *CEQA documentation for Exposition Park and Descanso Master Plans*
- *Descanso Garden Historic District National Register Nomination*
- *High-Speed Rail Construction Packages 2,3, and 4*
- *Manhattan Beach Context Statement*

Ms. Kasey Conley has three years of experience in the field of cultural resources management and the built environment, including archival research, district and resource surveys, preparation of National Register of Historic Places nominations, and regulatory compliance. She meets and exceeds the Secretary of the Interior's *Professional Qualification Standards* in the fields of History and Architectural History.

Ms. Conley has been the principal investigator and assistant project manager on several-large scale historic evaluations including reconnaissance survey work. Ms. Conley was the assistant project manager for the Altadena African American Historic Resources Survey conducted for the Los Angeles County Department of Regional Planning. The survey completed a historic context statement of the history of the African American Community in Altadena from 1887-1970 and surveyed over 300 properties associated with that history. Ms. Conley also supported the surveying and historic evaluation documentation of Los Angeles County parks, golf courses, and arboreta for the Los Angeles Department of Parks and Recreation. The historic evaluations considered eligibility for listing on the National Register of Historic Places, the California Register of Historical Resources, the County Register of Landmarks and Historic Districts, and standards provided in CEQA. The results were used by the County to address future projects in the facilities, alter plans as needed, and to inform a Cultural Resources Treatment Plan (CRTP) and Worker Environmental Awareness Program (WEAP) training. The project received a Historic Preservation Award from the Los Angeles Conservancy in 2020. Ms. Conley has also provided cultural resources support for the High-Speed Rail (HSR) Construction Packages (CPs) 2,3, and 4. Ms. Conley conducted field surveys, identified and documented resources on Department of Parks and Recreation 523 series forms, and coordinated with the HSR authority in support of these efforts. Ms. Conley also worked as the technical author for the City of Glendale SR-134 Ramp Improvement Project. Ms. Conley evaluated the impacts of the proposed road improvements on the surrounding environment to ensure no impacts would occur to identified national, state, or local historic bridges, tunnels, or highways, or adjacent historic resources as a result of the project.

Additional experience includes preparing Historic American Building Survey/Historic American Engineering Record (HABS / HAER) for properties within Los Angeles and San Bernardino County, preparing National Register nomination forms for historic districts such as Leimert Park in South Los Angeles and the Descanso Gardens Historic District in Pasadena and individual resources throughout Los Angeles and San Bernardino County, and the completion of several historic resource assessment reports within the cities of Los Angeles, Glendale, San Marino, and Rancho Cucamonga.

Sapphos environmental inc.

Carrie E. Chasteen, MS

Cultural Resources Manager

Master of Science, (Historic Preservation), School of the Art Institute of Chicago, Chicago, Illinois

Bachelor of Arts (History and Political Science), University of South Florida, Tampa, Florida

- *Cultural resource management and legal compliance*
- *History of California*
- *Architectural History*
- *Cultural History*
- *Identification and evaluation of the built environment*
- *Archival documentation*
- *Historic preservation consultation*
- *Certified Oregon Transportation Investment Act (OTIA) III CS3 Technical Lead*
- *Chair, Historic Preservation Commissioner, City of Pasadena*
- *Phi Alpha Theta National Honor Society*

Years of Experience: 19

Relevant Experience:

- *Pedestrian Safety and Bult-Outs Project, City of Pasadena, CA*
- *HABS documentation for Space Flight Operations Facility, JPL, Pasadena, CA*
- *Historical Evaluation for Smokehouses, Port of Long Beach*
- *Peer review in support of the Thomas Roads Improvement Program, City of Bakersfield, CA*

Ms. Carrie Chasteen has more than 19 years of experience in the field of cultural resources management and the built environment, including project management, agency coordination, archival research, managing large surveys, preparation of Environmental Impact Statement / Environmental Impact Report (EIS/EIR) sections, peer review, and regulatory compliance. She meets and exceeds the Secretary of the Interior's *Professional Qualification Standards* in the fields of History and Architectural History. Ms. Chasteen currently serves as Cultural Resources Manager.

Ms. Chasteen has served as Principal Investigator / Principal Architectural Historian on projects in Kern, San Bernardino, Riverside, Ventura, Los Angeles, Orange, Imperial, and San Diego Counties in Southern California. She has extensive experience with the California Office of Historic Preservation, the California Department of Transportation (Caltrans), San Bernardino Associated Governments (SANBAG), Los Angeles County Department of Parks and Recreation, the City of Los Angeles, and various other state, county, and local government agencies.

In support of the City of Pasadena Department of Public Work's Pedestrian Safety and Bulb-Outs Project, Ms. Chasteen prepared a Historic Property Survey Report, Historic Resource Evaluation Report, and a Finding of No Adverse Effect with appended Secretary of the Interior's *Standards for the Treatment of Historic Properties* and Environmentally Sensitive Area Action Plan in support of this project. Ms. Chasteen also conducted agency consultation and coordination between the City of Pasadena, Caltrans, and Pasadena Heritage.

Ms. Chasteen has prepared Historic American Buildings Survey / Historic American Engineering Record (HABS / HAER) documentation for the former Caltrans District 7 headquarters building and the Space Flight Operations Facility, commonly referred to as Mission Control, a National Historic Monument, at the Jet Propulsion Laboratory (JPL) in Pasadena.

In support of the City of Bakersfield's Thomas Roads Improvement Program (TRIP), Ms. Chasteen peer reviewed Area of Potential Effects (APE) maps and Historical Resources Evaluation Reports (HRERs) prepared by a variety of consultants. The project involved providing program management services for a consultant team augmenting the City of Bakersfield staff in collaboration with the County of Kern, the California Department of Transportation (Caltrans) District 6, the Kern Council of Governments, and the Federal Highway Administration. The project scope of work included planning, environmental clearance, design, and the construction of 14 projects totaling 85 miles in transportation improvements on the metropolitan Bakersfield highway network. The program's cost was estimated at over $1.25 billion.

Ms. Chasteen is a member of the Society of Architectural Historians, National Trust for Historic Preservation, California Preservation Foundation, and Pasadena Heritage. Ms. Chasteen is also Chair of the Historic Preservation Commission for the City of Pasadena and a Pasadena resident.

Sapphos environmental inc.

Daniel J. Woodward, RPA, MA

Senior Archaeologist

Master of Arts (Anthropology – Archaeology emphasis), California State University, Fullerton, 2012

Bachelor of Arts (History and Anthropology), University of Florida, Gainesville, 1998

- *Project management*
- *Native American coordination*
- *Archaeological fieldwork*
- *Technical writing*
- *Mission Period historic archaeology*
- *Holocene and Pleistocene studies*
- *Lithic studies*

Years of Experience: 20+

Relevant Experience:

- *Project archaeologist for LA-RICS' Land Mobile Radio and Long Term Evolution Projects*
- *Blythe Mesa SolarPproject*
- *Southern Owens Valley Solar Ranch*
- *Barren Ridge Renewable Transmission Line*
- *Emergency Cultural Resource Monitoring of the Adelanto-Toluca 500 kV Transmission Line*
- *City Highline Road Cultural Resource Mitigation and Archaeological Damage Assessment*
- *Cultural resources monitoring for the Riverside Supply Conduit Unit 4*

Mr. Dan Woodward has more than 20 years of experience in the field of cultural resource management including project management, agency coordination, all phases of archaeological fieldwork, and archaeological laboratory analysis. Mr. Woodward has coordinated and managed multiple resources for inclusion into large and small environmental documents under numerous jurisdictions, and prepared cultural resources studies in compliance with the California Environmental Quality Act (CEQA) (Categorical Exemptions, Initial Studies, Mitigated Negative Declarations, and Environmental Impact Reports) as well as the National Historic Preservation Act (NHPA) (Sections 106 and 110). He has participated in multidisciplined teams responsible for Categorical Exclusions, Environmental Assessments, and Environmental Impact Statements under the National Environmental Policy Act (NEPA). Mr. Woodward has coordinated numerous sub-contractors and has written EIR and EIS sections as well as managed POD mitigation for cultural and paleontological resources. He has organized multiple field teams and directed field activities for large and small projects.

Mr. Woodward has managed multiple cultural resource projects throughout southern California. Mr. Woodward was the lead archaeologist for numerous large solar projects in Riverside County, including the Blythe Mesa Solar Project and the Blythe Mesa-Verde Solar Project. Mr. Woodward was the senior cultural resource specialist and project archaeologist representing the Los Angeles Regional Interoperable Communication System Authority (LA-RICS) for the Land Mobile Radio (LMR) and Long Term Evolution (LTE) Projects. He was responsible for project-wide daily tracking of mitigation monitoring, Mr. Woodward advised construction personnel regarding environmental concerns during the project site review process. He performed archaeological surveys and wrote multiple technical reports associated with the project. He was responsible for all aspects of environmental compliance management on the project and was an integral member of the LA-RICS PM/CM team for over three years. In addition, Mr. Woodward has managed cultural resource portions of multiple Los Angeles Department of Water and Power (LADWP) projects, including the Southern Owens Valley Solar Ranch, the Barren Ridge Renewable Transmission Line, Emergency Cultural Resource Monitoring of the Adelanto-Toluca 500 kV Transmission Line, the City Highline Road Cultural Resource Mitigation and Archaeological Damage Assessment, and cultural resources monitoring for the Riverside Supply Conduit Unit 4, among others. Earlier in Mr. Woodward's career, he worked on dozens of archaeological projects throughout Riverside County as a field archaeologist.

As a manager for archaeological resources, Mr. Woodward has written and implemented archaeological management plans and technical reports and has coordinated Native American consultation. He has made pertinent significance recommendations for archaeological resources and has coordinated projects with multiple agencies as well as the California Office of Historic Preservation (OHP).

Mr. Woodward is a registered professional archaeologist, a member of the Society for California Archaeology, and a past member of many regional archaeological societies. In 2010, Mr. Woodward successfully attended the mandatory Riverside County sensitivity training for cultural resources. Mr. Woodward is listed as a Principal Investigator on numerous statewide BLM Permits, ARPA permits, and other state lists.

Appendix C

Noise Analysis

ALVERNO HEIGHTS ACADEMY MASTER PLAN UPDATE

NOISE ANALYSIS

200 NORTH MICHILLINDA AVENUE

ALVERNO HEIGHTS ACADEMY

PREPARED FOR: Julia Fanara, Head of School

Sent via email: jfanara@alveroheights.org

June 30, 2021

Prepared by: CSDA Design Group
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CSDA Project No. 21032.01

CSDA | DESIGN GROUP

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1.0 Project Description

CSDA Design Group (CSDA) completed a noise technical analysis for the Alverno Heights Academy Master Plan project in 2011 that reviewed project-related noise generation such as traffic noise and operational noise from student activity. The City of Sierra Madre is currently in the process of implementing an updated 2021 Master Plan for the Alverno Heights Academy.

The following report compares the noise environment associated with the proposed Master Plan (2021) with the noise environment predicted in the approved 2011 Master Plan.

2.0 Executive Summary

- Environmental Noise Measurements:
    - Noise measurements for the following study were conducted between Monday, May 10 and Wednesday, May 12, 2021, when the school was permitted to return to in-person learning by the Los Angeles County Health Department. See Section 5.2 for information about the 2021 noise measurements.
    - The following study also reviews the noise measurements conducted as part of the 2011 Master Plan Update. These noise measurements were conducted on Sunday March 28, 2010, to review the ambient conditions during weekend activities (e.g., special use Villa rentals for events such as weddings). Weekend outdoor events, although reviewed in the 2011 CEQA documentation, are not considered part of the 2021 Master Plan Update and are not included in the analysis below. See Section 5.1 for information about the noise measurements conducted as part of the 2011 Master Plan Update.
    - Both measurement sets included four separate measurements positioned in the same general areas. 24-hour CNEL levels between these two measurement periods exhibited a 1 dB to 6 dB change in noise level, which is typical of what is expected for residential weekday vs. residential weekend noise level measurements. See Section 5.3 for information about the comparison between measurement sets.
- Overall project-generated trips due to the 2021 Master Plan Update will decrease due to the change of enrollment (i.e., from the original planned enrollment of 400 high school students to the current enrollment of 400 students, split between high school and elementary school students), the proposed 2021 Master Plan Update is not expected to introduce a considerable change of noise level noise around the overall project area. See Section 6.1 for more information.
- After construction of the planned buildings that are part of the 2021 Master Plan Update, noise from midday elementary school lunch/break periods (i.e., students having lunch in the new lower school courtyard area plus students at play in the open space area/lower school sports court) are estimated to not exceed any of the existing ambient noise levels at nearby residential receivers. See Section 6.2 for more information.
- Student athletes (as well as adult spectators, coaches, and officials) using the hardcourt at the northwest corner of campus are not expected to generate average or instantaneous noise levels that exceed the existing ambient noise levels at nearby residential receivers. See Section 6.2 for more information.
- Student athletes (as well as adult spectators, coaches, and officials) using the athletic fields at the southeast corner of campus are not expected to generate *average* noise levels that exceed the existing ambient noise levels at nearby residential receivers. However, usage of this court

does have the potential to generate *instantaneous* noise levels that exceed the existing ambient noise levels measured along Wilson Street and Highland Avenue. Student athletes (as well as adult spectators, coaches, and officials) using the athletic fields at the southeast corner of campus are estimated to generate instantaneous noise levels up to 63 dBA at residential receivers along Wilson Street (where the existing weekday noise levels between 3 PM and 5:15 PM ranges between L_{EQ} 53 dBA and 63 dBA), and up to 65 dBA at residential receivers along Highland Avenue (where the existing weekday noise levels between 3 PM and 5:15 PM ranges between L_{EQ} 62 dBA and 64 dBA).

- As described in this report, the most noise-intensive events associated with the project would be midday elementary school break/lunch periods and after school athletic events. If there were to be a change in enrollment (e.g., max enrollment of 400 students with 65% elementary students, rather than the current 50/50 split), the estimated noise levels presented in this report would not change significantly. Additionally, a change in enrollment (while maintaining a max enrollment of 400 total students) would not significantly change the number of students attending the most noise-intensive outdoor activities (e.g., athletic events would still draw the same number of athletes and spectators).

3.0 2011 Master Plan Noise Study

In 2011, a Master Plan was developed for the Alverno Heights Academy to provide facilities to meet the educational and athletic needs of the school. The following list of approved items were either not construction, partially implemented, or fully implemented.

- **Multipurpose Building (not constructed):** A two-story building to be located on the western part of campus. The approved building consisted of a combination gymnasium, auditorium, and performing arts facility, to be used for events such as worship services, athletic events, and school plays and productions. This building was intended to be 12,860 square feet, large enough to hold the entire student body under one roof.
- **Outdoor Amphitheater (not constructed):** A 2,900 square foot amphitheater in the central portion of the campus. This area was intended to provide an outdoor instructional area. No large-scale musical performances would be staged at this location due to the small size of the planned facility.
- **Parking (partially implemented in 2019):** A reconfiguration of the two existing parking areas by reducing the size of the Wilson Street parking lot and enlarging the parking lot off Michillinda Avenue; implementation would result in a total number of 112 marked spaces. This proposed reconfiguration also included the addition of 52 tandem parking spaces next to an existing drive aisle in the southwestern part of the campus; direct access would be from West Highland Avenue. Tandem spaces will be used for special events such as school dances. Only changes to the Wilson Street parking lot were implemented with the 2011 Master Plan buildout.
- **Athletic Facilities (implemented in 2019):** Augmentation of the existing non-regulation softball field to create a multipurpose field in the southeastern part of the campus on the sites of the existing field and parking lot; no field lights would be provided. The improved field would accommodate a regulation softball field and a regulation soccer field.

The 2011 Master Plan also includes a reduction of the maximum permitted enrollment from 500 High School students to 400 High School students. The 2011 Noise Study completed for the Master Plan considered buildout of all facilities mentioned above, however the only changes that were implemented were the augmentation of the athletic facilities and a partial reconfiguration of the parking facilities. The current maximum capacity at Alverno Heights Academy remains at 400 students; however, rather than

providing capacity for 400 High School girls, the school enrollment now consists of an approximately 50/50 split of high school girls and elementary school students (transitional kindergarten to 8th grade).

4.0 2021 Master Plan

The updated master plan for the Alverno Heights Academy proposes the following facilities:

- **Minimal Changes to Upper School Buildings:** The 2021 Master Plan Update proposes a small 1,200 square-foot art classroom expansion to the existing visual/performing arts building. The existing Cottage is also planned to be converted to a flexible classroom building. The rest of the Upper School Campus (used by High School students) will remain the same.
- **Multipurpose Building:** The Multipurpose Building that was approved in the 2011 Master Plan is proposed again as part of the 2021 Master Plan.
- **Parking Facilities:** The expansion of the Michillinda Parking Lot that was approved in the 2011 Master Plan is proposed again as part of the 2021 Master Plan.

Most changes included in the 2021 Master Plan will be at the Lower School near the southwest quadrant of campus. The changes include:

- **New Buildings:** The 2021 Master Plan buildout would include the construction of 22,000 square feet of new classroom buildings and administrative space.
- **Flex Classroom Space:** The existing Caretaker Cottage Building (2,100 square feet) will be renovated with new flexible classroom space.
- **Wilson Street Parking:** the 2021 Master Plan includes new faculty parking at Wilson Street (the existing non-historic office structure will be demolished)
- New internal drop-off zone and firetruck access

A site map representing the 2021 Master Plan is shown in Figure 1.

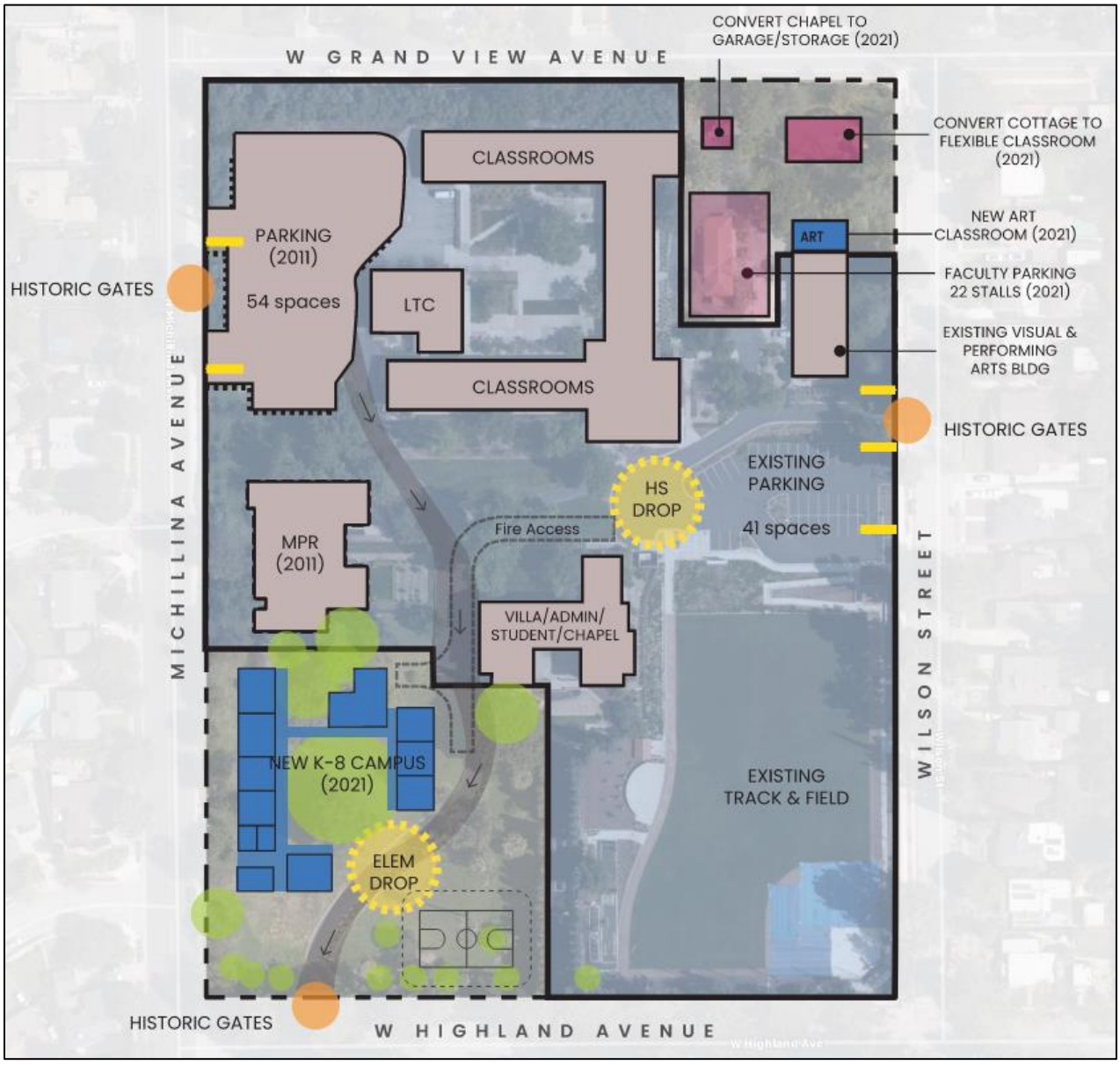

Figure 1: 2021 Master Plan Update Site

5.0 Noise Measurements

Noise measurements were conducted in 2010 by The Planning Center as part of the original noise and vibration technical study, and again in 2021 by CSDA Design Group. Both sets of measurements include four measurement locations – the 2021 measurements were positioned near the locations chosen for the 2010 measurements. Measurement locations for each set are shown in Figure 2.

Figure 2: Noise Measurement Locations

5.1 2010 Noise Measurement Results

The Planning Center conducted ambient noise measurements on the 24-hour period of Sunday March 28, 2010, which were incorporated into the 2011 Master Plan Noise Study. The results of the noise measurements are presented in Table 1; these results are shown graphically in Figures 3 through 6. Measurement data, as well as the following description of the noise environment at that time, were provided in the 2011 Alverno High School Master Plan Noise and Vibration Technical Study.

At the time of these measurements, the noise environment at the project site and local vicinity primarily consisted of local roadway noise including Michillinda Avenue, as well as distant roadway noise from Interstate-210. Traffic noise from West Highland Avenue, Wilson Street, and West Grandview Avenue contributes to the noise environment to a lesser extent. For the 2010 measurements, sound level meters were placed near the Alverno High School property lines along West Highland Avenue, Wilson Street, Michillinda Avenue, and West Grandview Avenue to obtain ambient noise levels on a typical weekend without any school events. Descriptions of the noise measurement locations are as follows:

- **Measurement #1, Wilson Street**: The sound level meter was placed on Alverno High School Property approximately 35 feet from the edge of Wilson Street. This roadway is infrequently traveled and is used primarily for residents of Wilson Street and for access to the high school. Primary noise sources are distant traffic, infrequent vehicle passbys, and low levels of noise from athletic field usage at the high school. Noise monitoring shows that ambient noise levels are quiet, consistent with that of a suburban residential neighborhood.
- **Measurement #2, Grandview Avenue**: The sound level meter was placed approximately 7 feet from the edge of Grandview Avenue. This location was intended to measure noise levels from the traffic along Grandview Avenue as well as general ambient noise levels. Primary noise sources were passing vehicles along this roadway and distant traffic.
- **Measurement #3, Michillinda Avenue**: The sound level meter was placed on Alverno High School property, approximately 20 feet from the school property line and 27 feet from the edge of Michillinda Avenue. The primary noise source at this location was traffic along Michillinda Avenue.
- **Measurement #4, Highland Avenue**: The sound level meter was placed approximately 10 feet north of Highland to measure noise levels from the traffic along this roadway as well as ambient noise levels. The primary noise sources at this location were passing vehicles along Highland Avenue. Secondary noise sources were at Alverno High School. Music and noise generated by students at the Villa were discernable but not of high magnitude during the monitoring period.

The data reported in the 2011 Master Plan CEQA documentation (and represented in Figures 3 through 6) only represent noise levels recorded on Sunday, March 28, 2010. Regular school operations do not typically occur on weekends, as such these 2010 measurements are not an accurate representation of the ambient noise environment that exists during typical outdoor school day activities. The noise measurements associated with the 2011 Master Plan CEQA documentation were conducted on a Sunday because, in addition to typical school day activities, that environmental study also reviewed activities such as weddings that may occur on Sundays.

Note: The Alverno Heights Academy does not have regular outdoor activities on weekends, or past 5:15 PM on weekdays. There are a small number of non-regular events, such as graduation ceremonies or special sports events, that continue past 5:15 PM. The Villa, however, has their own activities with its own special-use permit through the city that typically accounts for 30 outdoor activities per year (e.g., the Villa could be rented out for private events or weddings). Outdoor events that use this special-use permit, although reviewed in the 2011 CEQA documentation, are not considered part of the 2021 Master Plan Update and are not included in the analysis below.

Table 1: Noise Measurement Results (The Planning Center, 2010)

Measurement Location	Measured Noise Levels (weekend)	
	CNEL, dBA	Loudest 1-hour Period L_{eq}, dBA (time period)
Measurement #1: Wilson Street	55	57 (1 PM)
Measurement #2: Grandview Avenue	59	59 (1 PM)
Measurement #3: Michillinda Avenue	63	62 (12 PM
Measurement #4: Highland Avenue	56	58 (11 AM)

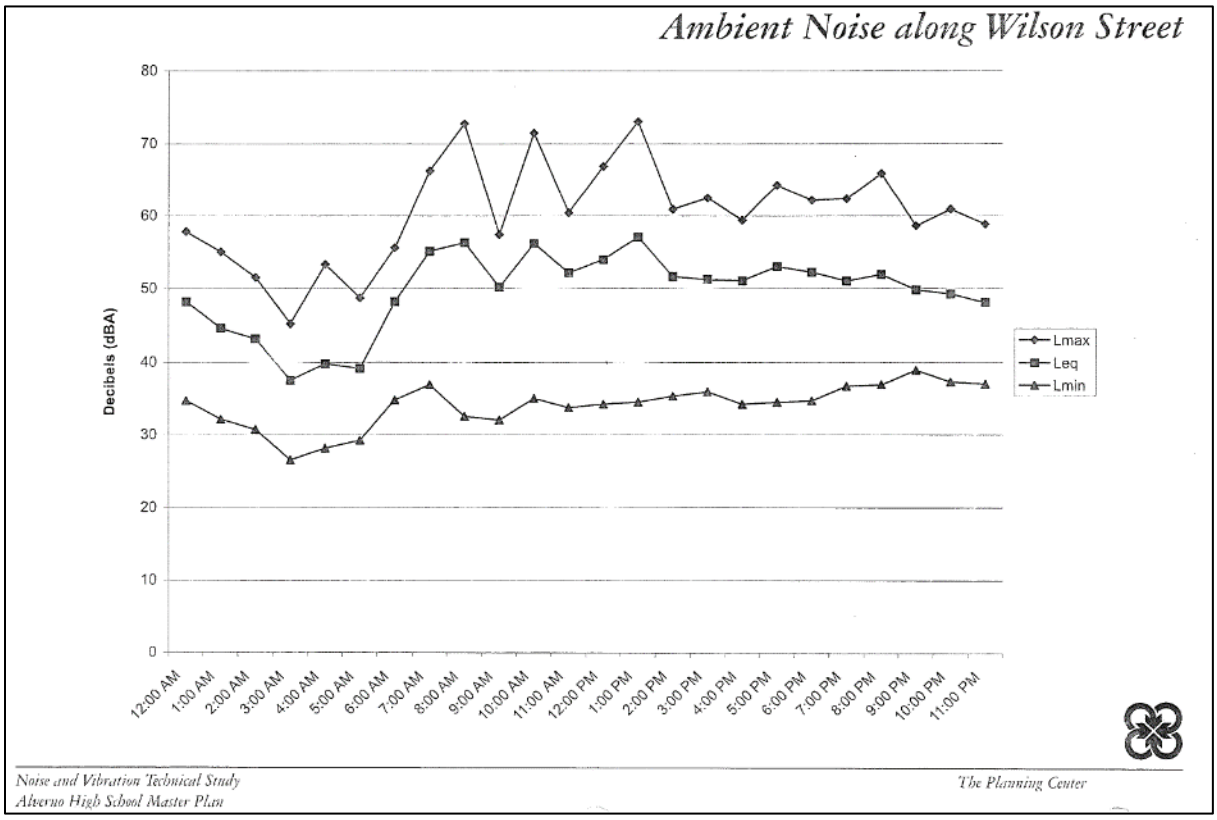

Figure 3: Continuous Noise Levels at Measurement #1 - Wilson Street (The Planning Center, 2010)

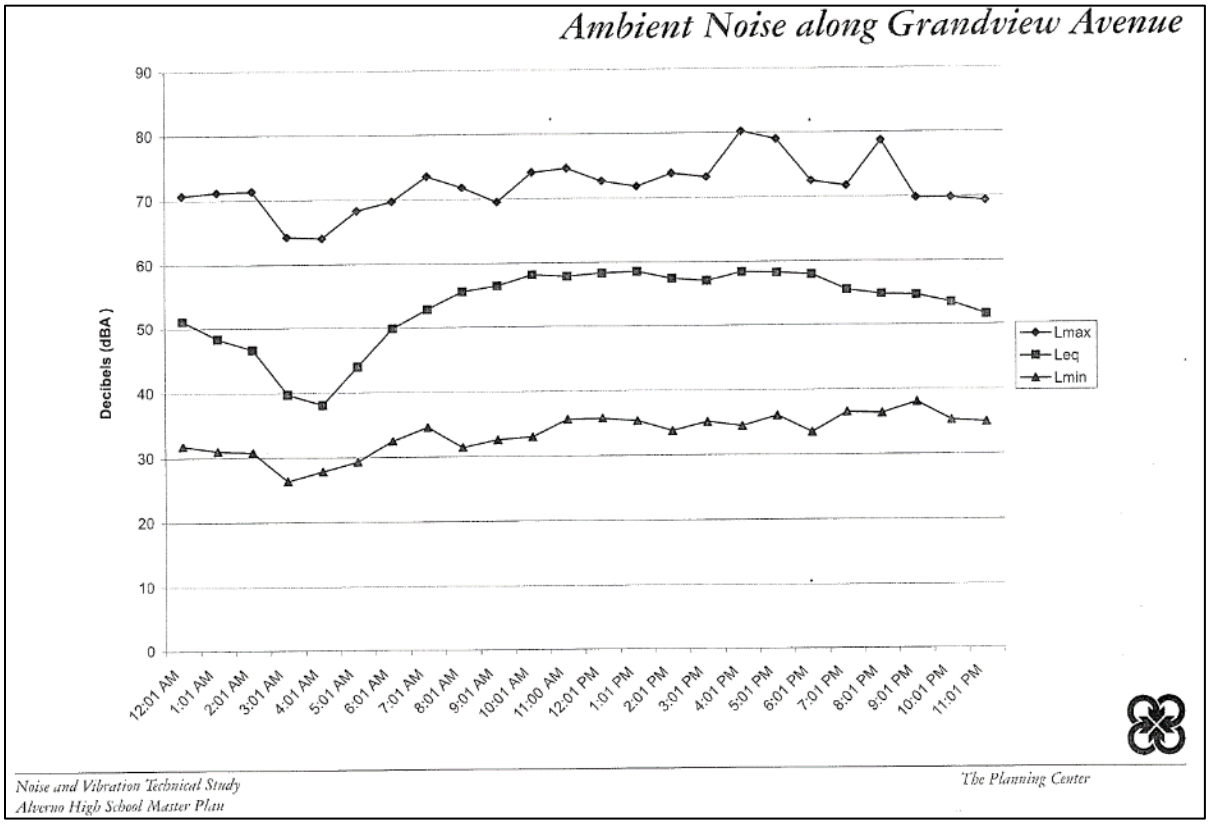

Figure 4: Continuous Noise Levels at Measurement #2 – Grandview Avenue (The Planning Center, 2010)

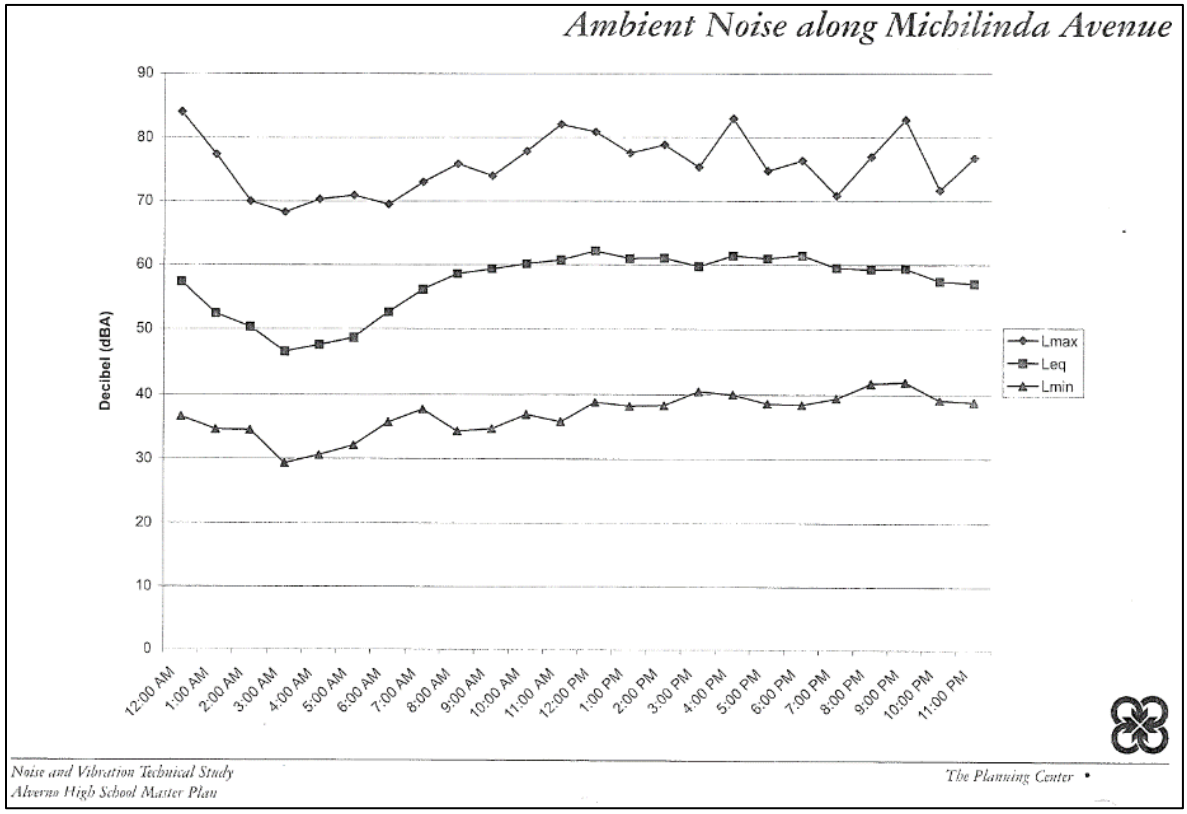

Figure 5: Continuous Noise Levels at Measurement #3 – Michillinda Avenue (The Planning Center, 2010)

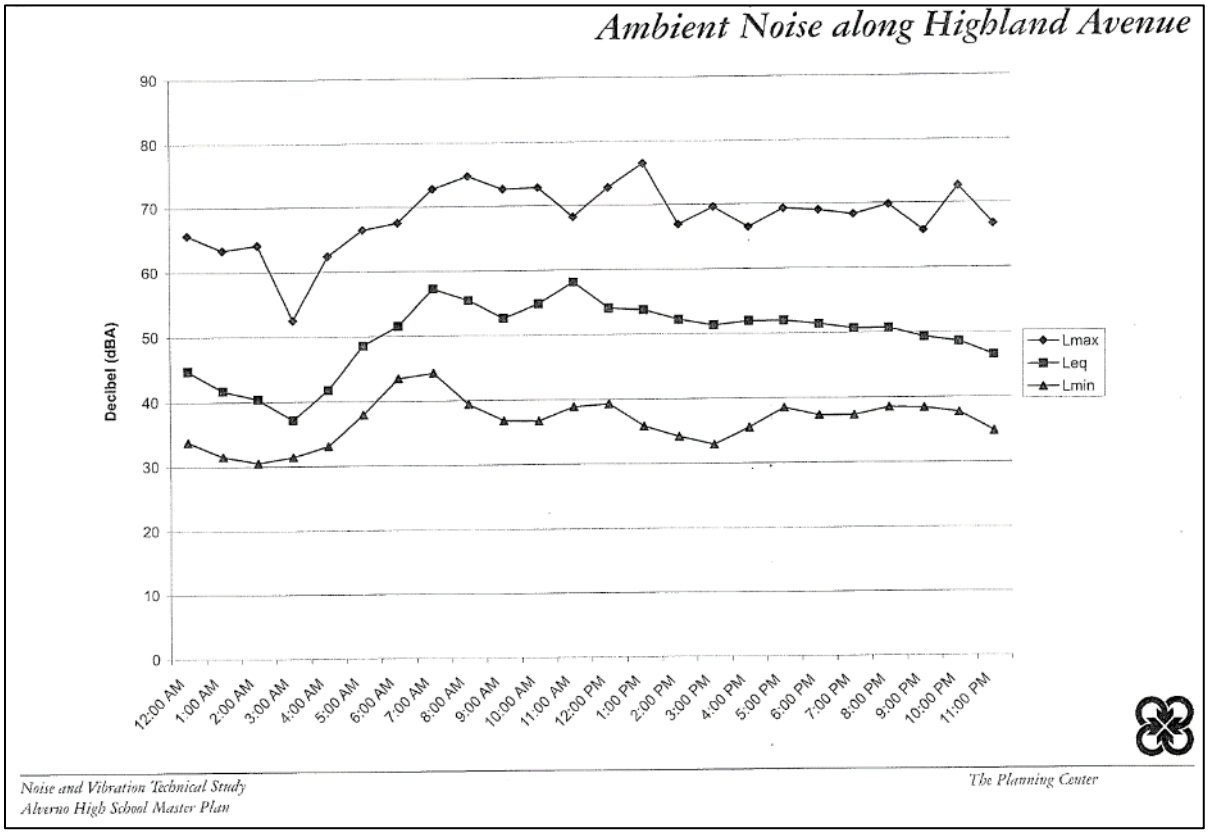

Figure 6: Continuous Noise Levels at Measurement #4 – Highland Avenue (The Planning Center, 2010)

5.2 Existing (2021) Noise Measurement Results

CSDA Design Group conducted noise measurements at the Alverno Heights Academy project site. Measurement positions similar to the positions chosen for the 2010 noise analysis were selected. 2021 measurements were conducted between Monday, May 10 and Wednesday, May 12, 2021. The results of the noise measurements are presented in see Table 2Figure 2.

As mentioned above, the noise measurements associated with the 2011 environmental documentation were conducted on a Sunday (due to review of weekend events that are outside of the scope of this noise study). As such, there is not a direct correlation between the continuous noise levels measured in the 2011 measurements vs. the 2021 measurements. Noise measurements are nonetheless compared and discussed in Section 5.3.

Table 2: Noise Measurement Results (CSDA, 2021)

Measurement Location	**Measured Noise Levels**	
	CNEL, dBA	**Loudest 1-hour Period L_{eq}, dBA (time period)**
Measurement #1: Wilson Street	56	64 (8 AM)
Measurement #2: Grandview Avenue	65	72 (2 PM)
Measurement #3: Michillinda Avenue	67	71 (3 PM
Measurement #4: Highland Avenue	62	64 (3 PM)

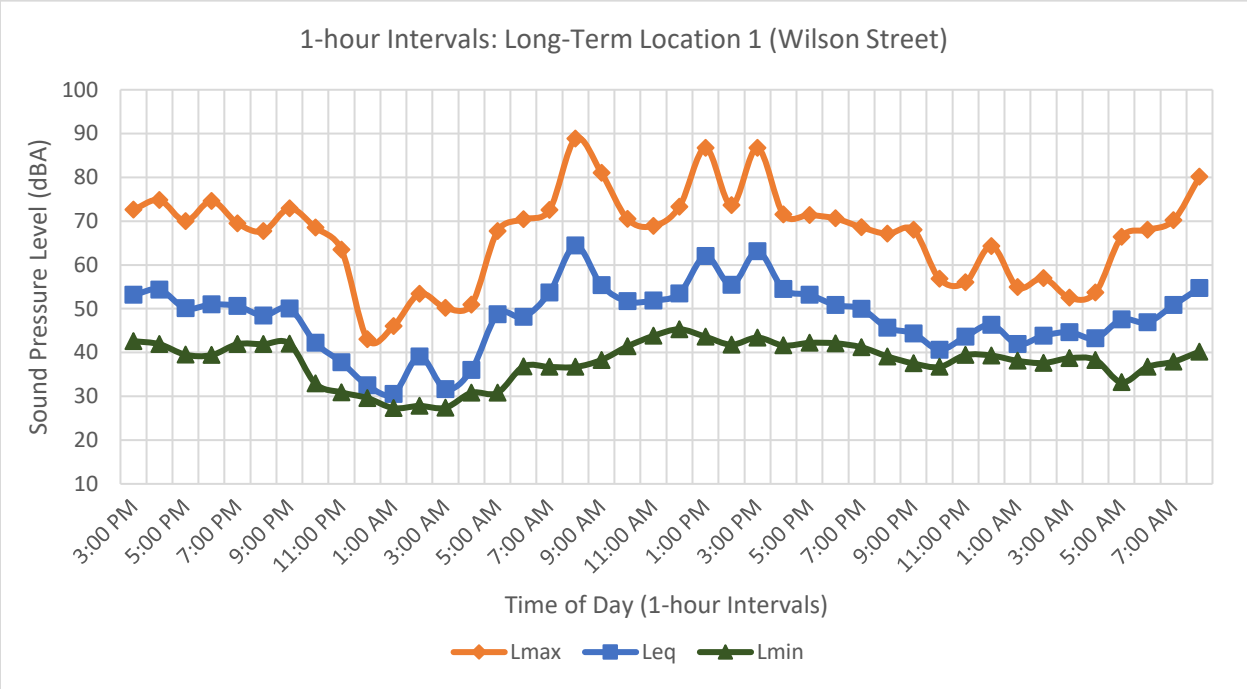

Figure 7: Continuous Noise Levels at Measurement #1 - Wilson Street (CSDA, 2021)

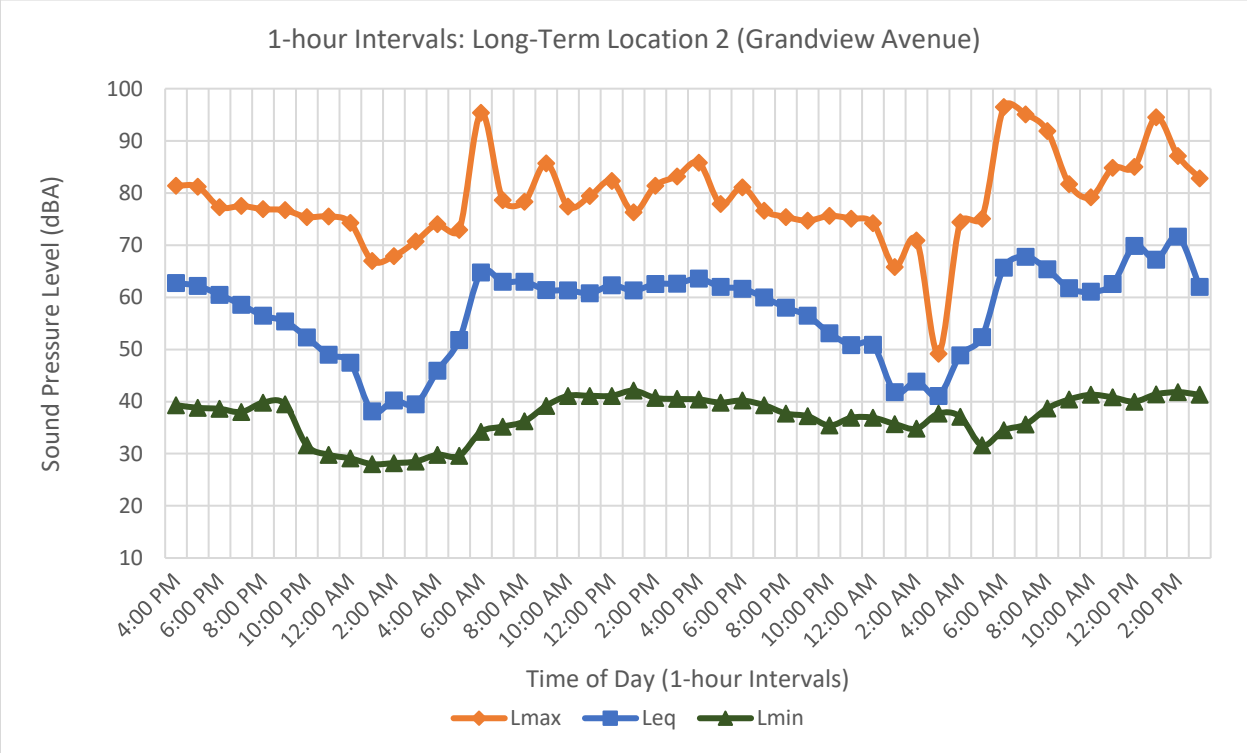

Figure 8: Continuous Noise Levels at Measurement #2 – Grandview Avenue (CSDA, 2021)

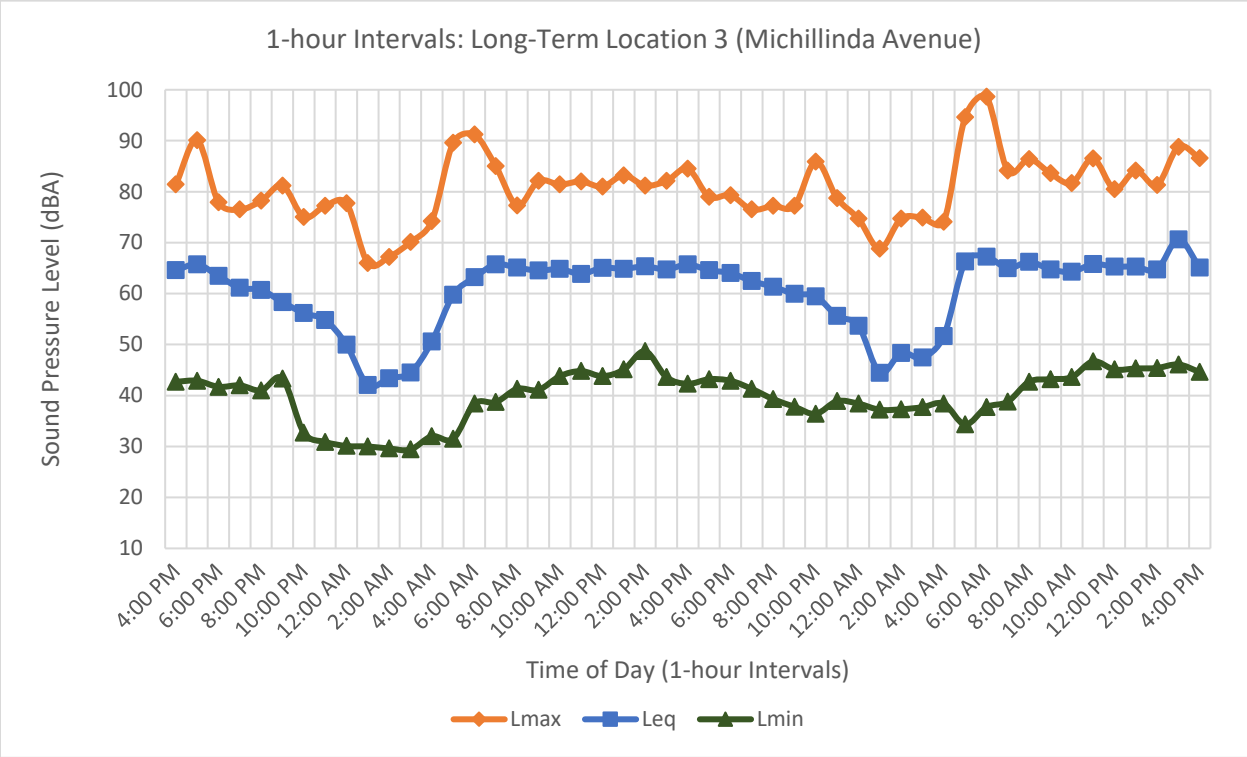

Figure 9: Continuous Noise Levels at Measurement #3 – Michillinda Avenue (CSDA, 2021)

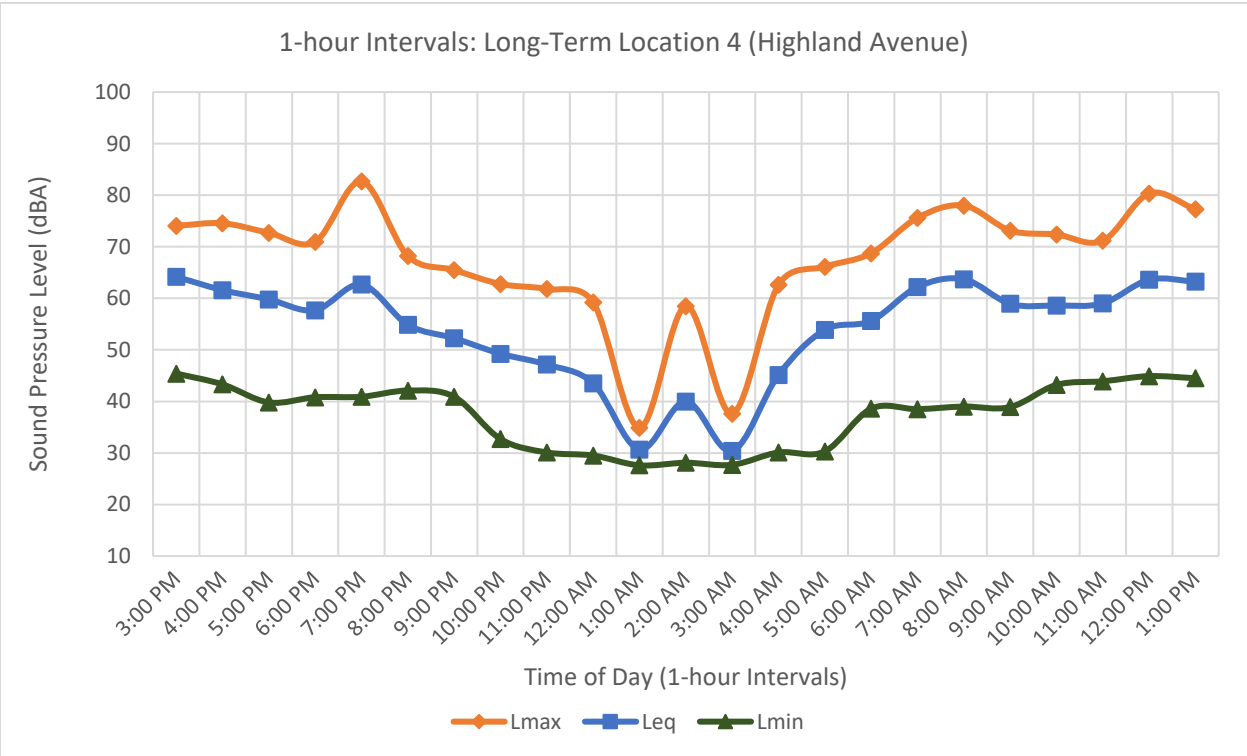

Figure 10: Continuous Noise Levels at Measurement #4 – Highland Avenue (CSDA, 2021)

5.3 *Noise Measurement Summary (2010 vs. 2021)*

As mentioned above, the data reported in the 2011 Master Plan CEQA documentation (and represented in Figures 3 through 6) only represent noise levels recorded on Sunday, March 28, 2010. The noise levels recorded in 2021 (and represented in Figures 7 through 10) represent weekdays, at which time outdoor school day activities will regularly occur.

Note: Due to differences in rush hour traffic periods, weekday and weekend noise environments are typically quite different. Nonetheless, these noise level differences are typical of what is expected for residential weekday vs. residential weekend noise level measurements. Table 4 represents the measured differences between the noise level measurements conducted for the 2011 Master Plan update and the 2021 Master Plan update.

Table 3: Measured Noise Level Increase Measurement Results (CSDA, 2021)

Measurement Location	**Measured Noise Levels, CNEL, dBA**		**Measured Increase**
	2011 Master Plan	**2021 Master Plan**	
Measurement #1: Wilson Street	55	56	+1
Measurement #2: Grandview Avenue	59	65	+6
Measurement #3: Michillinda Avenue	63	67	+4
Measurement #4: Highland Avenue	56	62	+6
Measurement Location	**Measured Noise Levels, 1-hour Period L_{eq}, dBA**		**Measured Increase**
	2011 Master Plan	**2021 Master Plan**	
Measurement #1: Wilson Street	57 (1 PM)	64 (8 AM)	+7
Measurement #2: Grandview Avenue	59 (1 PM)	72 (2 PM)	+13
Measurement #3: Michillinda Avenue	62 (12 PM)	71 (3 PM)	+9
Measurement #4: Highland Avenue	58 (11 AM)	64 (3 PM)	+6

6.0 Operational Noise Analysis

School operations, including traffic during drop off/pickup periods and outdoor student activity during breaks and/or sport events, have the potential to generate levels of noise that are noticeable at nearby residential receivers.

Note: The Alverno Heights Academy does not have regular outdoor activities on weekends, or past 5:15 PM on weekdays. There are a small number of non-regular events, such as graduation ceremonies or special sport events, that continue past 5:15 PM. The Villa, however, has their own activities with its own special-use permit through the city that typically accounts for 30 outdoor activities per year (e.g., the Villa could be rented out for private events or weddings). Outdoor events that use this special-use permit are not considered part of the Alverno Heights project and are not included in the analysis below.

6.1 *Project-Related Traffic Noise*

A Traffic Circulation Analysis dated April 30, 2020, was provided by W.G. Zimmerman Engineering, Inc. (WGZE). This study analyzes the estimated trip generation associated with the approved 2011 Master Plan (i.e., based on 400 High School students), as well as the trip generation associated with the proposed 2021 Master Plan (i.e., 200 High School students + 200 Elementary School students).

The WGZE traffic study states that since the adjacent residential area is substantially built-out, the WGZE traffic study does not include existing condition ambient traffic counts. Instead of physical counts, existing condition traffic was estimated using the measured 2010 traffic counts, plus a 0.5% per year growth factor. The ambient traffic data used in the noise study for the 2011 Master Plan CEQA

documentation, as well as the projected current (2021) traffic data (which uses the WGZE estimate of 0.5% traffic volume increase per year), are presented in Table 4

Table 4: Ambient Traffic Counts

Condition	Roadway	Traffic Volumes		
		Total Daily (ADT)	AM Peak Hour	PM Peak Hour
2011 Master Plan**	Michillinda Ave	7,348	654	590
	Highland Ave	391	35*	31*
	Wilson Ave	1,877	167*	151*
	Grandview Ave	3,310	295*	266*
2021 Master Plan Update***	Michillinda Ave	7,919	705	636
	Highland Ave	421	38*	34*
	Wilson Ave	2,023	180*	162*
	Grandview Ave	3,567	317*	286*

*AM and PM peak hour traffic counts were not provided for these roadways; peak hour volumes are based on the total daily count and the peak hour/ADT percent difference measured along Michillinda Ave. (i.e., AM peak hour is estimated to be 9% of the ADT, PM peak hour is estimated to be 8% of the ADT)

**Traffic counts for the 2011 Master Plan are dated 2006

***Ambient traffic volume based on 2011 Master Plan data plus a 0.5% increase between 2006 to 2021

The estimated traffic volume increase from WGZE, 0.5% per year for 15 years, accounts to a total traffic volume increase of approximately 8%. This accounts for a composite noise level increase of less than 1 decibel. Based on a review of the 2021 noise measurement data, noise levels around the project site are dominated by traffic sources.

The total vehicle trips generated by the school during AM drop-off and PM pickup conditions, are shown in Table 5.

Table 5: Project-Generated Vehicle Trip Generation

Project Condition	Traffic Volumes		
	Total Daily	AM Drop-off (M-F, 7 AM – 8 AM)	PM Pickup (M-F, 1:30 PM – 2:45 PM)
400 High School Students	823	172	116
200 High School Students, 200 Elementary School Students	727	176	114
Total Change	-96	+4	-2

Note: Traffic data provided by W.G. Zimmerman Engineering, Inc., 2020

The original Master Plan from 2011 included a maximum school capacity of 400 high school students. The current condition (as well as that of the proposed 2021 Master Plan Update) includes a maximum school capacity of 400 students, split between High School students and Elementary School students. As shown in Table 5, implementation of the updated enrollment condition (i.e., adding up to 200 elementary students into the total 400 student capacity) will decrease the total daily vehicle trips by 96 (decrease of approximately 12%). The change in vehicle trips associated with AM drop-off and PM pickup is marginal (i.e., less than 3% change due to change in enrollment).

Since project-generated trips due to the Master Plan Update will decrease due to the change of enrollment, the proposed Master Plan Update is not expected to induce a considerable change of noise level noise around the overall project area.

6.2 *Outdoor Student Activity Noise*

Although there may be outdoor student activity throughout the school's operating hours, the outdoor student operations that contribute to most of the noise generation are as follows (details about outdoor school operations are based on discussions with Alverno Heights Administrative staff):

- Student Drop-off:
  - Student drop-off occurs Monday through Friday, from approximately 7 AM to 8 AM
  - See Section 6.1 for details about project-related traffic noise.
- Lunch/Break period (elementary school grades cycle through play area and lunch area)
  - Beginning at approximately 9 AM, Elementary School Students (Lower School) will begin recess. Groups of students (two grade levels per group, or approximately 35 students per group) will rotate into the play area in 30-minute intervals. At approximately 10 AM, groups of students will start taking their lunch period, and will also rotate into the outdoor lunch area in 30-minute intervals. Between approximately 10 AM to 1 PM, there is the potential for approximately 35 students to be using the break area at the same time as approximately 35 students are using the lunch area.
  - There is the potential for up to 40 High School girls to also use the Upper School courtyard area for lunch/break during this high-activity period between 10 AM to 1 PM.
  - **In total, during the worst-case mid-day lunch/break period between 10 AM to 1 PM, there is the potential for approximately 90 elementary school students to be using the outdoor break and lunch areas, and approximately 40 High School girls to be using the Upper School courtyard.**
- Student Pickup:
  - Occurs Monday through Friday, from approximately 1:30 PM – 3 PM
  - Elementary school students will typically wait outside in line while they wait to be picked up (approximately 200 elementary school students).
  - See Section 6.1 for details about project-related traffic noise.
- After-school sport activities (High School only)
  - After-school sports will last from approximately 3 PM to no later than 5:15 PM.
  - There is the potential that softball or soccer games (southeast corner of campus) will occur at the same time as basketball games (northwest corner of campus).
  - A sports game will typically have approximately 35 high school student athletes, and up to 35 adults (parents, coaches, referees).
  - **In total, during the worst-case after-school athletic period between 3 PM and 5:15 PM, there is the potential for approximately 35 student athletes plus 35 adult spectators/coaches/officials at each athletic field area (i.e., the softball/soccer field at the southeast corner of campus; the basketball court at the northwest corner of campus).**

To estimate noise generated by elementary school students using outdoor facilities, this analysis primarily relies on a study by Noise and Sound Services titled "Carrying out noise assessments for proposed childcare facilities". To estimate noise generated by high school students using outdoor facilities and athletic fields (as well as noise generated by adults attending sporting events), this analysis relies on information provided by Engineering Toolbox. The sound reference levels for human speech provided by the resources mentioned above are presented in Table 6. Note: sound reference levels for High School girls were assumed to be the logarithmic average of the provided child speech sound level and the provided adult speech sound level.

Table 6: Human Speech Sound Reference Levels

	Sound Reference Level at 1 meter (3.28 feet), dBA				
	Shout	Loud	Raised	Normal	Casual
Adults[1]	-	82	76	70	65
Elementary School Students[2]	82	74	65	58	53
High School Girls[3]	86	80	73	67	62

Notes:
1. Engineering ToolBox, (2005). Voice Level at Distance. [online]
2. Noise and Sound Services (2006). Carrying out noise assessments for proposed childcare facilities.
3. Sound reference levels for High School girls was assumed to be the log average of the provided child speech sound level and the provided adult speech sound level.
4. Using a distance drop-off of 3-6 dBA attenuation per doubling of distance, the sound reference level for each of these individual sources at a distance of 25 feet would be between 9-18 dB lower than what is shown in the table. I.e., a high school girl shouting is estimated to be between 68 to 77 dBA at 25 feet.

The Noise and Sound Services resource also provides typical durations of each speech level for children at play. Typical speech level durations are not provided for high school students on break or during sporting events, or for adults – speech durations for high school students and adults are therefore assumed, as shown in Table 7.

Table 7: Equivalent Speech Sound Levels

Activity	**Percent of time at each Speech Level**					**Equivalent Sound Level at 1 meter (3.28 feet), dBA**
	Shout	Loud	Raised	Normal	Casual	
Elementary School Students at Play[1]	1.3%	13%	33%	33%	19%	68 dBA
High School Students during break[2]	-	-	-	-	100%	62 dBA
High School Students during after-school sports[3]	1.3%	13%	33%	33%	19%	74 dBA
Adult Spectators during after-school sports[4]	-	0.5%	10%	33%	56%	70 dBA

Notes:
1. Noise and Sound Services (2006). Carrying out noise assessments for proposed childcare facilities.
2. Based on discussion with school admin, High Schoolers spend most of their break using their cell phones or talking casually.
3. High Schoolers during after-school sports are assumed to use the same speech level percentages that were provided in the resource used for elementary students.
4. Assumptions were made for speech level percentages for adults during after-school sports.

The noise levels represented in Table 7 show the continuous equivalent noise level associated with outdoor activities (i.e., levels averaged over an entire outdoor activity period). The project-related outdoor activity noise analysis detailed below is in terms of this average noise level. However, as shown in Tables 6 and 7, instantaneous outdoor activity noise will be higher than the continuous equivalent noise level used in the noise models below:

- Elementary student "shouting" is estimated to be 14 dB louder than the equivalent continuous L_{EQ} noise level for elementary students.
- High school athlete "shouting" is estimated to be 12 dB louder than the equivalent continuous L_{EQ} noise level for high school athletes.
- Adult sports spectators at "loud" voice level are estimated to be 10 dB louder than the equivalent continuous L_{EQ} noise level for adult sports spectators.

Instantaneous noise levels may exceed the continuous equivalent noise level during, for example, intense sport plays with a lot of cheering. **To understand the expected instantaneous noise level in terms of the analysis below (which utilizes continuous equivalent, L_{EQ} noise levels), 10-14 dB should be added to the estimated continuous equivalent noise levels estimates.**

To calculate noise generated by the students using the outdoor facilities, 3D computer modeling software, CadnaA, was used. CadnaA utilizes the ISO 9613-2 calculation methodology. The noise reference levels from the resources below were inputted to the modeling software according to the 2021 Master Plan Update. The computer model also incorporates the shielding/blocking provided by the project buildings and considers any noise reflected off project buildings. Note: the noise sources used to model school operations were set within the model manually based on understanding of school operations and discussion with school administration. The results presented below should be considered general, as impacts in terms of each residential receiver may depend on the exact location of students/athletes/spectators during periods of loud activity. Additionally, each individual's percent of time at raised speech level, which may vary by person or event type, will also result in varied noise levels at receiver locations.

As described in Section 4.0, the 2021 Master Plan buildout will include the construction of new buildings in the southwest quadrant of campus. Currently, lower school lunch activities, which occur in the open space areas in the southwest quadrant of campus, have a clear noise path to residential receivers along Michillinda Avenue and Highland Avenue. Once the new buildings on campus are constructed, these structures will act as noise barriers between outdoor elementary school activities and some of the surrounding residential receivers along Michillinda Avenue and Highland Avenue. Noise estimates showing elementary school lunch/break activities with and without inclusion of the proposed buildings are presented below to demonstrate the estimated change in noise level between existing conditions (not including new proposed buildings) and proposed buildout conditions. High school students take their break/lunch in the existing courtyard at the upper school which also acts as a noise barrier between upper school courtyard activities and nearby residential receivers.

The following conditions were modeled, and noise contour maps were generated for each, as shown in the following figures:

- Lower School Lunch/Break period, without proposed building additions. These activities may occur Monday-Friday from approximately 10 AM to 1 PM (Figure 11).
    - 35 Elementary School students using the area just north of the existing Villa for lunch.
    - 35 Elementary School students using the southwest open space area for break/playtime.
    - 40 High School students using the Upper Campus courtyard for lunch/break.
- Lower School Lunch/Break period, with proposed building additions. These activities may occur Monday-Friday from approximately 10 AM to 1 PM (Figure 12).
    - 35 Elementary School students using the area just north of the existing Villa for lunch.
    - 35 Elementary School students using the southwest open space area for break/playtime.
    - 40 High School students using the Upper Campus courtyard for lunch/break.
- After-school sport activities (two simultaneous sports games), with proposed building additions. These activities may occur Monday-Friday from approximately 3 PM to 5:15 PM (Figure 13).
    - 35 High School athletes using the northwest hardcourt for sporting event.
    - 35 adult spectators/coaches/officials surrounding the northwest hardcourt.
    - 35 High School athletes using the southeast field for sporting event.
    - 35 adult spectators/coaches/officials surrounding the southeast field.

Note: The following figures only include noise generation from school operations (human activity), and do not include contribution from existing noise sources. The noise levels shown in the following figures

are in terms of continuous equivalent noise levels (L_{EQ}). To understand the expected instantaneous noise levels in terms of the noise contours below, 10-14 dB should be added to the estimated continuous equivalent noise levels (L_{EQ}) estimates.

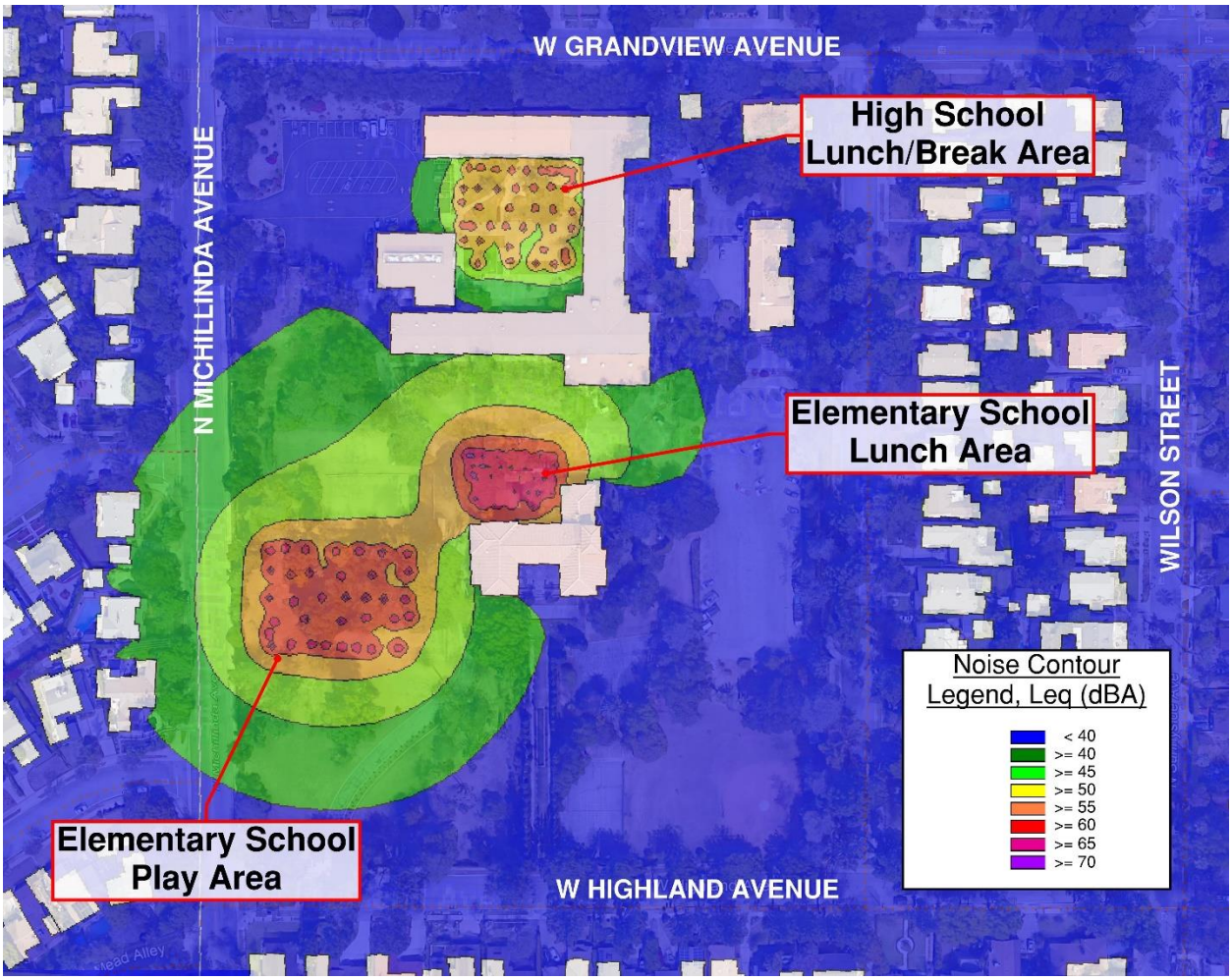

Figure 11: Noise Levels Generated by Mid-Day Outdoor Lunch/Break Activities (existing 2021 condition, i.e., Not Including New Building Constructions)

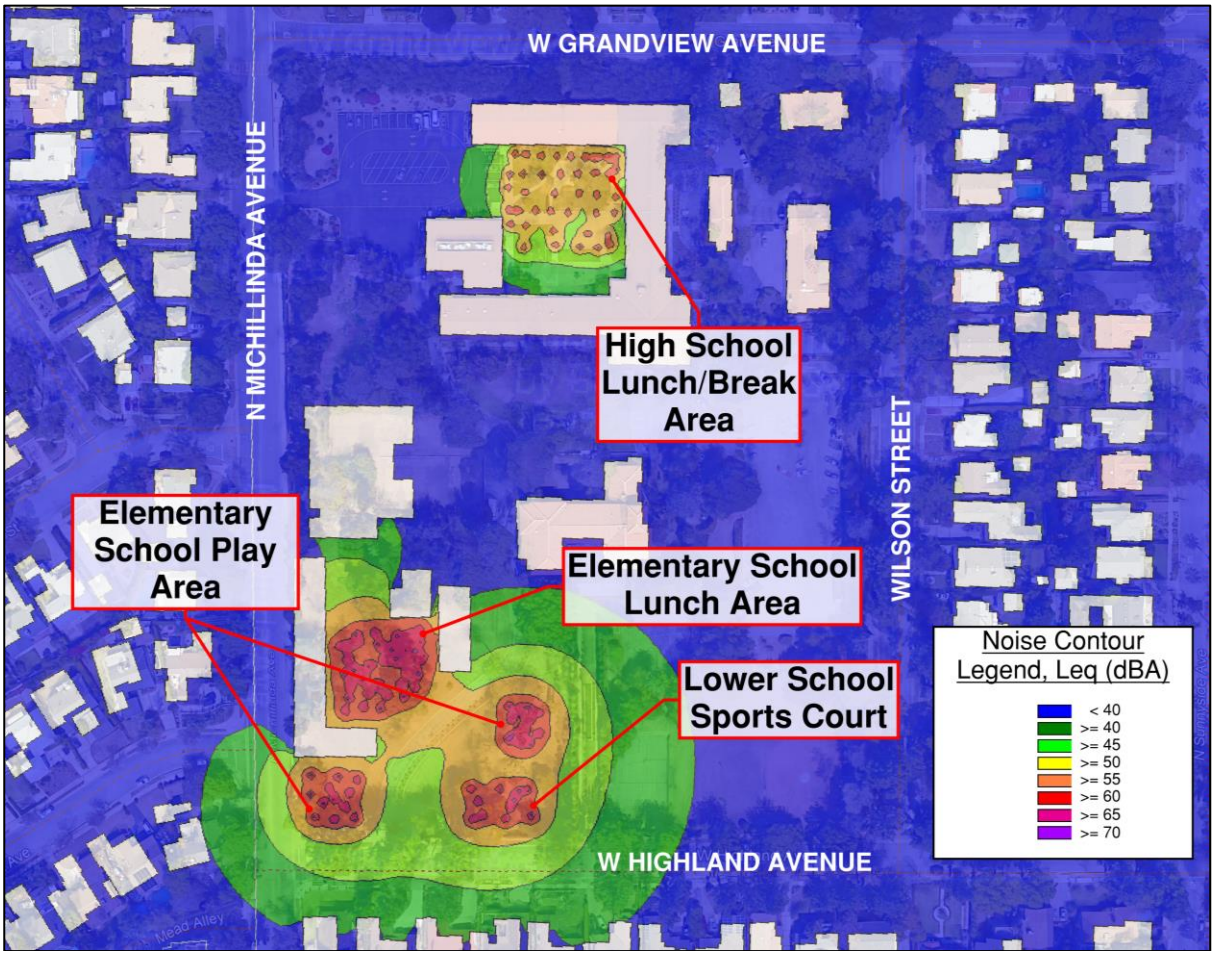

Figure 12: Noise Levels Generated by Mid-Day Outdoor Lunch/Break Activities (2021 Master Plan Buildout condition, i.e., Including New Building Constructions)

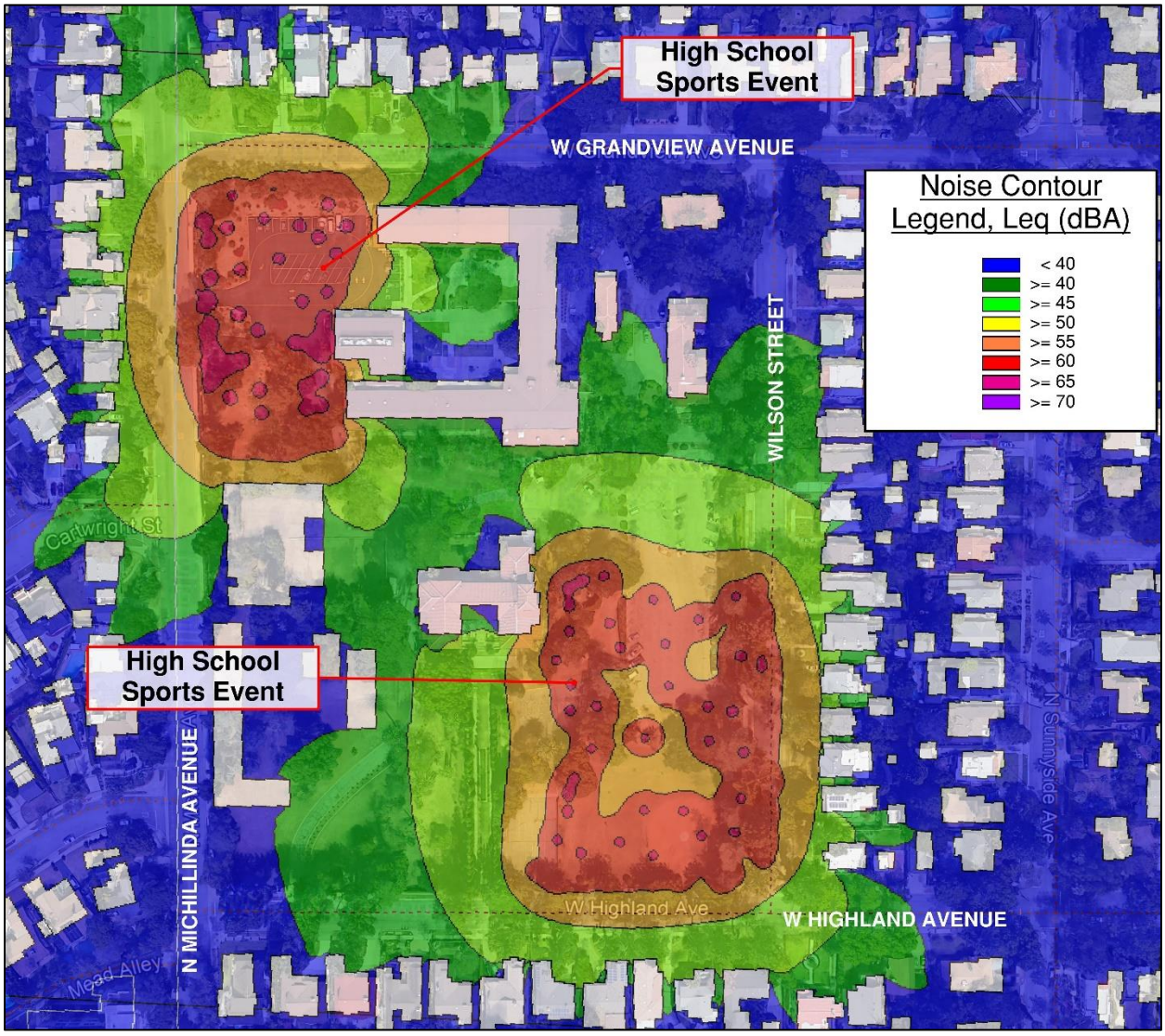

Figure 13: Noise Levels Generated by After-School Sport Activities
(2021 Master Plan Buildout condition, i.e., Including New Building Constructions)

School operations will generate noise that has the potential to expose nearby residents to high levels of noise. The figures above illustrate how each noise from regularly scheduled noise-generating activities will impact the surrounding area.

Additionally, Table 8 presents the noise level generation for activity in terms of the residential receivers along the adjacent streets, compared to the measured ambient noise conditions discussed in Section 5.0.

Table 8: Project-Generated Noise vs. Existing Ambient Noise Level Measurement Results

Receiver	Activity	Noise Level at Receiver, dBA		
		Lower School Lunch/Break period, without proposed building additions	**Lower School Lunch/Break period, with proposed building additions**	**After-school sports activities**
		Weekdays 10 AM – 1 PM	Weekdays 10 AM – 1 PM	Weekdays 3 PM – 5:15 PM
Residences Along Wilson Street	Measured Ambient Sound Level (2010)*	L_{EQ} 50 – 56 dBA		L_{EQ} 51 – 52 dBA
	Measured Ambient Sound Level (2020)	L_{EQ} 52 – 54 dBA		L_{EQ} 53 – 63 dBA
	Estimated Sound Level from Computer Model	L_{EQ} 34 dBA	L_{EQ} 29 dBA	L_{EQ} 51 dBA
Residences Along Grandview Avenue	Measured Ambient Sound Level (2010)*	L_{EQ} 58 – 59 dBA		L_{EQ} 57 – 59 dBA
	Measured Ambient Sound Level (2020)	L_{EQ} 61 – 69 dBA		L_{EQ} 62 – 64 dBA
	Estimated Sound Level from Computer Model	L_{EQ} 26 dBA	L_{EQ} 19 dBA	L_{EQ} 49 dBA
Residences Along Michillinda Avenue	Measured Ambient Sound Level (2010)*	L_{EQ} 60 – 62 dBA		L_{EQ} 60 – 61 dBA
	Measured Ambient Sound Level (2020)	L_{EQ} 64 – 66 dBA		L_{EQ} 65 – 71 dBA
	Estimated Sound Level from Computer Model	L_{EQ} 44 dBA	L_{EQ} 43 dBA	L_{EQ} 57 dBA
Residences Along Highland Avenue	Measured Ambient Sound Level (2010)*	L_{EQ} 53 – 58 dBA		L_{EQ} 51 – 52 dBA
	Measured Ambient Sound Level (2020)	L_{EQ} 59 – 64 dBA		L_{EQ} 62 – 64 dBA
	Estimated Sound Level from Computer Model	L_{EQ} 36 dBA	L_{EQ} 45 dBA	L_{EQ} 53 dBA

*Note the 2010 noise measurements conducted by the Planning Center only presented Sunday noise data. Regular school activities do not occur on weekends, and therefore these noise levels do not necessarily represent the ambient noise level that is expected at the time of noise generating school activities.
Ambient noise level measurements for each time period are shown graphically in Section 5.0
The noise level results for each receiver are in terms of the worst-case home on each residential street (each noise level presented above is within the front yard of each worst-case home)

As shown in Table 8, noise from student operations at the Lower School (elementary school mid-day break/lunch) is not expected to exceed the existing continuous equivalent sound levels measured around the project boundary over the time periods where outdoor activities occur (see Section 5.0 for detail about the continuous equivalent sound levels measured around the project boundary). Note: Instantaneous noise levels (from elementary school students shouting) could be up to 14 dB higher than the continuous equivalent noise levels attributed to the "lower school lunch/break period".

- Lower School lunch/break activities could generate an equivalent continuous noise level of L_{EQ} 45 dBA, or an instantaneous noise level of 59 dBA at the residences along Highland Avenue. The existing weekday ambient noise level measured at this location between 10 AM and 1 PM was between L_{EQ} 59-64 dBA (2021). Average or instantaneous noise from Elementary School students on midday lunch/break is not expected to exceed the existing ambient noise level at nearby residential receivers.

Noise from after-school sporting events is expected to be the most noise intensive outdoor activity at the school. The residential receivers along Wilson Street and Highland Avenue are generally the most sensitive to athletic field noise due to the relatively low ambient noise levels. Because of this, instantaneous sporting event noise may exceed the existing ambient noise level. Other sporting event noise may contribute to the total overall noise levels at residential receivers. Based on the noise level assumptions detailed above:

- Student athletes (as well as adult spectators, coaches, and officials) could generate an equivalent continuous noise level of approximately L_{EQ} 51 dBA, or an instantaneous noise level of 63 dBA, at residential receivers along Wilson Street, where the existing weekday noise levels between 3 PM and 5:15 PM ranged between L_{EQ} 53 and 63 dBA. Average noise generation (L_{EQ}) from after-school athletic activities is not expected to exceed the existing ambient noise level at residences along Wilson Street. Instantaneous noise levels up to 63 dBA may exceed the existing ambient noise level at receivers along Wilson Street by 1-10 dBA. This range depends on the existing ambient average noise level, which was measured to range between L_{EQ} 53 and 63 dBA within this period (i.e., when the ambient level is on the high end of the measured range, instantaneous sporting event noise is not expected to exceed the existing ambient; when the ambient level is on the low end of the measured range, instantaneous sporting event noise may exceed the existing ambient by 10 dB).
- Student athletes (as well as adult spectators, coaches, and officials) could generate an equivalent continuous noise level of approximately L_{EQ} 53 dBA, or an instantaneous noise level of 65 dBA, at residential receivers along Highland Avenue, where the existing weekday noise levels between 3 PM and 5:15 PM ranged between L_{EQ} 62 and 64 dBA. Average noise generation (L_{EQ}) from after-school athletic activities is not expected to exceed the existing ambient noise level at residences along Highland Avenue. Instantaneous noise levels generated by after-school athletic activities may sporadically exceed the existing ambient noise level at receivers along Highland Avenue by approximately 1-3 dBA.

As described in the analysis above, school operational noise is expected to be noticeable to nearby residential receivers, and noise generated by school operations may also contribute to the overall noise levels at nearby residences. During after-school athletic events, the total noise level at receivers along Wilson Street and Highland Avenue may increase by approximately 10 dBA and 3 dBA, respectively, due to instantaneous noise events at the athletic field (e.g., intense sport plays with a lot of cheering). Project-related equivalent continuous or instantaneous noise levels at other residential receivers are not expected to exceed the existing ambient noise environment (i.e., L_{EQ} or equivalent continuous ambient noise level) over the time periods where these regular school operations are expected to occur.

This concludes our noise analysis associated with the Alverno Heights Master Plan Update. Please don't hesitate to reach out with questions or comments.

Appendix: Acoustical Definitions, References, and Terminology

A-Weighted Sound Level: A decibel scale for sound level measurements using the "A" weighted network of a sound level meter and is denoted as "dBA." The A-weighted network is shaped to correspond to the response of the human ear so that the results correlate approximately with human perception. It is the accepted standard for environmental noise measurements.

Decibel (dB): A scale that measures sound level pressure defined as 20 times the logarithm of the ratio of the sound level pressure to a standard reference pressure level of 20 μPa.

Sound Pressure Level (SPL): The amplitude of sound when compared to the reference sound pressure level of 20 μPa. SPL is measured in dB.

Community Noise Equivalent Level (CNEL): A metric for the 24-hour A-weighted average noise level. The CNEL metric accounts for the increased sensitivity of people to noise during the evening and nighttime hours. From 7 pm to 10 pm, sound levels are penalized by 5 dB; from 10 pm to 7 am, sound levels are penalized by 10 dB. A 10 dB increase in sound level is perceived by people to be twice as loud.

Day/Night Average Sound Level (L_{dn} or DNL): A descriptor established by the U.S. Environmental Protection Agency to describe the average day-night level with a 10 dB penalty applied to noise occurring during the nighttime hours (10 pm to 7 am) to account for the increased sensitivity of people during sleeping hours. A 10 dB increase in sound level is perceived by people to be twice as loud.
L_{eq}: The A-weighted equivalent continuous sound exposure level for a defined period of time.

ISO 9613 2 calculation methodology: International Organization for Standardization, 9613-2:1996 "Acoustics – Attenuation of Sound during Propagation Outdoor-2."

Reference Childcare Noise Reference Level Analysis: Noise and Sound Services (2006). Carrying out noise assessments for proposed childcare facilities.

Reference Adult Speech Noise Levels: Engineering ToolBox, (2005). Voice Level at Distance. [online] Available at: https://www.engineeringtoolbox.com/voice-level-d_938.html [Accessed June 2021].

Appendix D

Traffic Circulation Analysis

MEMORANDUM

April 30, 2020

Vincent Gonzalez

Planning & Community Preservation Director

City of Sierra Madre

232 W. Sierra Madre Blvd.

Sierra Madre, CA 91024

RE: Alverno Heights Academy – Traffic Circulation Analysis

Dear Mr. Gonzalez:

The purpose of this memorandum is to present the findings of the traffic operation Analysis of the Alverno Heights Academy. The volume of traffic that would be generated by the addition of the Elementary School was developed in order to estimate the project impacts to the study area streets and intersections. The trip generation was calculated using regression/linear equations for each peak period and based upon land use obtained from the Institute of Transportation Engineers (ITE), Trip Generation Manual, 10th Edition, 2017. The trip generation rates for the school (trips per student) on existing condition (400 High School Students) are shown in Table 1.

Table 1: Existing Condition School Generated Traffic

Name/Address	Land Use	Size		Vehicle Estimated Trip Generation									
				Daily	AM (M-F) Drop off (7:00-8:00)			PM (M-TH) Pick-up (3:00-4:00)			PM (Friday) Pick-up (1:30-2:45)		
		Quantity	Unit	Trips	In	Out	Total	In	Out	Total	In	Out	Total
Alverno High School	ITE 530	400*	Students	823	117	55	172	38	78	116	38	78	116

*400 students high school previously approved in the 2011 Master Plan

WGZE

W.G. Zimmerman Engineering, Inc.
17011 Beach Boulevard, Suite 1240
Huntington Beach, CA 92647
(714) 799 – 1700 / (714) 333 – 4712 Fax

Table 1 indicates that the existing School (High School) generates 172 vehicle trips during the morning peak hour (117 inbound and 55 outbound), 116 trips during afternoon peak hour (38 inbound and 78 outbound), and 823 trips per day.

The trip generation rates for the school (trips per student) and the anticipated volumes of traffic that would be generated by the development (200 High School Students + 200 Elementary Students) are shown in Table 2.

Table 2: Proposed Condition School Generated Traffic

Name/Address	Land Use	Condition	Size		Vehicle Estimated Trip Generation									
					Daily	AM (M-F) Drop off (7:00-8:00)			PM (M-TH) Pick-up (3:00-4:00)			PM (Friday) Pick-up (1:30-2:45)		
			Quantity	Unit	Trips	In	Out	Total	In	Out	Total	In	Out	Total
Alverno High School	ITE 530	Proposed	200	Students	469	58	28	86	19	39	58	19	39	58
Alverno Elementary School	ITE 520	Proposed	200	Students	258	50	40	90	25	31	56	25	31	56
Total			400	Students	727	108	68	176	44	70	114	44	70	114

Table 2 indicates that the Proposed School (Elementary + High School) would generate 176 vehicle trips during the morning peak hour (108 inbound and 68 outbound), 114 trips during afternoon peak hour (44 inbound and 70 outbound), and 727 trips per day.

Figure 1 shows the forecast directional distribution patterns for the proposed development generated trips. The project trip distribution patterns are based on review of existing traffic volume data, surrounding land uses, and the local and regional roadway facilities in the project vicinity.

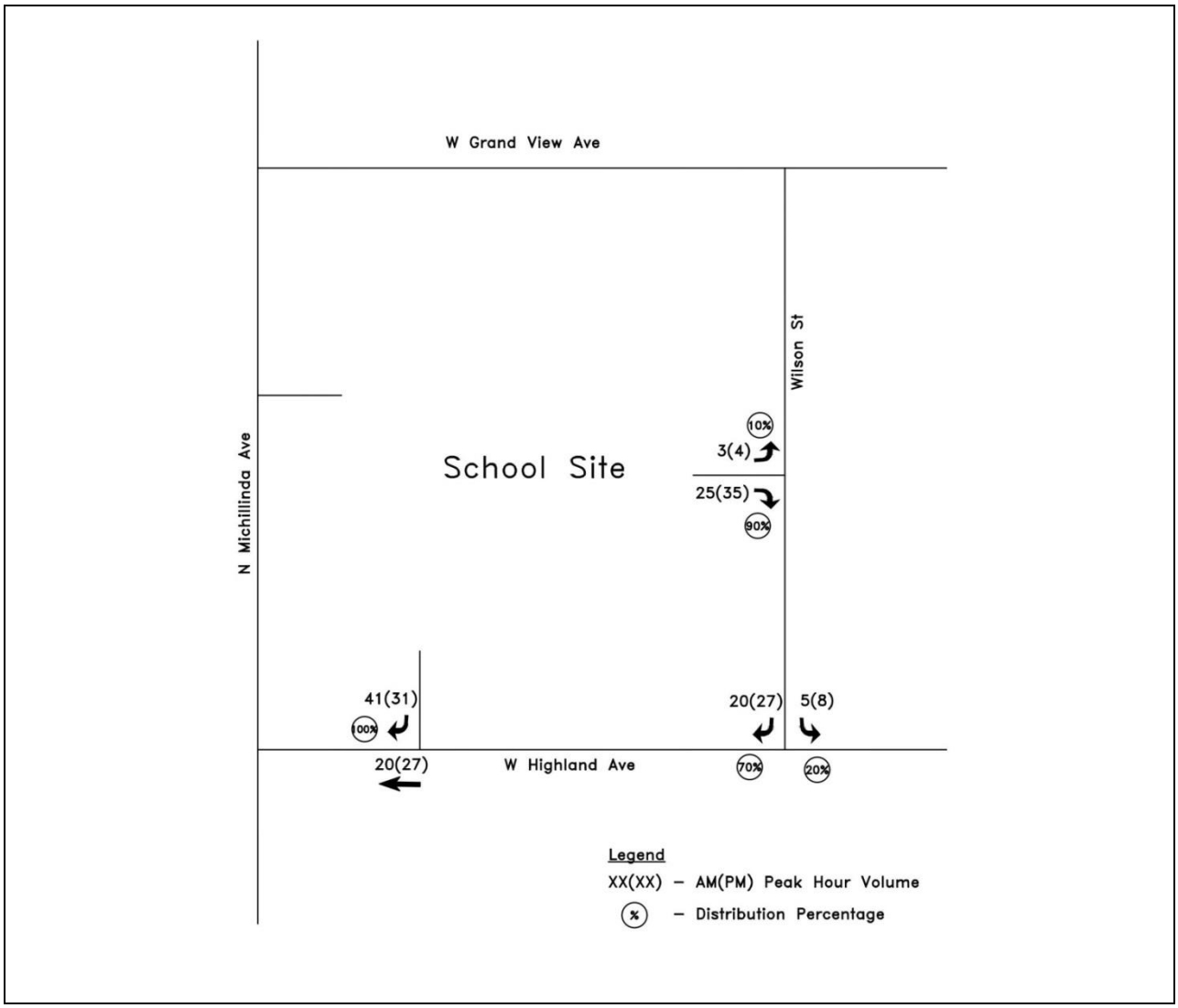

Figure 1: Project Trip Distribution Map

Field counts for turning movements at each intersection within the study area were collected in March 2010 by THE PLANNER CENTER and used for the existing network conditions. To assess existing (Year 2020) traffic conditions, year 2010 traffic volumes were combined with an ambient growth factor of 0.5% per year over a 10-year period. The 0.5% growth factor was used since the adjacent area is substantially built-out. Only the morning peak hour was addressed in the intersection analysis because the school would not typically impact the late afternoon commuter peak period which occurs generally from 5:00 to 6:00PM. The total volumes of existing condition plus the proposed school expansion were determined by adding the traffic that would be generated by the expanded school to the existing traffic volume. These projected traffic volumes for the morning peak hour are shown on Figure2.

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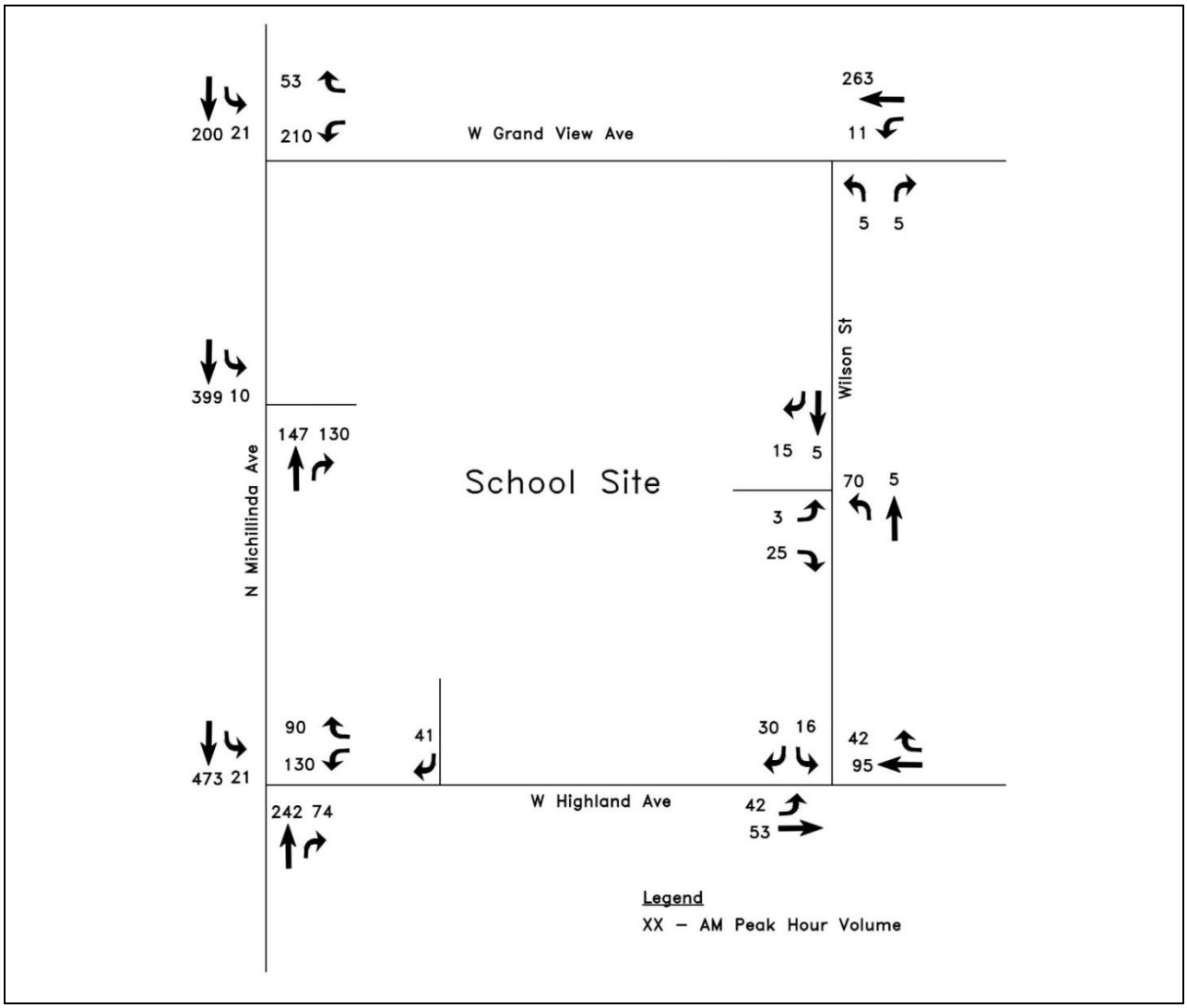

Figure 2: Existing +Project AM Peak Hour Traffic Volume

The result of our Synchro model determined that the expanded school will result in no significant traffic impact at the study intersections. As shown in Table 3, the queue length on the westbound approach at the intersection of W. Highland Avenue and N. Michillinda Avenue is 88 feet during the AM peak hour.

Table 3: Queue Length Analysis		
Intersection	Approach Direction	Queue Length (Ft)
		AM Peak Hour
W Highland Ave / N Michillinda Ave	WB	88

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The impact analysis for the intersection of W Highland Ave / N Michillinda Ave was conducted by comparing the level of service for Existing with the proposed scenario (200 High School Students + 200 Elementary Students). The levels of service for westbound approach of the intersection of W. Highland Avenue and N. Michillinda Avenue for each condition are summarized in Table 4 for the AM peak hour. The LOS analysis based on HCM method shows no significant changes in LOS from existing to future (Proposed Elementary + High school) for the study intersection of W. Highland Avenue and N. Michillinda Avenue. Synchro report is attached to this memorandum.

Table 4: Level of Service Comparison

Intersection	Existing Condition (400 High School Students)		Proposed School (200 High School Students + 200 Elementary Students)	
	Delay	LOS	Delay	LOS
Highland Ave / Michillinda Ave	22.6	C	24.8	C

Please give me a call at (657) 845-9500 if you have any questions.

Sincerely,

Bill Zimmerman, PE, TE, PTOE
President

WGZE

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Appendix

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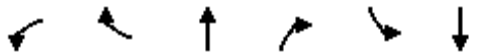
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	130	90	242	74	21	473
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	141	98	263	80	23	514
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	863	303			343	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	863	303			343	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	56	87			98	
cM capacity (veh/h)	319	736			1216	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	239	343	537
Volume Left	141	0	23
Volume Right	98	80	0
cSH	415	1700	1216
Volume to Capacity	0.58	0.20	0.02
Queue Length 95th (ft)	88	0	1
Control Delay (s)	24.8	0.0	0.5
Lane LOS	C		A
Approach Delay (s)	24.8	0.0	0.5
Approach LOS	C		

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	117	77	242	74	21	473
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	127	84	263	80	23	514
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	863	303			343	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	863	303			343	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	60	89			98	
cM capacity (veh/h)	319	736			1216	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	211	343	537
Volume Left	127	0	23
Volume Right	84	80	0
cSH	412	1700	1216
Volume to Capacity	0.51	0.20	0.02
Queue Length 95th (ft)	71	0	1
Control Delay (s)	22.6	0.0	0.5
Lane LOS	C		A
Approach Delay (s)	22.6	0.0	0.5
Approach LOS	C		

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix E

Parking Analysis

Alverno Heights Academy Parking Analysis
July 23, 2021

Current Parking Inventory

Parking Area Location	Total Parking Stalls
Michillinda Parking Lot	47 stalls (1 ADA)
Wilson Parking Lot	41 stalls (2 ADA)
ADA Drop-Off	1 drop-off area
Grandview Parkin	2 stalls
Faculty Parking	24 stalls
Total Current Parking Stalls	*114 stalls*

TK-12th Grade Parking Required per Section 17.68.020 D.7 of the SMMC)

Elementary and Junior High School - 1.5 parking stalls per classroom; 1 parking stall per two employees and faculty.

High School – 1 parking stall per 5 students; 1 parking stall per two employees/faculty

TK-8th Grades – 200 students/ 15 faculty/employees

10 classrooms = 15 parking stalls
21 faculty and staff = 8 stalls
Total Elementary/Middle School Parking = 26 parking stalls

9th -12th Grades – 200 students/ 30 faculty/employees

One parking stall for every five students = 40 parking stalls
31 faculty and staff = 15 parking stalls
Total High School Parking Required = 55 parking stalls

Total TK-12th Grade Code Required Parking - 81 parking stalls

Parking Provided – 114 stalls
Code Required – 81 stalls
33 parking stall surplus

Master Plan Update - Future Phases

Conversion of Chapel to Storage Building/ Relocation of Chapel to the Villa	No new parking required (Surplus of 33 stalls)
Conversion of Caretaker Residence	No new parking required (Surplus of 33 stalls)
Demolition of Business Office/Relocation to Villa	No new parking required (Surplus of 33 stalls)
Construction of Faculty Parking Lot	Existing faculty parking = 24 stalls to be replaced with centralized parking lot of 31 stalls. (Surplus of 7 stalls)
Michillinda Parking Lot Project	54 parking spaces (Surplus of 7 stalls)
Construction of the Lower School Campus	7 parking stalls (Surplus of 7 stalls)
Multi-Purpose Building Overflow Parking/ Per Approved 2011 Master Plan	52 parking stalls
Surplus Analysis at Master Plan Build Out	Michillinda Lot = 54 stalls Wilson Lot = 41 stalls Faculty Parking = 31 stalls Lower School Parking = 7 stalls Total = 133 stalls Code Required = 133

Appendix F

CalEEMod Report

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Alverno High School Master Plan Update

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High School	12.10		12.10	0.00	452

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Total project site 12.1 acres. Total student and faculty population is 452.

Construction Phase - Demolition for Faculty Lot, Sports Court, and Lower School.
Site Preparation and Grading phases combined. Maximum 6 weeks

Off-road Equipment - Other Const. Equipment = Pickup Trucks and hand compactors.

Grading - The Lower Campus would result in 1,130 cubic yards of cut and 650 yards of fill, with an excess of 480 cubic yards of soil. The sports court and playground would result in 100 cubic yards of cut and 550 cubic yards of fill, resulting in a need for 450 cubic yards of soil.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	300.00	60.00
tblConstructionPhase	NumDays	20.00	15.00
tblConstructionPhase	NumDays	30.00	10.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	PhaseEndDate	8/14/2023	10/9/2023
tblConstructionPhase	PhaseEndDate	6/19/2023	7/18/2022
tblConstructionPhase	PhaseEndDate	2/28/2022	2/21/2022
tblConstructionPhase	PhaseEndDate	4/25/2022	3/28/2022
tblConstructionPhase	PhaseEndDate	7/17/2023	9/11/2023
tblConstructionPhase	PhaseEndDate	3/14/2022	3/28/2022
tblGrading	AcresOfGrading	30.00	0.95
tblGrading	AcresOfGrading	30.00	0.00
tblGrading	MaterialExported	0.00	480.00
tblGrading	MaterialImported	0.00	450.00
tblLandUse	Population	0.00	452.00
tblOffRoadEquipment	HorsePower	172.00	81.00
tblOffRoadEquipment	HorsePower	172.00	158.00
tblOffRoadEquipment	HorsePower	97.00	247.00
tblOffRoadEquipment	HorsePower	16.00	402.00
tblOffRoadEquipment	LoadFactor	0.42	0.73
tblOffRoadEquipment	LoadFactor	0.42	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.40
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType	Excavators	Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Tractors/Loaders/Backhoes

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00

2.0 Emissions Summary

Alverno High School Master Plan Update - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	9.8688	94.3906	71.7600	0.1529	24.7743	4.8619	28.0361	13.4085	4.4764	16.4098	0.0000	14,775.8263	14,775.8263	4.5519	0.1081	14,894.8763
2023	1.2749	11.5297	16.8721	0.0272	0.1677	0.5820	0.7496	0.0445	0.5411	0.5855	0.0000	2,629.0089	2,629.0089	0.7345	3.5900e-003	2,648.4407
Maximum	**9.8688**	**94.3906**	**71.7600**	**0.1529**	**24.7743**	**4.8619**	**28.0361**	**13.4085**	**4.4764**	**16.4098**	**0.0000**	**14,775.8263**	**14,775.8263**	**4.5519**	**0.1081**	**14,894.8763**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	9.8688	94.3906	71.7600	0.1529	24.7743	4.8619	28.0361	13.4085	4.4764	16.4098	0.0000	14,775.8263	14,775.8263	4.5519	0.1081	14,894.8763
2023	1.2749	11.5297	16.8721	0.0272	0.1677	0.5820	0.7496	0.0445	0.5411	0.5855	0.0000	2,629.0089	2,629.0089	0.7345	3.5900e-003	2,648.4407
Maximum	**9.8688**	**94.3906**	**71.7600**	**0.1529**	**24.7743**	**4.8619**	**28.0361**	**13.4085**	**4.4764**	**16.4098**	**0.0000**	**14,775.8263**	**14,775.8263**	**4.5519**	**0.1081**	**14,894.8763**

Alverno High School Master Plan Update - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Alverno High School Master Plan Update - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.1000e-004	1.0000e-005	1.2300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.6500e-003	2.6500e-003	1.0000e-005		2.8200e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1000e-004**	**1.0000e-005**	**1.2300e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6500e-003**	**2.6500e-003**	**1.0000e-005**	**0.0000**	**2.8200e-003**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.1000e-004	1.0000e-005	1.2300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.6500e-003	2.6500e-003	1.0000e-005		2.8200e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1000e-004**	**1.0000e-005**	**1.2300e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6500e-003**	**2.6500e-003**	**1.0000e-005**	**0.0000**	**2.8200e-003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	2/1/2022	2/21/2022	5	15	
2	Site Preparation	Site Preparation	3/1/2022	3/28/2022	5	20	
3	Grading	Grading	3/15/2022	3/28/2022	5	10	
4	Building Construction	Building Construction	4/26/2022	7/18/2022	5	60	
5	Paving	Paving	6/20/2023	9/11/2023	5	60	
6	Architectural Coating	Architectural Coating	7/18/2023	10/9/2023	5	60	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0.946

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Other Construction Equipment	6	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Other Construction Equipment	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Tractors/Loaders/Backhoes	3	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Demolition	Rubber Tired Dozers	3	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Demolition	Off-Highway Trucks	2	8.00	402	0.38
Demolition	Graders	1	8.00	187	0.41
Demolition	Dumpers/Tenders	1	8.00	402	0.38
Demolition	Cement and Mortar Mixers	3	8.00	9	0.56
Demolition	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	27	68.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	92.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	9.6226	94.2109	69.4141	0.1464		4.8574	4.8574		4.4722	4.4722		14,120.2297	14,120.2297	4.5335		14,233.5669
Total	**9.6226**	**94.2109**	**69.4141**	**0.1464**		**4.8574**	**4.8574**		**4.4722**	**4.4722**		**14,120.2297**	**14,120.2297**	**4.5335**		**14,233.5669**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2462	0.1797	2.3459	6.4900e-003	0.7601	4.5500e-003	0.7646	0.2016	4.1900e-003	0.2058		655.5966	655.5966	0.0184	0.0176	661.3094
Total	**0.2462**	**0.1797**	**2.3459**	**6.4900e-003**	**0.7601**	**4.5500e-003**	**0.7646**	**0.2016**	**4.1900e-003**	**0.2058**		**655.5966**	**655.5966**	**0.0184**	**0.0176**	**661.3094**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	9.6226	94.2109	69.4141	0.1464		4.8574	4.8574		4.4722	4.4722	0.0000	14,120.2297	14,120.2297	4.5335		14,233.5669
Total	**9.6226**	**94.2109**	**69.4141**	**0.1464**		**4.8574**	**4.8574**		**4.4722**	**4.4722**	**0.0000**	**14,120.2297**	**14,120.2297**	**4.5335**		**14,233.5669**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.2462	0.1797	2.3459	6.4900e-003	0.7601	4.5500e-003	0.7646	0.2016	4.1900e-003	0.2058		655.5966	655.5966	0.0184	0.0176	661.3094
Total	**0.2462**	**0.1797**	**2.3459**	**6.4900e-003**	**0.7601**	**4.5500e-003**	**0.7646**	**0.2016**	**4.1900e-003**	**0.2058**		**655.5966**	**655.5966**	**0.0184**	**0.0176**	**661.3094**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0652	0.0476	0.6210	1.7200e-003	0.2012	1.2000e-003	0.2024	0.0534	1.1100e-003	0.0545		173.5403	173.5403	4.8700e-003	4.6700e-003	175.0525
Total	**0.0652**	**0.0476**	**0.6210**	**1.7200e-003**	**0.2012**	**1.2000e-003**	**0.2024**	**0.0534**	**1.1100e-003**	**0.0545**		**173.5403**	**173.5403**	**4.8700e-003**	**4.6700e-003**	**175.0525**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0652	0.0476	0.6210	1.7200e-003	0.2012	1.2000e-003	0.2024	0.0534	1.1100e-003	0.0545		173.5403	173.5403	4.8700e-003	4.6700e-003	175.0525
Total	**0.0652**	**0.0476**	**0.6210**	**1.7200e-003**	**0.2012**	**1.2000e-003**	**0.2024**	**0.0534**	**1.1100e-003**	**0.0545**		**173.5403**	**173.5403**	**4.8700e-003**	**4.6700e-003**	**175.0525**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1224	0.0000	6.1224	3.3211	0.0000	3.3211			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**6.1224**	**1.6349**	**7.7573**	**3.3211**	**1.5041**	**4.8252**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0392	1.5403	0.3578	5.6100e-003	0.1609	0.0118	0.1727	0.0441	0.0113	0.0554		618.0341	618.0341	0.0365	0.0982	648.2158
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0724	0.0529	0.6900	1.9100e-003	0.2236	1.3400e-003	0.2249	0.0593	1.2300e-003	0.0605		192.8225	192.8225	5.4100e-003	5.1800e-003	194.5028
Total	**0.1116**	**1.5931**	**1.0478**	**7.5200e-003**	**0.3844**	**0.0132**	**0.3976**	**0.1034**	**0.0125**	**0.1159**		**810.8566**	**810.8566**	**0.0419**	**0.1034**	**842.7186**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1224	0.0000	6.1224	3.3211	0.0000	3.3211			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**6.1224**	**1.6349**	**7.7573**	**3.3211**	**1.5041**	**4.8252**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0392	1.5403	0.3578	5.6100e-003	0.1609	0.0118	0.1727	0.0441	0.0113	0.0554		618.0341	618.0341	0.0365	0.0982	648.2158
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0724	0.0529	0.6900	1.9100e-003	0.2236	1.3400e-003	0.2249	0.0593	1.2300e-003	0.0605		192.8225	192.8225	5.4100e-003	5.1800e-003	194.5028
Total	**0.1116**	**1.5931**	**1.0478**	**7.5200e-003**	**0.3844**	**0.0132**	**0.3976**	**0.1034**	**0.0125**	**0.1159**		**810.8566**	**810.8566**	**0.0419**	**0.1034**	**842.7186**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Alverno High School Master Plan Update - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Alverno High School Master Plan Update - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0505	0.0351	0.4768	1.3800e-003	0.1677	9.4000e-004	0.1686	0.0445	8.7000e-004	0.0453		139.9767	139.9767	3.6500e-003	3.5900e-003	141.1381
Total	**0.0505**	**0.0351**	**0.4768**	**1.3800e-003**	**0.1677**	**9.4000e-004**	**0.1686**	**0.0445**	**8.7000e-004**	**0.0453**		**139.9767**	**139.9767**	**3.6500e-003**	**3.5900e-003**	**141.1381**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0505	0.0351	0.4768	1.3800e-003	0.1677	9.4000e-004	0.1686	0.0445	8.7000e-004	0.0453		139.9767	139.9767	3.6500e-003	3.5900e-003	141.1381
Total	**0.0505**	**0.0351**	**0.4768**	**1.3800e-003**	**0.1677**	**9.4000e-004**	**0.1686**	**0.0445**	**8.7000e-004**	**0.0453**		**139.9767**	**139.9767**	**3.6500e-003**	**3.5900e-003**	**141.1381**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**0.1917**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**0.1917**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Alverno High School Master Plan Update - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High School	0.542639	0.062168	0.185423	0.128137	0.023809	0.006526	0.012163	0.008660	0.000816	0.000502	0.024766	0.000746	0.003644

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High School	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.1000e-004	1.0000e-005	1.2300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.6500e-003	2.6500e-003	1.0000e-005		2.8200e-003
Unmitigated	1.1000e-004	1.0000e-005	1.2300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.6500e-003	2.6500e-003	1.0000e-005		2.8200e-003

Alverno High School Master Plan Update - South Coast Air Basin, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1000e-004	1.0000e-005	1.2300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.6500e-003	2.6500e-003	1.0000e-005		2.8200e-003
Total	**1.1000e-004**	**1.0000e-005**	**1.2300e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6500e-003**	**2.6500e-003**	**1.0000e-005**		**2.8200e-003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1000e-004	1.0000e-005	1.2300e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.6500e-003	2.6500e-003	1.0000e-005		2.8200e-003
Total	**1.1000e-004**	**1.0000e-005**	**1.2300e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.6500e-003**	**2.6500e-003**	**1.0000e-005**		**2.8200e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation