Draft Initial Study/Mitigated Negative Declaration

Bulldog Stadium Modernization Project

California State University, Fresno

November 2017

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November 2017

Lead Agency:

California State University Board of Trustees
401 Golden Shore
Long Beach, California 90802-4210

California State University, Fresno
2351 E. Barstow Avenue
Fresno, California 93740

Prepared by:

Dudek
725 Front Street, Suite 400
Santa Cruz, California 95060

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
ACM	asbestos containing material
ADA	Americans with Disabilities Act
BMP	Best Management Practices
BPS	Best Performance Standards
CAAQ	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Building Code
CCAP	Climate Change Action Plan
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
City	City and County of San Francisco
CMP	Campus Master Plan
CO	carbon monoxide
CO_2E	carbon dioxide equivalent
CSU	California State University
EIR	Environmental Impact Report
FCOG	Fresno Council of Governments
gpd	gallons per day
GHG	greenhouse gas
GSF	gross square feet
IS	Initial Study
KOP	Key Observation Points
LEED	Leadership in Energy and Environmental Design
LUST	leaking underground storage tank
MND	Mitigated Negative Declaration
MT	metric tons
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
OEHHA	Office of Environmental Health Hazard Assessment
OSHA	Occupational Safety and Health Administration

Acronym/Abbreviation	Definition
$PM_{2.5}$	fine particulate matter
PM_{10}	coarse particulate matter
Project	Bulldog Stadium Modernization Project
ROG	reactive organic gases
RTP/SCS	Regional Transportation Plan / Sustainable Communities Strategy
SGMA	Sustainable Groundwater Management Act
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_2	sulfur dioxide
SR	State Route
SSJVC	Southern San Joaquin Valley Information Center
SWPPP	Storm Water Pollution Prevention Plan
SWQMP	Storm Water Quality Management Program
TAC	toxic air contaminant
TDM	transportation demand management
UWMP	Urban Water Management Plan
Board of Trustees	California State University Board of Trustees

1 INTRODUCTION

1.1 Project Overview

California State University, Fresno (Fresno State) proposes to renovate and modernize the existing Bulldog Stadium (Bulldog Stadium Modernization Project or Project) at its existing site located on the western portion of the Fresno State campus (see Figure 1, Regional Map, and Figure 2, Vicinity Map). The Project would include remodeling the existing stadium to improve fan amenities and spectator access to seating; and addition of a three-story tower over the existing seating area on the westside of the stadium that includes premium seating, club seating, club area, and media facilities. Utility infrastructure improvements, new lighting and landscaping, utility yard and a loading dock would also be provided. The Project would not include additional vehicle access or parking facilities.

1.2 CEQA Authority to Prepare a Mitigated Negative Declaration

The California Environmental Quality Act (CEQA) serves as the main framework of environmental law and policy in California. CEQA emphasizes the need for public disclosure and identifying and preventing environmental damage associated with proposed projects. Unless a proposed project is deemed categorically exempt, CEQA is applicable to any project that must be approved by a public agency in order to be processed and established. This Project does not fall under any of the statutory or categorical exemptions listed in the 2013 CEQA Statute and Guidelines (California Public Resources Code, Section 21000 et seq.; 14 California Code of Regulations [CCR] 15000 et seq.), and, therefore, must meet CEQA requirements.

The Board of Trustees of the California State University (Board of Trustees) is the lead agency pursuant to CEQA and is responsible for preparing and approving the CEQA document for the Project. The Board of Trustees has determined that a mitigated negative declaration (MND) is the appropriate environmental document to be prepared for the Project in compliance with CEQA. This finding is based on the Environmental Checklist/Discussion of Environmental Evaluation (Chapter 3 of this document). Per the CEQA Guidelines, an MND may be prepared for a project subject to CEQA if an initial study (IS) has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the project proponent before the proposed MND and IS are released for public review would avoid the effects or mitigate the effects to a point in which clearly no significant effect on the environment would occur; and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment (California Public Resources Code, Section 21064.5).

This IS/MND has been prepared by the Board of Trustees as the lead agency and in conformance with Section 15070(a) of the CEQA Guidelines. The purpose of the IS/MND is to determine the potential significant impacts associated with the construction and operation of the Project, and to incorporate mitigation measures, as necessary, to reduce or eliminate the significant or potentially significant effects of the Project.

1.3 Other Agencies Use of the MND

This IS/MND is intended to be used by responsible and trustee agencies that may have an interest in reviewing the Project. At the time of the IS/MND's publication, the Board of Trustees does not believe permits or authorizations required from other agencies or individuals would require such agencies' or individuals' need to comply with CEQA. Therefore, it is assumed that no other agencies or individuals would use this IS/MND for their actions or decisions.

1.4 Public Review Process

In accordance with CEQA, a good-faith effort has been made during the preparation of this IS/MND to contact affected agencies, organizations, and persons who may have an interest in this Project. In reviewing the IS/MND, affected public agencies and the interested public should focus on the sufficient identification and analysis of possible impacts on the environment in the document.

Fresno State issued a Notice of Availability and a Notice of Intent to Adopt a Mitigated Negative Declaration for the Project. Comments may be made on the IS/MND in writing before the end of the public review period. A 30-day review and comment period from November 7, 2017, to December 7, 2017, has been established in accordance with CEQA Guidelines Section 15072(a). Following the close of the public comment period, the Board of Trustees will consider this IS/MND and its comments in determining whether to approve the Project.

Written comments on the IS/MND should be sent to the following address by 5:00 p.m., on December 7, 2017.

Ms. Sara Mitchel,
Interim Director of Planning, Design and Construction
Facilities, Planning, Design and Construction
2351 E. Barstow Ave. M/S PO112
Fresno, California 93740
smitchel@csufresno.edu

1.5 Project Location and Setting

The Project site is located on the existing Fresno State campus in the City of Fresno, California (see Figure 1, Regional Map). The Fresno State campus is located near the intersection of State Route 168 (SR-168) and Shaw Avenue. Major streets surrounding the campus include Shaw Avenue, North Cedar Avenue, East Barstow Avenue, and North Chestnut Avenue (see Figure 2, Project Location).

The Project site is located to the west of the main campus at the site of the existing stadium. Specifically, the Project site is be located north of Bulldog Lane, west of Cedar Avenue, south of East Barstow Avenue, and east of Millbrook Avenue (see Figure 3, Project Site and Setting). This block also contains other athletic facilities including soccer and baseball fields, the Duncan Athletic facility, the Ricchiuti Academic Strength and Conditioning Center, and the Meyers Family Sports Medicine Center.

The existing Bulldog Stadium was originally constructed in 1979 and renovated in 1991. The football stadium sits slightly off center to the east of the site, oriented to the north/south. The stadium is nested within a 32-foot-tall landscaped berm that surrounds the entire bowl with the exception of openings at each end zone. These end zone openings are at street level and are the primary game-day entrances, which tie into perimeter circulation along the top of the berm that surrounds the stadium. At center field, the berm flattens out to hold the buildings on the east side of the stadium that house the skyboxes and the current press box on the west.

There is a large surface parking lot adjacent to the south entrance of the existing stadium with access from Bulldog Lane. A series of flat grass lots surrounding the stadium provide playing and practice fields, and game-day parking stalls. Landscape trees exist on the landscape berm surrounding the stadium and are scattered along the perimeter of the site.

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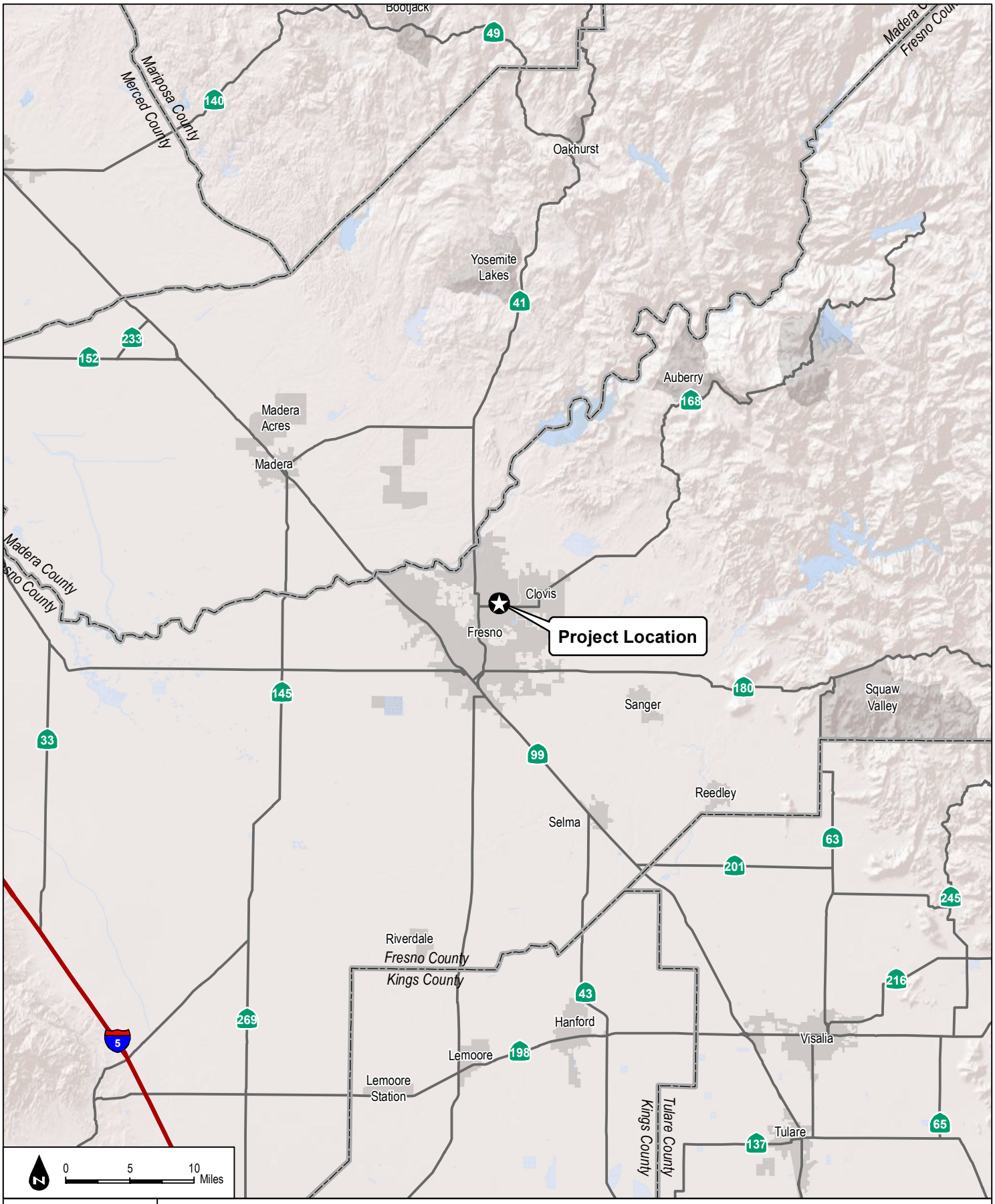

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SOURCE: ESRI, 2017

FIGURE 1

Regional Map

Fresno State Bulldogs Stadium Modernization Project IS/MND

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SOURCE: Fresno County GIS, 2017; Bing Maps 2017

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FIGURE 2

Project Location

Fresno State Bulldog Stadium Modernization Project IS/MND

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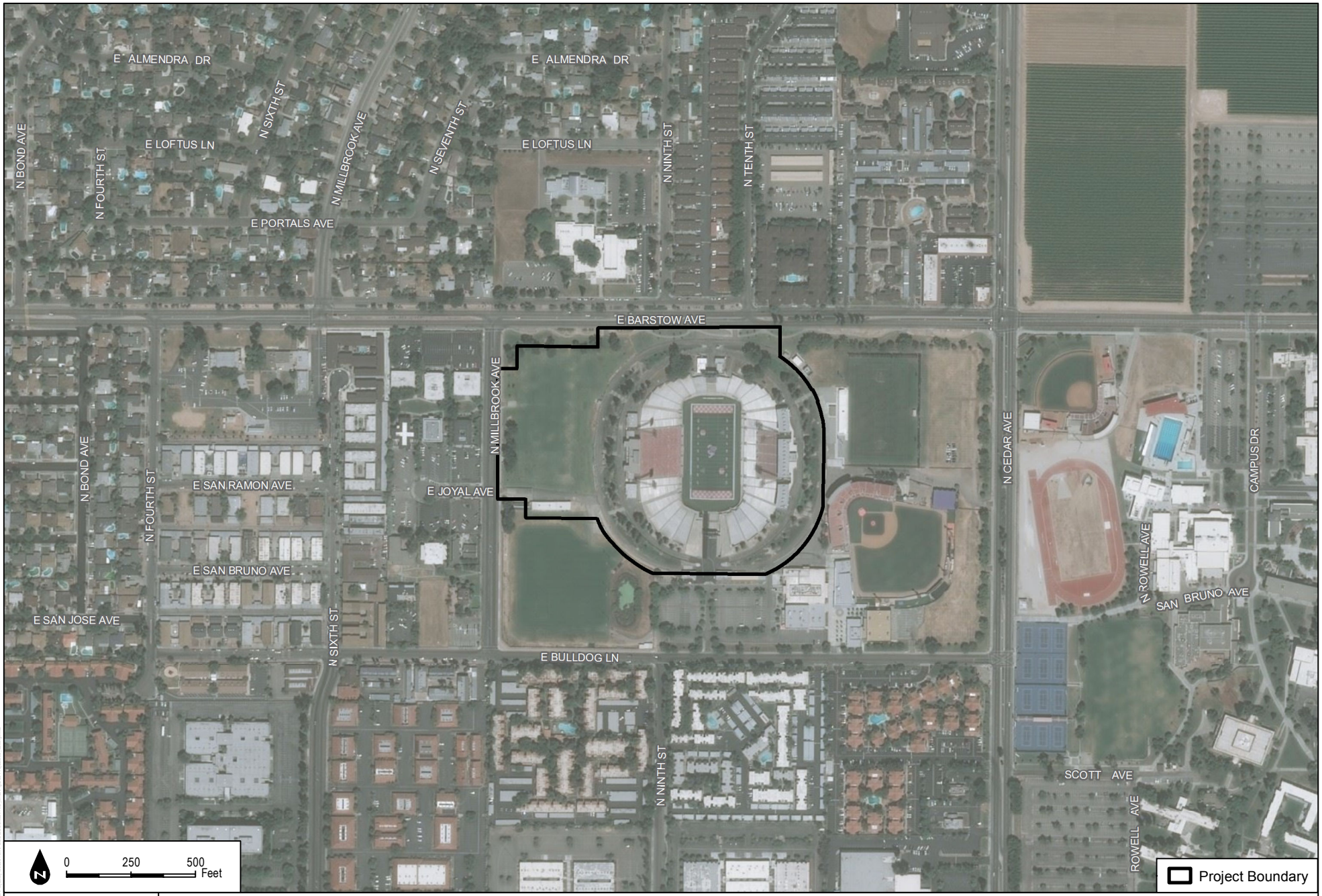

SOURCE: Fresno County GIS, 2017; Bing Maps 2017

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FIGURE 3

Project Site and Setting

Fresno State Bulldog Stadium Modernization Project IS/MND

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2 PROJECT DESCRIPTION

2.1 Project Objectives

CEQA indicates that the statement of project objectives should be clearly written to define the underlying purpose of a project to aid the lead agency in making findings when considering the project for approval. Bulldog Stadium is an aging facility with a need for improved accessibility and amenities. The Project would modify the identity of the stadium and improve fan amenities, access, and safety. The objectives of the Project are informed, in part, by the *Fresno State Strategic Plan 2016–2020* (Fresno State 2016) and are as follows:

1. Address deferred maintenance of the aging stadium.
2. Improve accessibility and safety features throughout the stadium.
3. Modernize the existing stadium in support of the strategic priority to "align our physical and technological infrastructure to support a sustainable and welcoming campus environment," per the *Fresno State Strategic Plan 2016–2020*.
4. Provide the highest quality experience for student athletes and Bulldog fans.
5. Ensure that new construction achieves at least Leadership in Energy and Environmental Design (LEED) Silver or equivalent performance and energy efficiency beyond Title 24 requirements.

2.2 Project Components

The Project involves remodeling the existing stadium to transform the identity of the stadium and to improve fan amenities throughout the stadium, spectator access to seating, and press and media facilities. The proposed stadium improvements include three elements: new amenity concourses located in each of the four corners of the stadium and a new plaza at the north entrance, modifications to the stadium seating bowl to provide a cross-aisle, and creation of a new multi-level tower structure on the west sideline. There would be 38,155 seats when modifications are complete, which is a reduction of approximately 3,038 seats over the existing 41,193 seats. Utility, lighting, and landscaping improvements, utility yard and a loading dock would also be included with the Project. No modifications would be made to vehicle access, parking, or circulation. Additionally, the existing skyboxes on the east sideline would not be modified as part of the Project. Table 1 provides a summary of stadium space with implementation of the Project. Figures 4 through 8 provide the site plan and elevations showing the new facilities.

TABLE 1
SUMMARY OF STADIUM SPACE WITH PROJECT

Project Element	Existing Conditions	Proposed Conditions	Net Change with Project
Total Stadium Seats	41,193 seats	38,155 seats	- 3,038 seats
• Suites*	22 suites	51 suites	29 suites
Restrooms	10,000 square feet	11,600 square feet	1,600 square feet
Concessions/Lounge Space*	2,600 square feet	29,600	27,000 square feet

Note:

* The capacity of the suites and club space is accounted for in the stadium seat count above, with an overall reduction in capacity with the Project.

2.2.1 Stadium Concourses and Entrance Modifications

The primary entrances to the stadium behind the end zones would be modified to provide new branding and signage. The northern plaza between East Barstow Avenue and the stadium would be enlarged, regraded, and repaved to become a more inviting entrance with additional queuing for stadium visitors. The southern entrance plaza would not be modified as part of the Project. New concessions and restrooms would be constructed near these entrances.

Four new concourse plazas would be constructed as open plazas or sunken courtyards in each quadrant of the stadium. The plazas would be constructed by excavating into the middle of the existing berm and locating the plazas at heights that would be fully accessible to the new cross-aisle via a large tunnel on the south and voids in the seating bowl in the north. The concourse plazas would provide views of the playing field approximately 35 feet below and would be accessible to the new concessions and restrooms. Stairs and/or elevators would be provided in the plazas to ascend the berm. By removing the middle of the berm, the outer slope of the berm would be left visually intact so the natural organic shape surrounding the stadium would be retained with the Project.

2.2.2 Stadium Seating Bowl and Cross-Aisle

A cross-aisle would be constructed in the existing seating bowl by removing existing seats in the stadium at mid-level. This cross-aisle would include platforms for the majority of the Americans with Disabilities Act (ADA)-compliant seating and would be connected to all the stadium quadrants via the new concourse plazas for full accessibility. The cross-aisle would improve access to stadium seats and concourses by providing a new aisle at mid-level.

2.2.3 West Sideline Tower

A three-story tower building with an additional subgrade[1] floor would be constructed at the top of the west sideline berm. This building would replace the existing press box on the west side. The new 43,000-square-foot building would house a club lounge, private suites, and press facilities with concessions, amenities, and views to the playing field. The new tower building would be composed of a steel frame on pile foundations. The total height of the new tower would be approximately 49 feet from the top of the berm and approximately 83 feet above the surrounding street level. For comparison, the existing skyboxes on the east side are approximately 30 feet in height from the top of the berm and approximately 64 feet above the surrounding street level.

The floor below grade would include a lobby and premium entrance. The floor at grade would become the club lounge, with a designated outdoor club area connecting to the club seating. This first level of the building would be clad with an aluminum storefront/curtainwall system with both clear and opaque insulated glass. The floorplates of the levels above this first level are larger and their overhanging nature would provide shade to this level all the way around the structure.

The second level of the tower building would contain 19 sellable private suites. These large suites would include outdoor stadium seating. This level would also include restrooms and food pantry spaces to service patrons.

The third and uppermost level would contain a state-of-the-art, national broadcast equipment and media press area; 9 private mini suites with outdoor stadium seating and access to an interior sports bar lounge space; and restrooms and food pantry spaces dedicated to the service of the patrons and media professionals on this level. With the existing skyboxes to remain, the Project would increase the number of suites by 29 for a total of 51.

The second and third levels of the building would be clad with a mixture of curtainwall glazing, a laminate panel with wood veneer and a metal louvered screen that would provide additional shading to interior spaces and exterior decks at each end of the building. The east-facing facades on the second and thirds levels would feature floor to ceiling storefront glass cladding to provide views to the field.

[1] The subgrade floor would be below the top of the berm.

2.2.4 Infrastructure and Service Systems

TV Truck Compound and Utility Yard. The existing maintenance building located on the west side of the Project site and north of the practice fields would be removed and replaced with a TV truck compound and utility yard. The utility yard would contain a new central plant (see Heating and Cooling below) and facilities for TV trucks to park and access power and communication services.

Water. The Project would be served by the existing potable water infrastructure on the Project site and by Fresno State's groundwater well system.

Wastewater. To provide sanitary services to the new tower building, a new 6-inch-diameter sanitary waste line would be routed around the northwest corner of the stadium (not in the berm) and connected to the existing manhole on the north side of the Project site. The existing sanitary sewer pipeline in the berm would be abandoned.

Stormwater and Irrigation. As the existing impermeable area of approximately 509,000 square feet would increase approximately 5,000 to 10,000 square feet, or 1 to 2%, the Project would not require an increase in the capacity of the downstream storm drain system, including the stormwater detention basin located just southwest of the stadium.

Heating and Cooling. The building heating and cooling would be provided by a new central plant supplying cooling and heating water. The new central plant would be located in the new utility yard adjacent to the west side of the stadium. Inside the new mechanical room there would be two condensing boilers, two variable volume chilled water circulating pumps, and two variable volume heating water circulating pumps. Air distribution systems would be provided by a Variable Air Volume system for the club level.

Hot water would be provided by high-efficiency (condensing) gas-fired domestic boilers. Condensation from air conditioning mechanical equipment would also be collected and connect to rainwater harvest system to further assist with irrigation supply needs.

Lighting. The existing stadium field lighting, consisting of four angled lattice tower-mounted lighting banks that are located adjacent to the existing skyboxes on the east and press box on the west, would be removed and replaced with new field lighting on both sides. On the west side, new field lighting would be mounted on a steel frame and attached to the new tower building structure along the roofline. On the east side, two new lattice tower-mounted lighting banks would be installed between the existing buildings housing the skyboxes, in the same location as the existing lights. These lights would be approximately 70 feet tall from the top of

the berm and approximately 100 feet above the surrounding ground level, and similar in height to the existing lights.

Lighting power density would adhere to Title 24 maximums. The luminaires would be selected based on appearance, energy and illuminance efficacy, durability, and quality of luminaire produced. LED light sources would be used as much as possible in all areas, and they would be specified with electronic program or instant start drivers. LED fixtures were selected because they have the longest life span, consume the least energy, produce highest illuminance, and are smaller.

Energy. The Project would be designed to meet LEED Silver equivalent and would comply with Title 24 Building, Energy and Green Buildings Standards (California Building Code, Title 24, Parks 4, 6, and 11). A new Direct Digital Control system would be installed to monitor and operate utilities. The Direct Digital Control system would be integrated with a total building Energy Management System to monitor electrical, natural gas, and water usage. Lighting controls would also be integrated. The building roof would be solar ready and able to support future installation of a photovoltaic system; however, this is not a part of the Project being analyzed.

Electricity is currently provided by Pacific Gas & Electric Company. A number of on-site improvements to the electrical services would be required to serve the new tower building and other new facilities. These improvements would be determined by Pacific Gas & Electric, but could include a new, pad-mounted transformer, and transformer conductors and conduit. Additionally, underground feeder circuits would be installed to provide services to all of the new facilities. The Project would continue to be served by the existing 12-kilovolt overhead distribution line located west of the Project site. A 500-kilowatt diesel emergency generator would also be installed in the utility yard by the central plant.

The boilers in the central plant would be fueled with natural gas. No improvements to the natural gas services would be required to serve the Project.

Solid Waste. The Project would be provided with similar trash and recycling services as the existing stadium.

2.2.5 Access and Parking

The existing vehicle access and parking would remain unchanged with the Project. Attendees would continue to use the existing informal game-day parking around the stadium and other parking on the Fresno State campus. The Project would include repaving the existing asphalt road at the perimeter of the stadium with concrete. Additionally, a new loading dock area would be installed into the berm on the southwest side of the stadium to provide for more

convenient delivery of goods to the stadium. The stadium currently receives approximately seven truck deliveries per week during the football season. The number of truck deliveries would increase to up to 18 deliveries per week with the Project, due to the addition of a loading dock at the stadium. Most deliveries are currently sent to the Fresno State warehouse and then transported in a smaller vehicle to the stadium.

2.2.6 Landscaping

Project construction could result in removal of some of the existing non-native landscape trees located on the existing berm that surrounds the stadium. In particular, construction of the new tower building and concourses could result in the need to remove some landscape trees. The Project includes tree replacement and other landscaping. For example, the open concourses would be shaded with new trees.

2.3 Project Operations

2.3.1 Football and Other Sport Team Events

The stadium is currently used for football practice, starting in summer and through the football season, and for football games during the pre-season, regular season, and playoffs, which run from September through November. The regular season consists of approximately six to eight games. The majority of games are held on Saturdays, depending on television contracts scheduling requirements. The Project would not change the use of the stadium for football practice and games, or the scheduling of games.

Attendance at games varies substantially depending on how well the Bulldogs are performing in a given season, what team they are playing, and other factors such as the weather. The 5-year game average attendance (2012 to 2016) during the regular season was 22,233, which is about 54% of existing stadium capacity of 41,193 (Fresno State 2017). The range in per-game attendance over the 5-year period varied from a low of about 7,000 in 2016 (17% capacity) to a high of approximately 37,000 in 2013 (90% capacity).

The Project would reduce the overall capacity of the stadium from 41,193 to 38,155, a reduction of 3,038 seats. This reduction in capacity with the Project is not expected to reduce game-day attendance given that the 5-year game average attendance is only 22,233, or about half of the existing capacity. While the Project would improve fan amenities and access it is expected that the factors stated above about team performance would continue to drive attendance to football games.

The stadium would continue to be used for other campus sports events (e.g., soccer). The Project would not change the frequency or size of these events.

2.3.2 Other Events and Stadium Use

The existing stadium is not open for public use. Suite holders currently hold private events at the stadium in the existing skyboxes during the off-season or on non-game days. These events are small in comparison to game-day attendance and range in size from 25 to 80 people. These events are typically held during mid-day, evening, or weekend periods at off-peak travel times. In the past, these types of events occur occasionally (approximately 5 times a year).

Similar to the existing stadium, the modernized stadium would not be open for public use. However, given the proposed improvement in premium seating areas, the frequency and size of some private events could increase. It is anticipated that such events may occur once a month (approximately 12 times a year). These events could be similar in size to those currently held at the stadium under existing conditions, but some of these events could be somewhat larger. These larger events could draw a maximum of approximately 2,000 people and would occur more occasionally (approximately 4 times a year). As under existing conditions, these events are typically be held during mid-day, evening, or weekend periods at off-peak travel times. The stadium would not be used for much larger events such as rock concerts, given the availability of the Save Mart Center.

2.3.3 Employment Growth

The Project could result in the need for up to two new full-time staff to manage private events. To serve visitors in new areas of the stadium (tower building and new concourses) up to 25 new part-time employees/vendor staff would be required to serve new vendor locations, and provide security and ushering in new locations.

2.4 Project Demolition and Construction

Demolition activities and then construction of the Project is anticipated to commence in 2019/2020 and last for approximately 18 to 24 months.

The limits of construction disturbance, including disturbance from construction staging, are shown by the Project boundary line in Figure 4, Site Plan. Temporary construction parking could also occur in the parking lot to the south of the stadium. Construction workers would access the construction site primarily via East Bulldog Lane. Construction hours would be from 7:00 a.m. to 5:00 p.m., Monday through Friday.

Construction would be performed by qualified contractors. Plans, specifications, and construction contracts would incorporate stipulations regarding standard CSU requirements

and acceptable construction practices, including abatement of hazardous building materials per regulatory requirements,[2] grading and demolition, safety measures, vehicle operation and maintenance, excavation stability, erosion control, drainage alteration, groundwater disposal, traffic circulation, public safety, dust control, and noise generation.

2.5 Discretionary Actions

This section describes discretionary actions required for Project approval by state and regional agencies. Discretionary approvals include, but are not limited to, adoption of the IS/MND under CEQA and approval of the schematic plans for the Project, by the CSU Board of Trustees, as summarized in Table 2. Other approvals could also be necessary by the Responsible Agencies noted below.

TABLE 2
PROJECT APPROVALS

Authorizing Jurisdiction or Agency	Action
CSU Board of Trustees	
Final IS/MND	Adoption
Schematic Plans for the Bulldog Stadium Modernization Project and other related actions and approvals, as necessary	Approval
Division of the State Architect	
Accessibility Compliance	Approval
State Fire Marshal	
Facility Fire and Life Safety Compliance	Approval
Regional Water Quality Control Board	
National Pollutant Discharge Elimination System Permit (NPDES) – Storm Water Pollution Prevention Plan (SWPPP) and Notice of Intent to Comply with NPDES Construction Permit	Approval/Enforcement
Air Pollution Control District	
Authority to Construct and/or Permits to Operate Hazardous Materials Removal and Asbestos Demolition	Approval Rule Compliance

[2] Hazardous building materials include, but are not limited to, asbestos building materials, lead-based paint, and other regulated materials such as fluorescent lights and electrical ballasts.

New Concourse Plazas

E BARSTOW AVE

New Cross Aisle

Modified Entrance

New Concessions and Bathrooms

New Tower Building

Replacement Lighting

Existing Suite Building to Remain

Replacement Lighting

N MILLBROOK AVE

E JOYAL AVE

N CEDAR AVE

T.V. Truck Parking

New Utility Yard

New Loading Dock

New Concourse Plazas

E BULLDOG LN

0 75 150 Feet

Project Boundary

SOURCE: Fresno County GIS, 2017; Bing Maps 2017

FIGURE 4

Site Plan

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Fresno State Bulldog Stadium Modernization Project IS/MND

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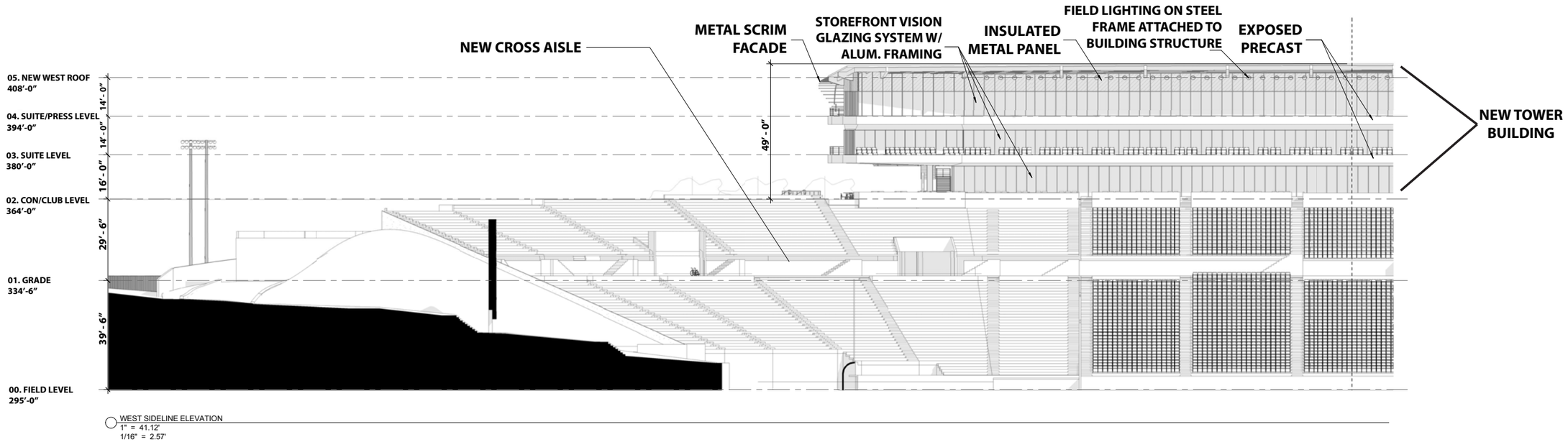
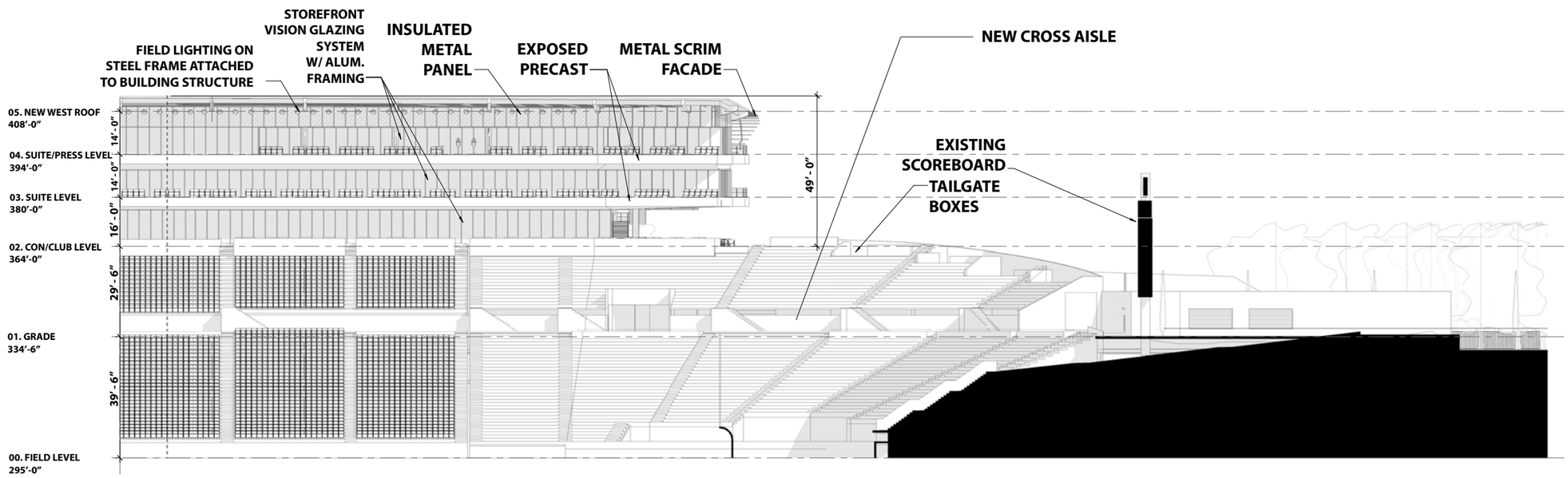


NEW TOWER BUILDING



SOURCE: AECOM, 2017

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FIGURE 5
Project Elevations - West Sideline

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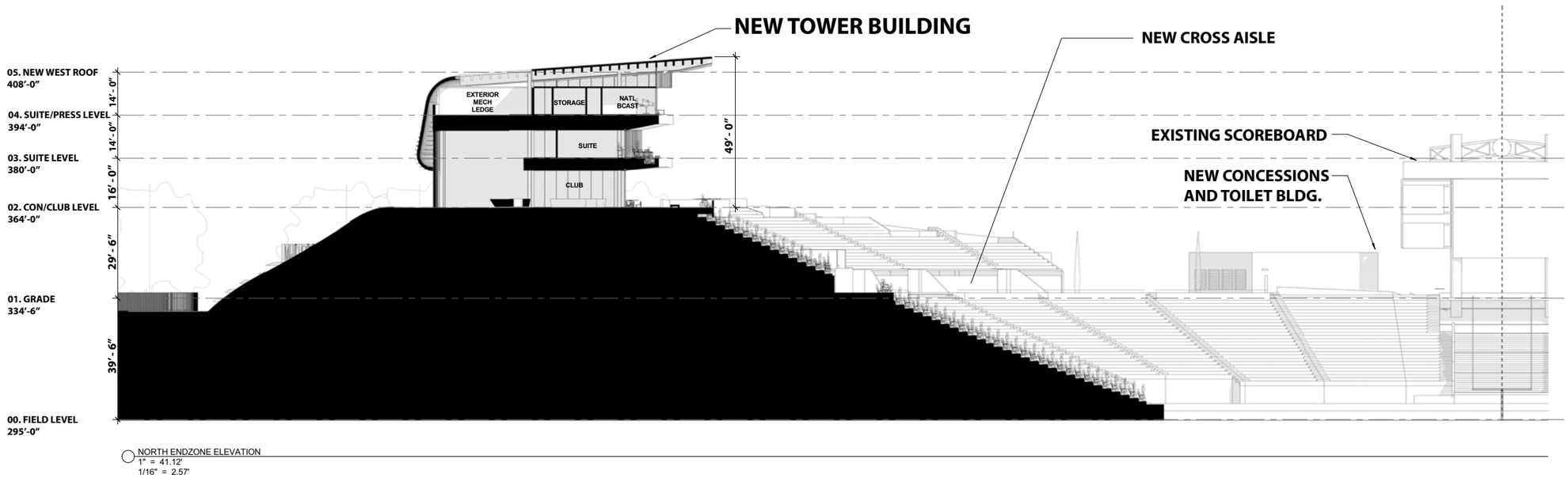
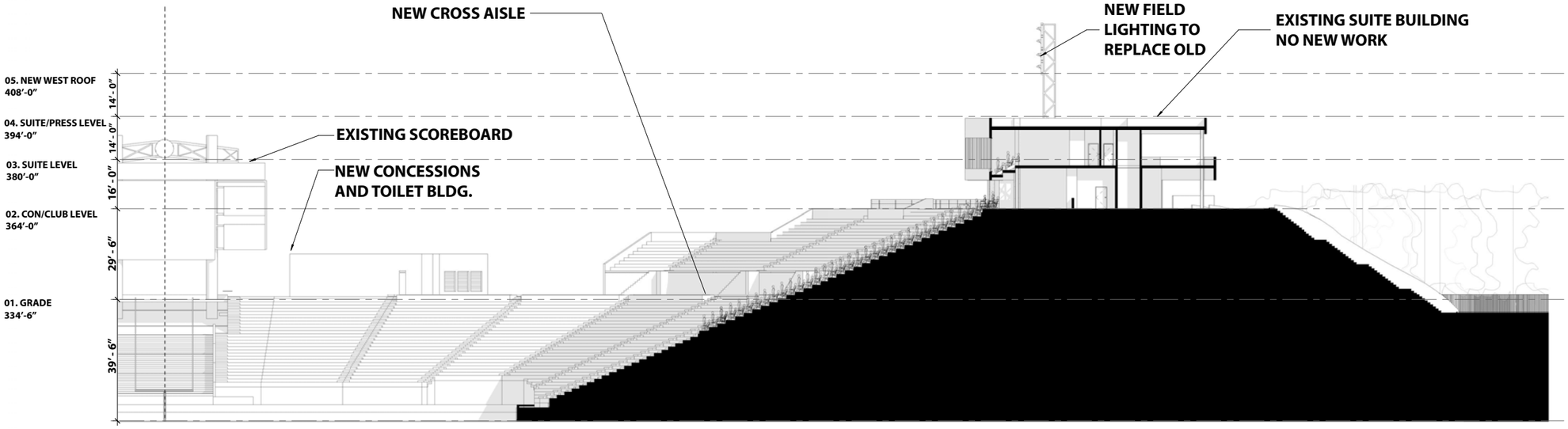


NORTH ENDZONE ELEVATION
1" = 41.12'
1/16" = 2.57'



SOURCE: AECOM, 2017

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FIGURE 6
Project Elevations - North Endzone

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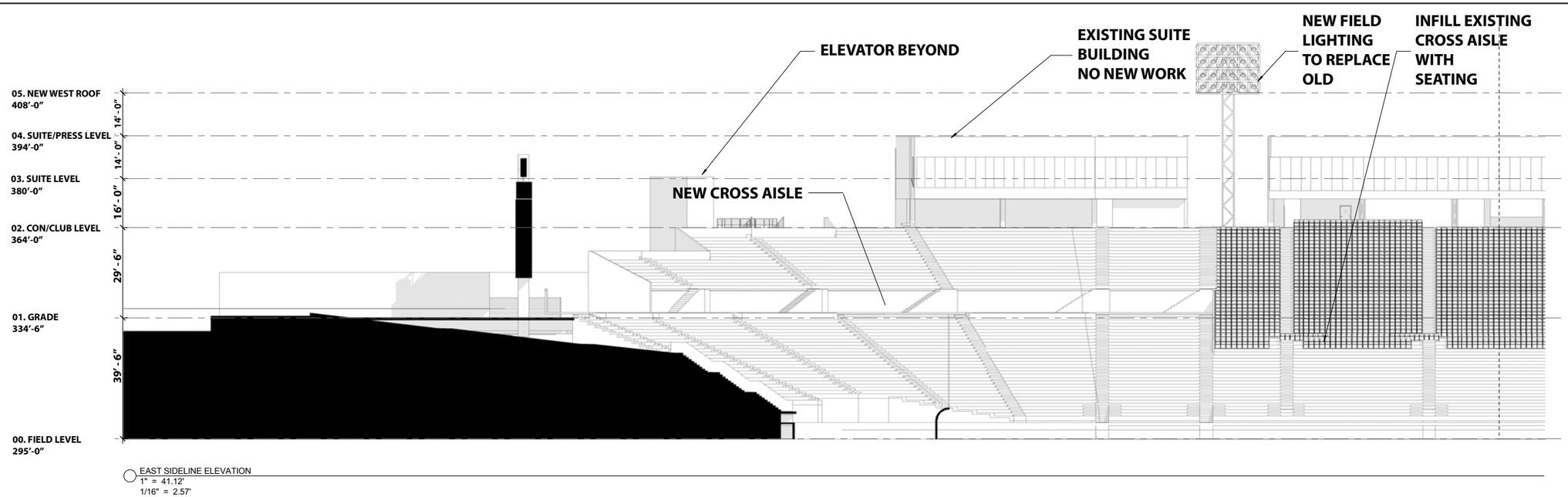
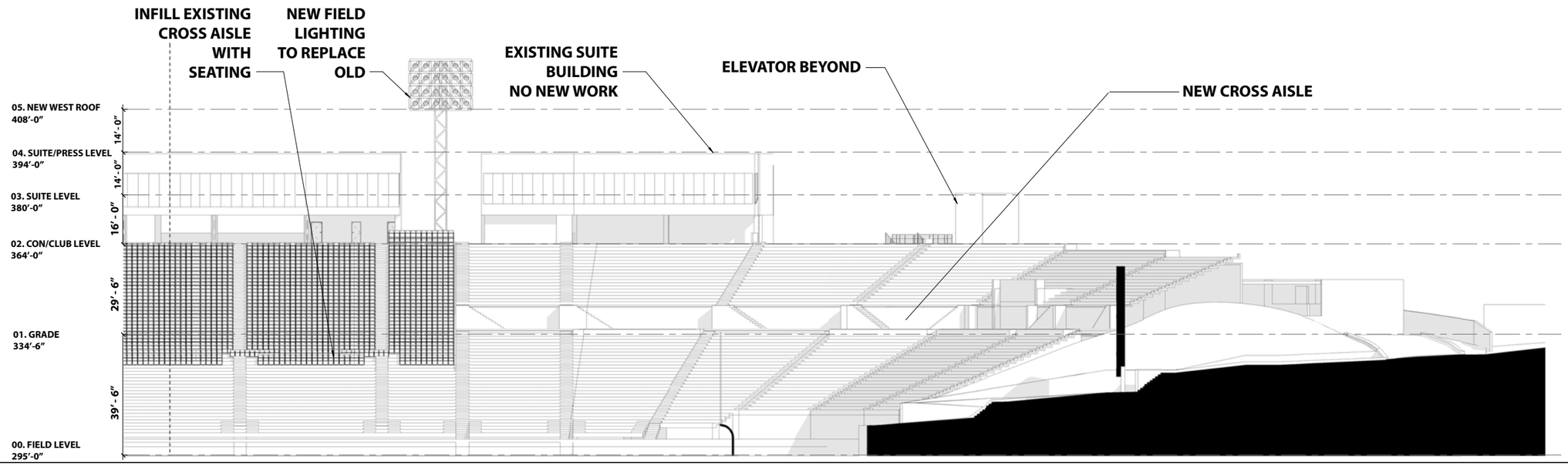


EAST SIDELINE ELEVATION
1" = 41.12'
1/16" = 2.57'



SOURCE: AECOM, 2017

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FIGURE 7
Project Elevations - East Sideline

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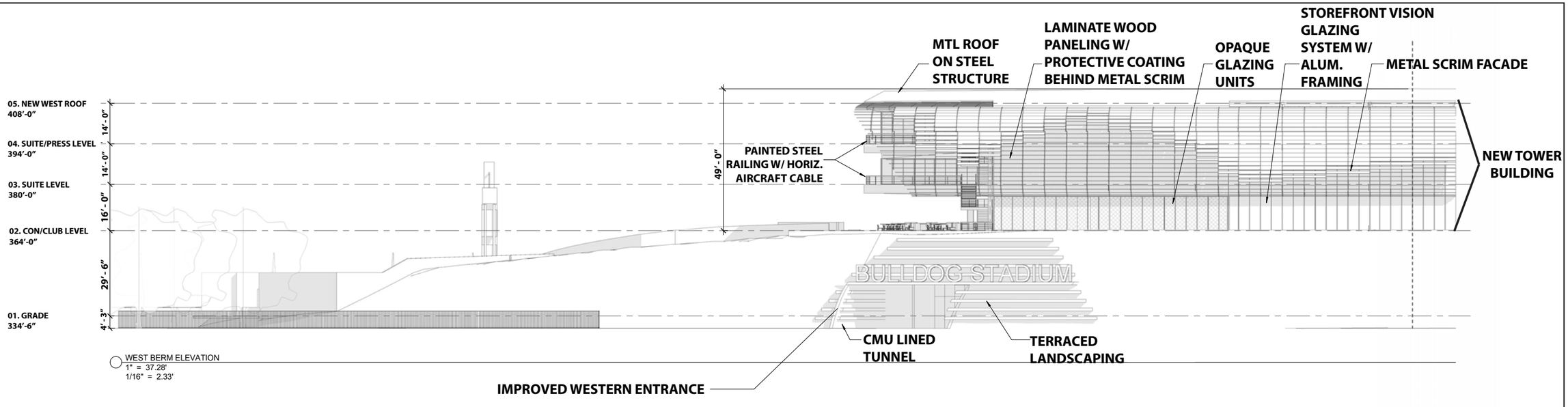

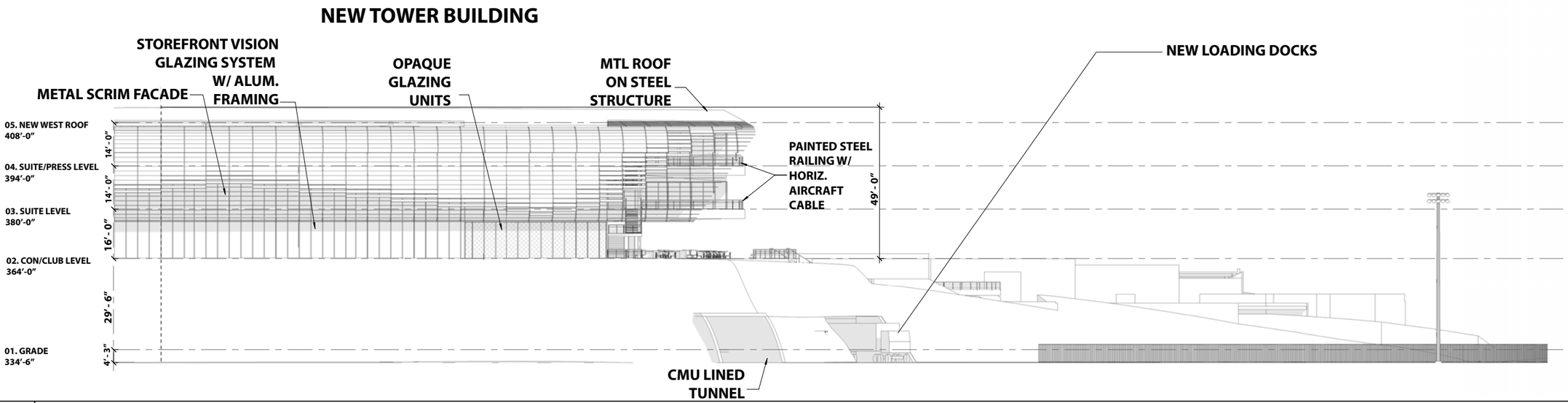

SOURCE: AECOM, 2017

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FIGURE 8
Project Elevations - West Berm

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3 INITIAL STUDY CHECKLIST

Topics with a check mark below would result in a potentially significant impact, but would be reduced to a level that is clearly less than significant with implementation of Project mitigation measures identified in this Initial Study.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

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

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

☐ I find that the proposed Project could have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

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

☐ I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Deborah S. Adishian-Astone, Vice President for Administration — Date 11/6/2017

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-Than-Significant Impact." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less–than-significant level (mitigation measures from "Earlier Analyses," as described in (5), may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program environmental impact report, or other CEQA process, an effect has been adequately analyzed in an earlier environmental impact report or negative declaration (see Item 1 above). Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a) Earlier Analysis Used. Identify and state where they are available for review.

    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were

incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) The significance criteria or threshold, if any, used to evaluate each question; and

   b) The mitigation measure identified, if any, to reduce the impact to less than significance.

3.1 Aesthetics

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

DISCUSSION

A Lighting Study was prepared for this Project by Dudek in October 2017 (see Appendix A). The report includes a review of existing light level measurements and proposed lighting design, based on the 75% Schematic Design Drawings and Specifications (AECOM 2017), and calculated light levels for the Project. The study determines potential nighttime lighting impacts associated with light spillover to nearby residential properties and public roads. Additionally, Dudek also prepared visual simulations of the Project from adjacent public vantage points to determine the change in the visual setting that could occur with the Project. The analysis in this section is

based on the findings and results of the Lighting Study, the visual simulations, and a site visit of the Project site and surrounding vicinity.

a) **Less-than-significant impact.** No scenic vistas are identified or designated by the City per the City of Fresno General Plan (City of Fresno 2014). Although there are no designated scenic vistas in the Project vicinity, distant views of natural landscape features, including the foothills of the Sierra Nevada Mountain Range, are available looking east from East Barstow Avenue adjacent to the Project site. However, views of the foothills are occasionally screened by intervening trees, buildings, and other structures, and foothills are routinely obscured by poor air quality. Furthermore, the existing stadium is a feature in the landscape that, along with mature trees and other landscaping, blocks views of distant foothills from motorists on North Millbrook Avenue and residential land uses to the west of the Project site. Existing views of the foothills from East Barstow Avenue would be maintained as stadium improvements would not block or otherwise impede views. As such, the Project would not have a substantial adverse effect on a scenic vista. Impacts would be less than significant.

b) **Less-than-significant impact.** The nearest officially designated State Scenic Highway, Highway 180 from the Kings Canyon National Park Boundary near Cedar Grove to the Alta Main Canal near Minkler, is approximately 16 miles from the Project site (Caltrans 2017). The Project would not be visible from this highway due to distance. From State Route 65 near Clovis to approximately Shepard Avenue, Highway 168 is an eligible State Scenic Highway. At its closest point, the eligible scenic designated segment of the highway is located approximately 7 miles from the Project site (Caltrans 2017). The existing stadium is not visible from the designated scenic segment of the highway. Similarly, the Project would not be visible from Highway 168 due to distance as well as the presence of buildings, trees, and other structures between the Project site and highway.

The City of Fresno General Plan designates several roads as scenic corridors or boulevards. The closest designated scenic corridors include Ashlan Avenue near Maroa Avenue, approximately 2.3 miles from the Project site, and Audubon Drive near Friant Road, approximately 2.9 miles from the Project site. The Project site is not visible from either of these corridors or any other designated scenic corridor or boulevard due to the presence of buildings, trees, and other structures that intervene with the line of sight to Bulldog Stadium from these areas. As the Project will not damage scenic resources within a state scenic highway (or locally designated scenic corridor), impacts would be less than significant.

c) **Less-than-significant impact.** The existing Bulldog Stadium is nested within a landscaped berm that surrounds the entire stadium bowl with the exception of street level openings at each end zone. The existing stadium features a turf field surrounded by

the ascending bowl seating and walking concourses surround the stadium. Three rectangular buildings housing the skyboxes are located on the eastern side of the stadium and a press box building is located on the western side of the stadium.

Landscape trees are installed on the landscape berm surrounding the stadium and are scattered along the perimeter of the site and along East Barstow Avenue to the north, Cedar Avenue to the east, Bulldog Lane to the south, and North Millbrook Avenue to the west. The stadium is adjacent to several turf fields, the CSU Fresno baseball stadium ("Beiden Field"), the CSU Fresno soccer stadium, the tan, 1 to 2 story Robert E. Duncan Athletic Building, and a small surface parking lot located along East Bulldog Lane.

Uses near the Project site include apartments, Fresno State athletic facilities, limited retail, a church and preschool, and single-family residential development. Three apartment complexes are located to the south of the Project site and south of Bulldog Lane. These complexes consist of a collection of two-story buildings painted in neutral exterior colors, pedestrian paths and other hardscape areas, turf and tree landscaping, and paved surface parking lots. A retail shopping center and small office complex is located southwest of the Project site near the Bulldog Lane/6th Street intersection and includes several stores, restaurants, and offices, a surface parking lot, and landscaped areas. These uses are housed within one-story buildings displaying white painted exteriors and brown terracotta roofs. To the west of the Project site and across North Millbrook Avenue, the landscape is marked by apartment complexes comprised of gray, white, and brown exterior painted two-story buildings, two-story sorority and fraternity houses, and surface parking lots. A single-story pre-school building and a 1-to 2-story church center surrounded by surface parking lots and undeveloped turf areas and vacant lots are located to the north of Project site as are several apartment complexes comprised of two-story buildings displaying uniform, neutral colors. A small one-story retail center is located at the northwestern corner of the Barstow Avenue/North Cedar Avenue intersection and includes several restaurants in tan colored buildings with terracotta-brown roofs. Single-family residential development is located to the northwest of Bulldog Stadium (west of the pre-school and church) and primarily consists of single-story, neutral colored homes. Agricultural areas are located to the northeast of the Project site, across North Cedar Avenue and north of East Barstow Avenue. Campus facilities, including the Fresno State track ("Warmerdam Field"), softball field, swimming pool facility, and tennis courts are located to the east of the Project site across North Cedar Avenue.

The Project would construct new amenity concourses at each of the four corners of the stadium, modify the north entrance of the stadium along East Barstow Avenue, modify the stadium seating bowl, replace existing field lighting and other lights with modern lamps and fixtures, and create a new multi-level tower structure on the west sideline of the stadium. A site plan for the Project is provided on Figure 4, and elevations depicting

the height and characteristics of the new tower and other stadium features are included on Figures 5 through 8.

Construction and operation of the new tower building would somewhat alter the existing visual character of the stadium through the introduction of a modern tower building with a metal scrim façade and exposed precast concrete floors. However, the new building would replace the existing press box building on a similar footprint and therefore would maintain the existing built features on the site.

With the exception of new field lighting on the east side of the stadium, the three-story tower building would be the tallest element of the Project. As depicted on Figure 5, the total height of the new three-story tower building would be approximately 49 feet from the top of the berm and approximately 83 feet above the surrounding street level. While the new tower building would be taller than the existing buildings on the east side of the stadium (these buildings are approximately 30 feet tall as measured from the top of the berm and approximately 64 feet above the surrounding street level), the height increase would not be substantial such that the new facilities would substantially degrade the character of Bulldog Stadium. In addition, the height of the existing lights on both sides of the stadium is approximately 70 feet above the berm. Therefore, the height of the new tower at the western side of the stadium would be visually compatible with the height of other existing elements within the stadium.

The new tower building would also display a comparable bulk and scale as the existing press box building when viewed from off-site viewing locations. To demonstrate the anticipated visual change associated with the introduction of the new tower building and other Project elements to Bulldog Stadium, visual simulations of the Project were prepared from public key observation points on East Barstow Avenue. Dudek visited the Project site in June 2017 and conducted a photographic inventory of potential views to Bulldog Stadium available from public vantage points in the surrounding area. Three key observation points (KOPs) were selected and are representative of views to and toward Bulldog Stadium available from East Barstow Avenue motorists and nearby residents. The KOP locations are depicted on Figure 9, Key Observation Points.

Existing photographs towards Bulldog Stadium and visual simulations of the Project as viewed from locations on East Barstow Road are provided in Figures 10, 11, and 12. The visual simulations used existing site photographs as background images and included true scale 3d models for the proposed facilities that were rendered onto the background photographs. The simulations depict the Project at completion. As shown on Figure 10, 11, and 12, views afforded to East Barstow Avenue motorists and pedestrians would be minimally impacted. New stadium elements would be most visible at KOP 1 (i.e.; north of

the north end zone) where the new tower building, concession/restroom buildings, hardscape and landscaping would occupy the foreground (see Figure 10). New buildings would display greater mass and scale than the existing press box and concession/restroom buildings however, they would not be out of character in the football stadium setting. At KOP 2 (i.e., located west of KOP 1), visibility to new features at Bulldog Stadium would decrease from KOP 1 and views to the new tower building, western tunnel entrances, and concession/restroom/team store buildings would be partially blocked by intervening landscaping (see Figure 11). These elements would not dominate the view from East Barstow Avenue and would not substantially degrade existing visual character. As viewed from KOP 3 (i.e., near the East Barstow Avenue/North Cedar Avenue intersection), the majority of Bulldog Stadium and Project components would be obscured by intervening vegetation (i.e., trees) or would consist of low-profile buildings that would not command attention (see Figure 12). In addition, new lighting installed on the eastern side of the stadium would be obscured by existing trees and would be less visually prominent than existing athletic field lighting present in the view.

As detailed in Figures 10, 11, and 12, improvements within the majority of the stadium would be either briefly visible or obscured from view by viewers in the surrounding area from public vantage points at street level. While the visual simulations focused on views from East Barstow Avenue, similar visual change is anticipated to be experienced from Millbrook Avenue and portions of East Bulldog Lane immediately adjacent to the Project site. The stadium is mostly obscured from Cedar Avenue motorists due to intervening buildings and landscaping.

As Project components would be visually compatible in scale and massing with existing stadium buildings and facilities and congruous with the athletic uses immediately surrounding the Project site, the visual character of the site as experienced by viewers in the immediate vicinity of the site would not substantially change. Project components would be consistent with the existing visual character and quality of the stadium through uses similar colors, familiar building materials, comparable building scales, and maintaining similar uses as existing stadium buildings/facilities. Parking and circulation would not change with the Project. As the Project would not substantially degrade the existing visual character and quality of the site and surrounding area, impacts would be less than significant.

d) **Less-than-significant impact.** Existing lighting sources on and surrounding the Project site include stadium lights, parking lot lighting and lighting associated with surrounding athletic fields, stadiums, and buildings. The existing stadium's lighting was originally designed to be cantilevered to focus on the playing field and minimize light trespass beyond the rim of the stadium to the stadium vicinity (Fresno State 1989).

A lighting evaluation was conducted by Dudek for the Project and is included as Appendix A The lighting evaluation includes a review of existing light level measurements conducted in June 2017 and an analysis of the lighting design and calculated light levels for the Project. The purpose of the lighting evaluation was to determine potential nighttime lighting impacts associated with Project lighting and spillover to nearby residential properties and public roads. The CSU system does not have lighting regulations or a lighting impact threshold that can be used to determine impact significance. However, Dudek determined that local light trespass regulations in the City of Fresno's Citywide Development Code Section 15-2015 could be used for this purpose in the absence of specific CSU thresholds. The light trespass thresholds are as follows:

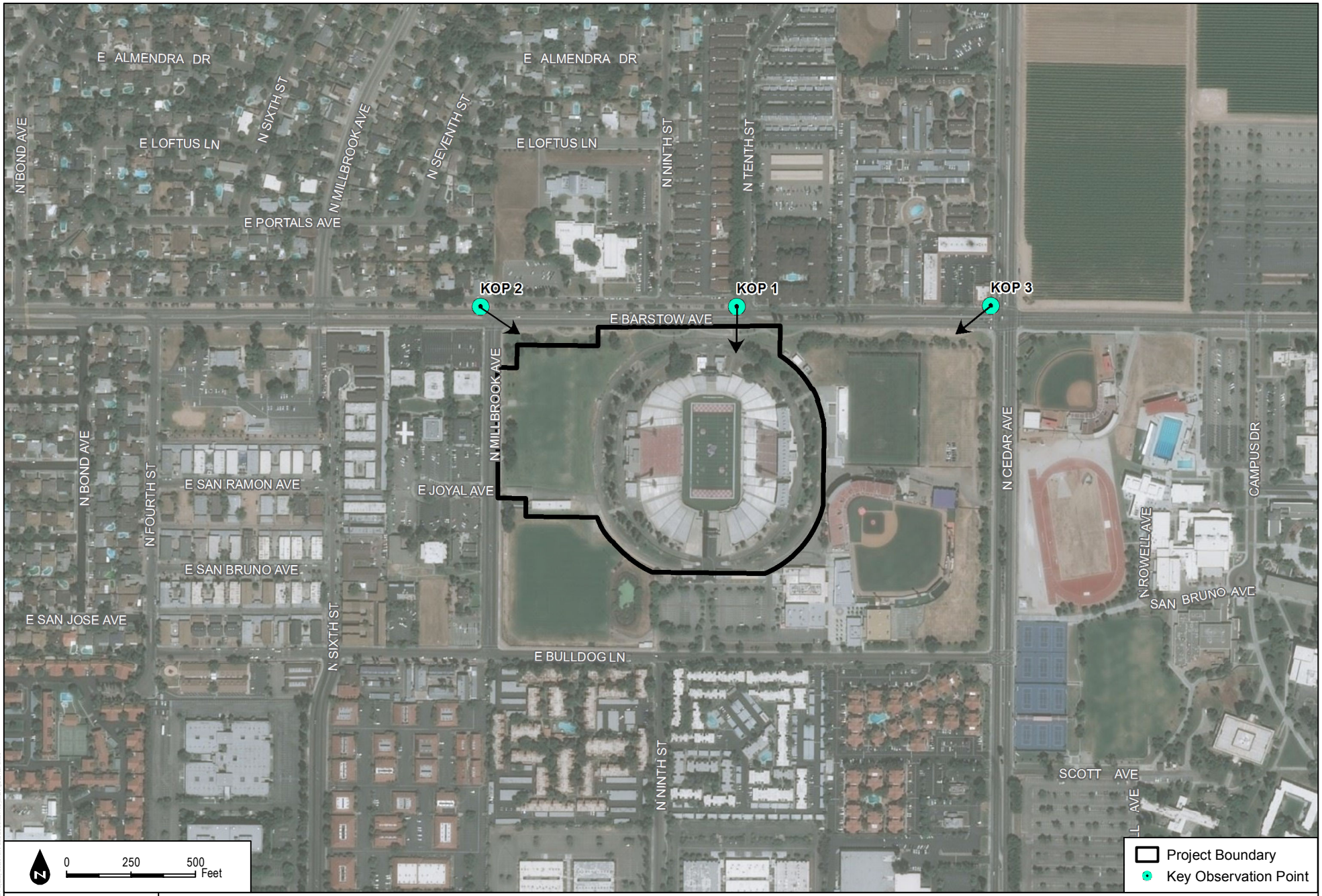
- No light or combination of lights, or activity shall cast light exceeding one-footcandle[3] onto a public street, with the illumination level measured at the centerline of the street.
- No light, combination of lights, or activity shall cast light exceeding 0.5-footcandle onto a residentially zoned property, or any property containing residential uses.

As demonstrated in Appendix A, the light levels that would be produced from the Project and received at nearby residential properties and public roads would be minimal and light spill from new Bulldog Stadium lighting and projected future light levels at each identified measurement location would be reduced when compared to existing conditions. While existing and projected light levels exceed residential light trespass thresholds at two locations (residential areas west of Millbrook Avenue and north of Barstow Avenue), the Project would reduce existing light levels in these locations. As proposed, existing halide stadium field lights and other lighting at Bulldog Stadium would be replaced with modern and improved lamps and lighting fixtures. The proposed lighting system for Bulldog Stadium would incorporate current lighting technology that includes LED fixtures, improved light shields, and glare control systems, as called for in the 75% Schematic Design and Specifications (AECOM 2017), which reduce spill light and glare. This technological improvement would reduce the maximum spill light levels as compared to existing conditions. In addition, because the proposed lighting plan would essentially replace the existing lighting at Bulldog Stadium, new lighting would not be a new source of substantial lighting in the area. Because of existing lighting levels in the surrounding area and the low Project light levels anticipated at nearby residentially

[3] Footcandles are the most common unit of measure used by lighting professions in the United States to calculate light levels in businesses and outdoor spaces. A footcandle is a measurement of light intensity received on a plane and is defined as the illuminance on a one-square foot surface from a uniform source of light.

zoned property and along public streets, Project generated lighting would be less than significant and would not adversely affect existing nighttime views.

The new tower building includes a metal scrim façade, aluminum framing, and non-reflective metal paneling on the western side of the building. Despite the incorporation of metallic building materials, the Project is not anticipated to create substantial daytime glare that would be received in the surrounding area. The new tower building contains field facing windowed surfaces and as these face inward towards the field, substantial glare is not anticipated to be reflected to public viewing locations in the surrounding area. Further, as shown in Figure 11, existing vegetation located to the west of the stadium would partially screen the metal scrim façade on the new tower building from viewers to the northwest, west, southwest of Bulldog Stadium. As such, the Project would not create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area and impacts would be less than significant.



DUDEK

SOURCE: Fresno County GIS, 2017; Bing Maps 2017

FIGURE 9

Key Observation Points

Fresno State Bulldog Stadium Modernization Project IS/MND

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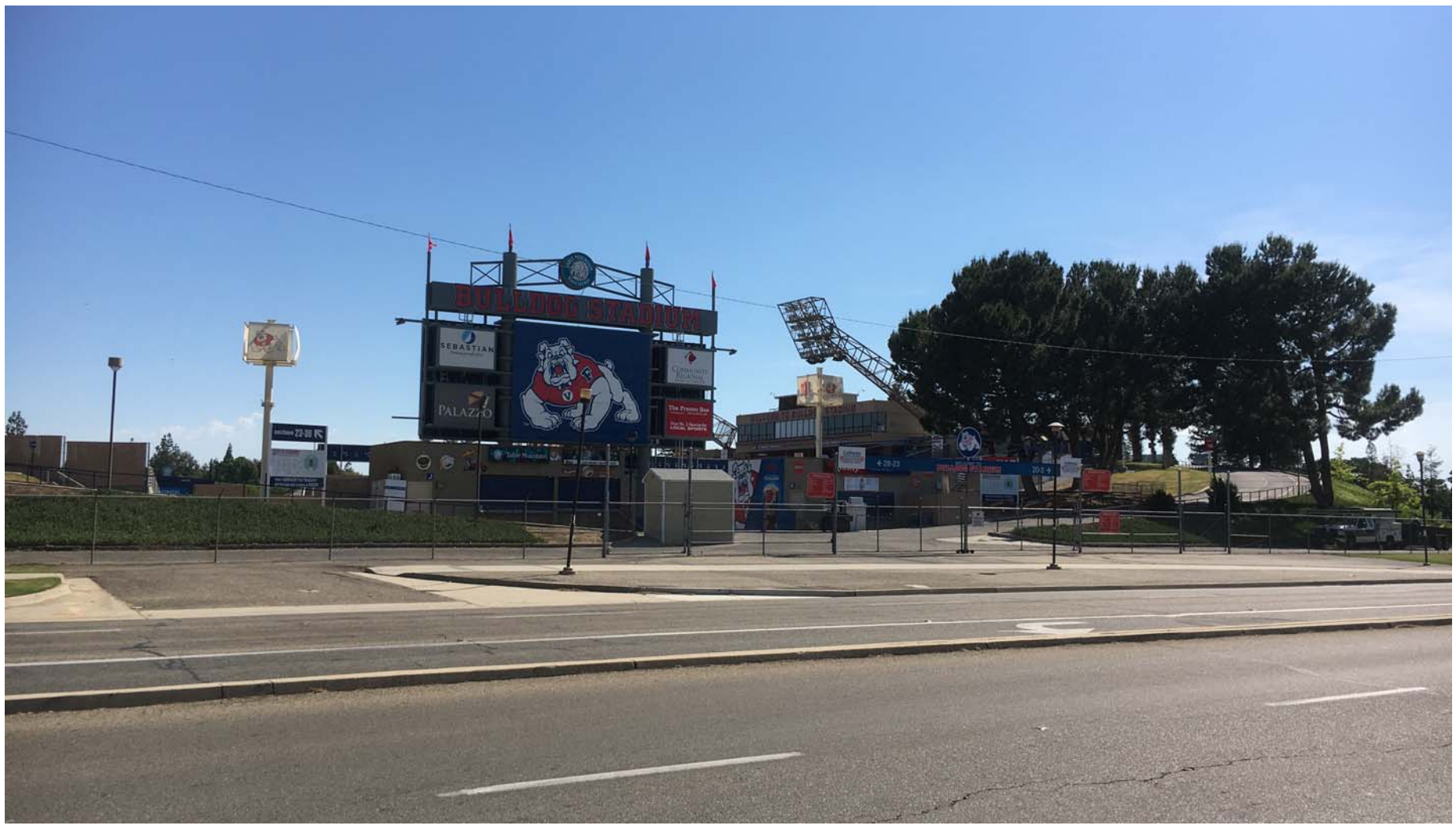
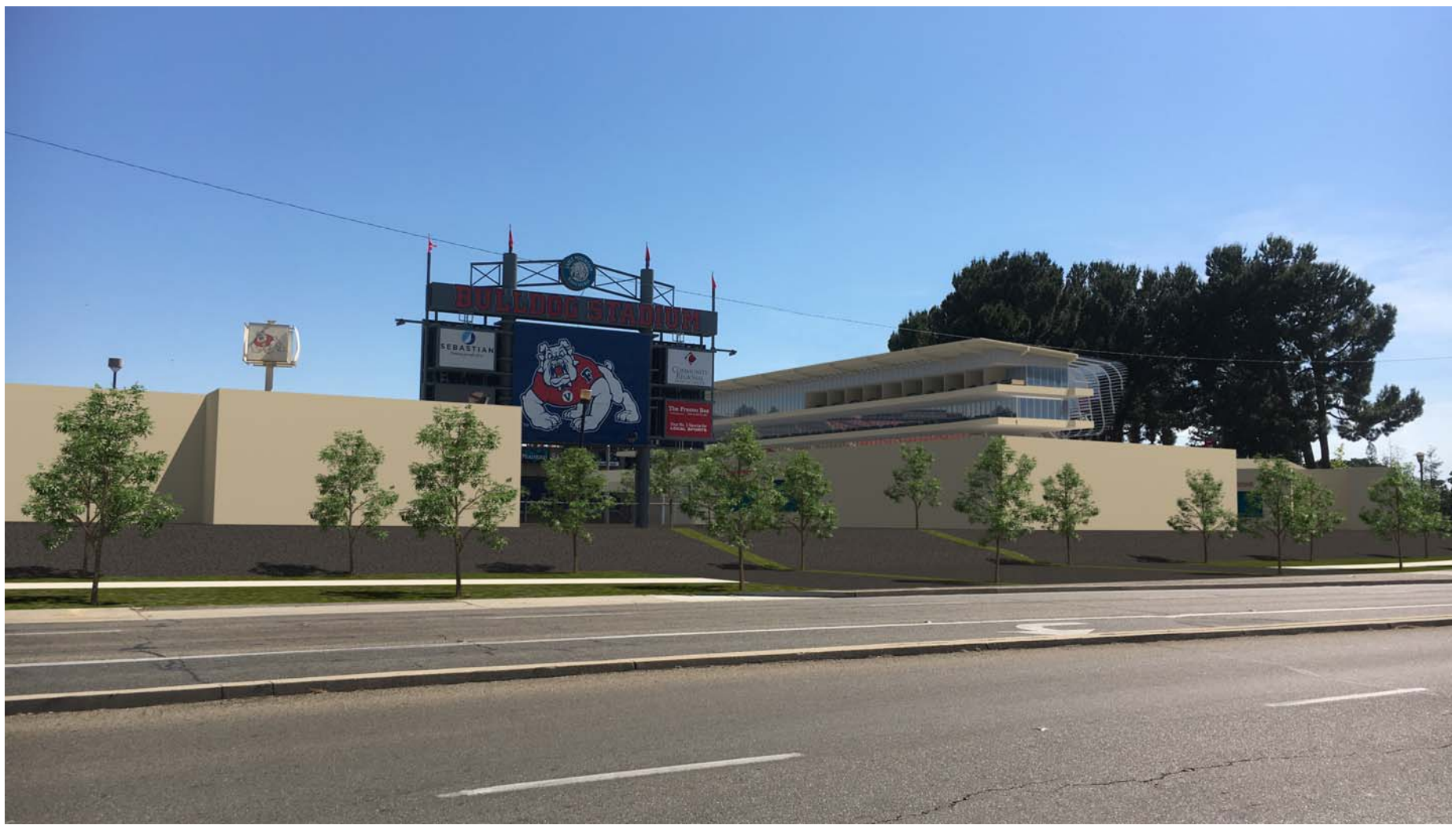


Existing Photograph



Visual Simulation of Proposed Project

SOURCE: Dudek (2017)

FIGURE 10

Key Observation Point 1: View looking south from East Barstow Avenue towards Bulldog Stadium

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Existing Photograph

Visual Simulation of Proposed Project

SOURCE: Dudek (2017)

DUDEK

FIGURE 11

Key Observation Point 2: View looking east from East Barstow Avenue towards Bulldog Stadium

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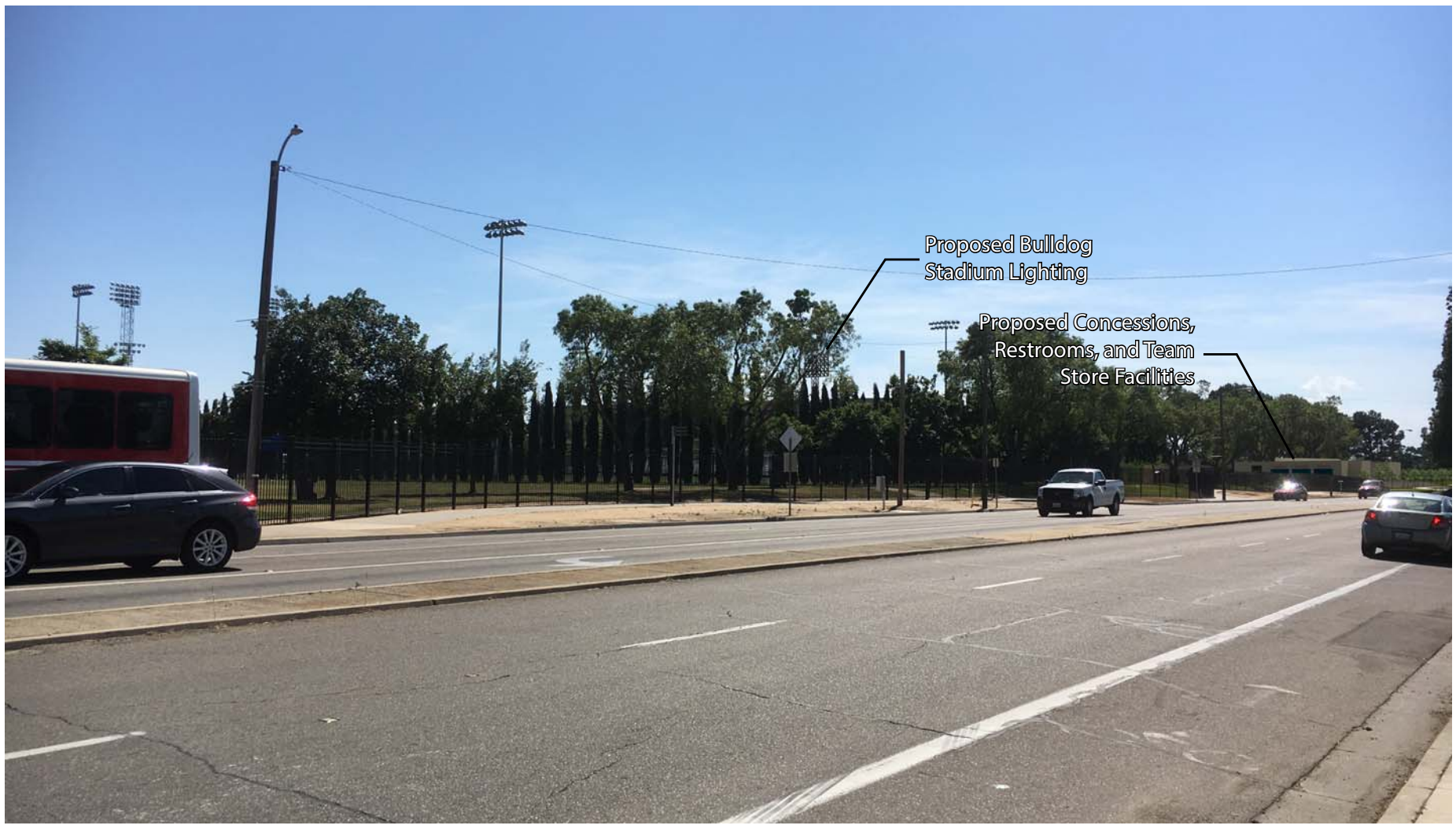
Existing Photograph



Visual Simulation of Proposed Project

DUDEK

SOURCE: Dudek (2017)

FIGURE 12

Key Observation Point 3: View looking west from East Barstow Avenue towards Bulldog Stadium

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3.2 Agriculture and Forestry Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

DISCUSSION

a–e) No impact. The Project site is located on the site of the existing Bulldog Stadium on the Fresno State campus. There are no lands designated or zoned for agricultural use or subject to Williamson Act contracts on the Project site or adjacent areas. The Project site is designated as Urban and Built-Up Land by the California Farmland Mapping and Monitoring Program (California Department of Conservation 2015). Additionally, there are no active agricultural operations on the Project site or adjacent areas. The closest agricultural land is located to the northeast of the site, beyond the intersection of Cedar Avenue and Barstow Avenue. The Project would not affect agricultural operations in this off-campus location. Therefore, no impacts to agricultural lands or agricultural operations would result with construction and operation of the Project.

Additionally, no forest or timberlands are present on or adjacent to the Project site. Therefore, no impacts to forest or timberlands would result with construction and operation of the Project.

3.3 Air Quality

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

DISCUSSION

a) **Less-than-significant impact.** The Project site is located within the San Joaquin Valley Air Basin (SJVAB), which includes the Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare County, and is within the jurisdictional boundaries of the San Joaquin Valley Air Pollution Control District (SJVAPCD). A project is non-conforming with an air quality plan if it conflicts with or delays implementation of any applicable attainment or maintenance plan. A project is conforming if it complies with all applicable SJVAPCD rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). Zoning changes, specific plans, general plan amendments and similar land use plan changes which do not increase dwelling unit density, do not increase vehicle trips, and do not increase vehicle miles traveled are also deemed to comply with the applicable air quality plan (SJVAPCD 2015).

For construction impacts, the pollutant of greatest concern to the SJVAPCD is respirable PM_{10}. The SJVAPCD recommends that significance be based on a consideration of the control measures to be implemented during Project construction. Compliance with Regulation VIII (Fugitive PM_{10} Prohibitions) and implementation of appropriate mitigation measures to control PM_{10} emissions are considered by the Air District to be sufficient to render a Project's construction-related impacts less than significant. All control measures listed in Table 6-2 (Regulation VIII Control Measures) are required for all construction sites by regulation. Therefore, the Project would be required comply with applicable SJVAPCD rules and regulations, such as Regulation VIII (Fugitive PM_{10} Prohibitions). The Project would not conflict with or propose to change existing land uses or result in population growth. Haul truck, vendor truck, and worker vehicle trips would be generated during the proposed construction activities but would cease after construction is completed.

In regards to long-term operations, the Project would decrease the seating capacity to 38,155 seats, which is a reduction of approximately 3,038 seats over the existing 41,193 seats. However, future attendance for events is expected to be similar to the 5-year average attendance of 22,233 and would continue to fluctuate year-to-year based on team performance. The stadium would continue to be used for other campus sports events and the Project would not change the frequency or size of these sports events. While the Project could result in an increase in the frequency and size of private events, these events would still occur occasionally (approximately once a month). Approximately, four of these monthly events could be larger private events drawing

approximately 2,000 people. Overall, the Project would not substantially increase the amount of vehicle trips to the Project site.

Therefore, the Project's emissions would not exceed the construction significance thresholds and is not expected to generate activities that could cause exceedance of the operational thresholds or violate any SJVAPCD rule or regulation (see Item b below). The Project would not conflict with or delay the implementation of the SJVAPCD Ozone or Particulate Matter Attainment Plans. Therefore, Project impacts would be less than significant.

b) **Less-than-significant impact.** A quantitative analysis was conducted to determine whether proposed construction activities may result in emissions of criteria air pollutants that may cause exceedances of the National Ambient Air Quality Standards (NAAQS) or California Ambient Air Quality Standards (CAAQS), or contribute to existing nonattainment of ambient air quality standards. Criteria air pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and lead. Pollutants that are evaluated herein include reactive organic gases (ROG) and oxides of nitrogen (NO_x), which are important because they are precursors to O_3, as well as CO, sulfur oxides (SO_x), PM_{10}, and $PM_{2.5}$.

Construction of the Project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and ROG off-gassing) and off-site sources (i.e., on-road haul trucks, vendor trucks, and worker vehicle trips). Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions. Therefore, such emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts.

Construction criteria air pollutant emissions associated with temporary construction activity were quantified using the California Emissions Estimator Model (CalEEMod) version 2016.3.1. CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant emissions associated with construction activities from a variety of land use projects, such as residential, commercial, and industrial facilities. CalEEMod input parameters, including the Project land use type and size, construction schedule, and anticipated construction equipment utilization, were based on information provided by Fresno State, or default model assumptions if Project specifics were unavailable.

Implementation of the Project would generate air pollutant emissions from entrained dust, off-road equipment, vehicle emissions, and architectural coatings. Entrained dust results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, resulting in PM_{10} and $PM_{2.5}$ emissions. The Project would be required to comply with applicable Rules under SJVAPCD Regulation VIII to control dust emissions generated during grading activities. Additionally, the Project would be required to adhere to SJVAPCD Rule 8021, which requires that projects develop, prepare, submit, obtain approval of, and implement a Dust Control Plan that would reduce fugitive dust impacts to less than significant for all construction phases. Standard construction practices that would be employed to reduce fugitive dust emissions include watering of the active sites twice per day depending on weather conditions. Internal combustion engines used by construction equipment, vendor trucks (i.e., delivery trucks), and worker vehicles would result in emissions of ROG, NO_x, CO, PM_{10}, and $PM_{2.5}$. The application of architectural coatings, such as exterior application/interior paint and other finishes, and application of asphalt pavement would also produce ROG emissions; however, the contractor would be required to procure architectural coatings from a supplier in compliance with the requirements of SJVAPCD's Rule 4601 (Architectural Coatings).

Table 3 presents the estimated maximum annual emissions generated during construction of the Project. Details of the emission calculations are provided in Appendix B.

TABLE 3
ESTIMATED MAXIMUM ANNUAL CONSTRUCTION CRITERIA AIR POLLUTANT EMISSIONS

Year	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Tons per year					
2019	0.24	2.38	1.62	<0.01	0.26	0.17
2020	0.36	3.20	2.69	0.01	0.29	0.18
2021	0.46	1.10	1.03	<0.01	0.10	0.06
Maximum Annual Emissions	**0.46**	**3.20**	**2.69**	**0.01**	**0.29**	**0.18**
SJVAPCD Threshold	*10*	*10*	*100*	*27*	*15*	*15*
Threshold Exceeded?	No	No	No	No	No	No

Notes: CO = carbon monoxide; NO_x = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SJVAPCD = San Joaquin Valley Air Pollution Control District; SO_x = sulfur oxides; ROG = reactive organic gases
See Appendix B for complete results.

As shown in Table 3, the Project would not exceed the annual significance thresholds established by the SJVAPCD. Therefore, construction impacts of the Project would be less than significant.

In regards to operational emissions, the Project would not result in a substantial increase in the number of visitors served by Fresno State during game days. As previously discussed, future attendance for events is expected to be similar to the 5-year average attendance of 22,233 and would continue to fluctuate year-to-year based on team performance, as is currently the case. The stadium would continue to be used for other campus sports events and the Project would not change the frequency or size of these sports events. Additionally, while the Project could result in an increase in the frequency and size of private events, these events would still occur occasionally (approximately once a month) and of these events, the larger private events drawing approximately 2,000 people would occur approximately four times a year. Overall, the Project would not substantially increase the amount of vehicle trips to the Project site. Therefore, the Project would not substantially increase the existing operational emissions related to mobile sources, which are typically the primary source of emissions from land use development.

The Project would also include installation of a 500-kilowatt diesel emergency generator in the utility yard by the central plant. Fresno State would be required to work with the SJVAPCD and provide the necessary emission information to ensure less than significant exhaust emissions and exposure to obtain permits to operate. Therefore, operational impacts of the Project would be less than significant.

c) **Less-than-significant impact.** Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and the SJVAPCD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality.

The SJVAB is a nonattainment area for O_3, PM_{10}, and $PM_{2.5}$ under the NAAQS and/or CAAQS. The poor air quality in the SJVAB is the result of cumulative emissions from motor vehicles, off-road equipment, commercial and industrial facilities, and other emission sources. Projects that emit these pollutants or their precursors (i.e., ROG and NO_x for O_3) potentially contribute to poor air quality. As indicated in Table 3, annual construction emissions associated with the Project would not exceed the SJVAPCD significance thresholds. Additionally, the Project is not expected to generate a substantial increase in long-term operational emissions over existing

conditions (see Item b above). Furthermore, the Project would not conflict with the SJVAPCD Ozone Attainment Plans, or the PM_{10} or $PM_{2.5}$ Attainment Plan, which address the cumulative emissions in the SJVAB and account for emissions associated with construction activity in the SJVAB. Accordingly, the Project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants and impacts would be less than significant.

d) **Less-than-significant impact.** The SJVAPCD has adopted thresholds for toxic air contaminant (TAC) emissions to sensitive receptors: cancer risks and non-cancer health effects (acute and chronic). These impacts are addressed on a localized rather than regional basis and are specific to the sensitive receptors identified for the project. Sensitive receptors include residences, schools, playgrounds, child-care centers, athletic facilities, long-term health-care facilities, rehabilitation centers, convalescent centers, and retirement homes. The closest sensitive receptors are existing multi-family apartments located approximately 130 feet north of the Project across Barstow Avenue.

"Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period would contract cancer based on the use of standard Office of Environmental Health Hazard Assessment (OEHHA) risk-assessment methodology (OEHHA 2015). In addition, some TACs have non-carcinogenic effects. TACs that would potentially be emitted during construction activities would be diesel particulate matter, emitted from heavy-duty construction equipment and heavy-duty trucks. Heavy-duty construction equipment and diesel trucks are subject to California Air Resources Board (CARB) air toxic control measures to reduce diesel particulate matter emissions. According to the OEHHA, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period for the maximally exposed individual resident; however, such assessments should be limited to the period/duration of activities associated with the project (OEHHA 2015). Thus, the duration of proposed construction activities (occurring over a 18- to 24-month period) would only constitute a small percentage of the total 30-year exposure period. Regarding long-term operations, the Project would include installation of a 500-kilowatt diesel emergency generator that would emit air diesel particulates. The emergency generator would be subject to permitting by the SJVAPCD. As a part of the permit process, the SJVPACD would evaluate compliance with Rule 2201 (New and Modified Stationary Source Review Rule). Rule 2201 requires Best Available Control Technology for new emission units. As mentioned previously, Fresno State would be required to work with the SJVAPCD and provide the necessary emission information to ensure less-than-significant exhaust TAC exposure to obtain permits to operate.

Although the Project site is currently developed, the Project would be required to comply with SJVAPCD Rule 8021, which requires applicants to develop, prepare, submit, obtain approval of, and implement a Dust Control Plan that would reduce fugitive dust impacts to less than significant for all construction phases of the project. Dust control measures would also control the potential release of the *Coccidioides immitis* fungus from construction activities.

Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, demolition, and disposal of asbestos containing material (ACM). ACMs could be encountered during demolition of existing structures, particularly older structures constructed prior to 1970. Asbestos can also be found in various building products, including (but not limited to) utility pipes/pipelines. Because the Project includes demolition of existing structures, the removal of ACMs would be subject to the Asbestos Program administered by the SJVAPCD.

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed federal and/or state standards for CO are termed CO "hotspots." CO transport is extremely limited and disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors. According to the Guidance for Assessing and Mitigating Air Quality Impacts, CO hotspots are typically evaluated when (1) the LOS on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F, or (2) that the project will substantially worsen an already existing LOS F on one or more streets or at more or more intersections in the project vicinity (SJVAPCD 2015).

Vehicle trips associated with worker, vendor, and haul trips would be temporary in nature occurring over the duration of construction activities (occurring over a 18- to 24-month period). Since attendance after completion of the Project is expected to be similar to the existing stadium, the Project would not result in the generation of traffic that would contribute to potential adverse traffic impacts that may result in the formation of CO hotspots.

In summary, the Project would not expose sensitive receptors to substantial pollutant concentrations or health risk during construction or operations, and this impact would be less than significant on a project-level and cumulative basis.

e) **Less-than-significant impact.** Odors are a form of air pollution that is most obvious to the general public and can present problems for both the source and surrounding community. Although offensive odors seldom cause physical harm, they can be annoying and cause concern. Odors would be potentially generated from vehicles and equipment

exhaust emissions during construction of the Project. Odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment. Such odors are temporary and generally occur at magnitudes that would not affect substantial numbers of people. In regards to long-term operations, the Project would generate similar odors to existing conditions at the stadium. Typical odors generated from operation of the Project would include vehicle exhaust generated by visitors and employees traveling to and from the Project site, through the periodic use of landscaping or maintenance equipment, cooking odors from the new concessions, and from the temporary storage of typical solid waste (refuse). Therefore, impacts associated with odors would be less than significant.

3.4 Biological Resources

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

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

DISCUSSION

a) Less-than-significant impact with mitigation. Based on the results of the literature review and site visit conducted in 2017, the Project would not result in impacts to special-status plants. The Project site is developed with the existing stadium and surrounding lawn, mature landscape trees and fencing. No native vegetation or habitats exist on the Project site. Given its developed characteristics, no special-status plant species or their habitats exist on the Project site. Therefore, no impacts to special-status plant species would result with construction and operation of the Project.

Based on the results of a California Department of Fish and Wildlife, California Natural Diversity Database search conducted in 2017, there were no known occurrences of special-status birds or wildlife species on or immediately adjacent the Project site. While there are several occurrences for tricolored blackbird (*Agelaius tricolor*) and Swainson's hawk (*Buteo swainsoni*) in the Project vicinity, there is no suitable habitat at the Project site and several of these occurrences have been extirpated due to development. However, there is low potential that the landscaped trees on site provide suitable nesting habitat for special-status birds or other birds protected by the federal Migratory Bird Treaty Act, and therefore, such nesting may be occurring on the site, or may occur in the future. Accordingly, construction on the Project site could potentially result in the loss or abandonment of active nests of special-status or other birds as a result of tree removal or construction-related noise and disturbance, a potentially significant impact. Mitigation Measure BIO-1 would be implemented in conjunction with the Project, which requires preconstruction nesting bird surveys and other measures, if construction occurs during the typical avian nesting season. Implementation of this mitigation measure would reduce this potentially significant impact related to construction activities to less than significant.

> **Mitigation Measure BIO-1:** To avoid impacts to special-status and native migratory birds protected by the federal Migratory Bird Treaty Act, a nesting bird survey shall be completed by a qualified biologist no earlier than 2 weeks prior to construction and/or tree removal during the nesting season (February 1–September 30) to determine if any special-status or other native migratory birds

are nesting on or near the site. If any active nests are observed during surveys, a suitable avoidance buffer will be determined by the qualified biologist and consultation with CDFW will be sought, if necessary. The nests will be flagged by the qualified biologist based on species, location and planned construction activity in the vicinity of the nest. These nests will be avoided until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist. Any nesting habitat (i.e., trees) will be removed outside of the breeding bird season to avoid impacts to nesting birds. If it is infeasible to remove trees outside of the breeding season, a survey will be performed no earlier than 1 week prior to removal to determine if active nests are present.

b–c) **Less-than-significant impact.** The Project site is developed with the existing stadium and surrounding lawn, mature landscape trees and fencing. No native vegetation or habitats exist on the Project site. The Project site does not contain wetlands or other sensitive habitats under federal or state regulations. A stormwater detention basin is located southwest of the stadium and Project site. While this basin may have wetland features, it would not be directly or indirectly modified by construction or operation of the Project. Stormwater from the Project site would continue to be directed to this basin, but stormwater discharge would not increase substantially given that the impermeable area would increase by 1 to 2% with the Project. Therefore, the impact of the Project on wetlands would be less than significant.

See Section 3.9, Hydrology and Water Quality for additional discussion about water quality impacts of the Project.

d) **No impact.** Given the developed nature of the Project site, the Project would not affect migration corridors or nursery sites. Therefore, no impact on such features would result with construction and operation of the Project.

e) **No impact.** There are no local ordinances or policies of the City of Fresno that would apply to projects on the Fresno State campus, as the City does not have jurisdiction over campus lands. The Project would be constructed entirely on Fresno State property. Therefore, the Project would not conflict with local policies. Construction of the Project would likely include the removal of some existing on-site landscape trees, but the Project would replace some trees and provide other plantings on the site. Therefore, no impacts related to policies for the protection of biological resources would result with implementation of the Project.

f) **No impact.** The Project would not conflict with the provisions of an adopted Habitat Conservation Plan, National Community Conservation Plan, or other applicable Habitat

Conservation Plan, as the Project site does not fall within the boundaries of such an adopted plan. Therefore, no impact related to conflicts with an adopted plan would result with implementation of the Project.

3.5 Cultural Resources

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES AND TRIBAL CULTURAL RESOURCES – Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐
e) 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:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

DISCUSSION

A Cultural Resources Report was prepared for the Project by Dudek in August of 2017. The report

includes the results of a records search of the Project area and a half-mile radius around the Project Area at the Southern San Joaquin Valley Information Center (SSJVC), a Sacred Lands File records search at the Native American Heritage Commission (NAHC), and an intensive pedestrian survey of the Project site. The analysis in this section is based on the findings and results of this report.

a) **No impact.** The existing Bulldog Stadium was originally constructed in 1979 and renovated in 1991. Given that the stadium is less than 50 years old and has been modified since its original construction, the existing stadium does not have the potential to be a historic resource. Additionally, review of historic aerials from 1962 to 2012 did not reveal any previous structures within the Project area prior to the construction of the existing stadium in 1979. The Project area consisted of agricultural fields with an irrigation ditch. Therefore, no impact related to historic built resources would result with implementation of the Project.

b, d) **Less-than-significant impact with mitigation.** The records searches conducted for the Project through the SSJVC and NAHC did not identify any previously known cultural resources within the Project area. However, there were three cultural resources identified within a one half-mile radius of the Project area. A prior cultural resources memo prepared for the Project site indicated that there were no visible archaeological resources on the site and that the original land surface has been destroyed from historical land-use practices and it is unlikely any archaeological resources exist below the current land surface.

Project site is developed with the existing stadium and surrounding lawn, mature landscape trees and fencing. No cultural resources were discovered during the intensive pedestrian survey conducted for this Project, which revealed high levels of ground disturbance.

Based on the geotechnical report for the Project, the generalized soil profile at the site consists of large fill embankments (berms), which support the stadium facilities, overlying native soils. Based on the geotechnical investigation for the Project, the berms range from approximately 32 feet high along the east and west sides of the stadium to 2 feet high or less at the north and south ends of the stadium (RMA GeoScience 2017). These large berms were constructed when the stadium was originally built using an engineered fill derived from the excavation that was made for the interior of the stadium and its field, which are lower in elevation and below the surrounding ground surface.

The new tower building and the new concourses would be built into the large berms and foundation excavations would not extend into native soils, based on review of the geotechnical investigation for the Project. However, given that the berm is

approximately 2 feet high at the north and south entrances, grading and excavations for the new concessions and restrooms on the north side of the stadium have the potential to extend into native soils. Therefore, there is a low potential that such activities could result in the inadvertent discovery of cultural resources, including archaeological resources and human remains. If such activities affect a significant cultural resource, the impact could be potentially significant. Mitigation Measures CULT-1 and CULT-2 would be implemented to ensure that impacts related to inadvertent discovery of cultural resources would be reduced to less than significant.

Mitigation Measure CULT-1: Fresno State shall include a standard inadvertent discovery clause in every construction contract for the Project, which requires that in the event that an archaeological resource is discovered during construction (whether or not an archaeologist is present), all soil disturbing work within 100 feet of the find shall cease until a qualified archaeologist can evaluate the find and make a recommendation for how to proceed. For an archaeological resource that is encountered during construction, the campus shall:

- Retain a qualified archaeologist to determine whether the resource has potential to qualify as a historical resource or a unique archaeological resource as outlined in the California Environmental Quality Act (CEQA)(PRC 21083.2).
- If the resource has potential to be a historical resource or a unique archaeological resource, the qualified archaeologist, in consultation with Fresno State, shall prepare a research design and archaeological evaluation plan to assess whether the resource should be considered significant under CEQA criteria.
- If the resource is determined significant, in consultation with Fresno State, a qualified archaeologist will prepare a data recovery plan for retrieving data relevant to the site's significance. The data recovery plan shall be implemented prior to, or during site development (with a 100 foot buffer around the resource). The archaeologist shall also perform appropriate technical analyses, prepare a full written report and file it with the Southern San Joaquin Valley Information Center, and provide for the permanent curation of recovered materials.

Mitigation Measure CULT-2: Should human remains be discovered at any time, work will halt in that area and procedures set forth in the California Public Resources Code (Section 5097.98) and State Health and Safety Code (Section

7050.5) will be followed, beginning with notification to Fresno State and the County Coroner. If Native American remains are present, the County Coroner will contact the Native American Heritage Commission to designate a Most Likely Descendent, who will arrange for the dignified disposition and treatment of the remains.

c) **Less-than-significant impact.** The Project site is developed with the existing stadium and surrounding lawn, mature landscape trees and fencing. The intensive pedestrian survey conducted for the Project revealed high levels of ground disturbance and the geotechnical report showed that most of the development would involve disturbance in the exist large berms surrounding the field. Therefore, the Project would not likely affect unique paleontological or geologic resources. The impact would be less than significant.

e) **No impact.** State Assembly Bill 52, effective July 1, 2015, recognizes that California Native American prehistoric, historic, archaeological, cultural, and sacred places are essential elements in tribal cultural traditions, heritages, and identities. The law establishes a new category of resources in CEQA called "tribal cultural resources" that considers the tribal cultural values in addition to the scientific and archaeological values when determining impacts and mitigation. Public Resources Code section 21074 defines a "tribal cultural resource" as either:

(1) Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Nature American tribe that is either listed, or determined to be eligible for listing, on the national, state, or local register of historic resources, or

(2) A resource determined by the lead agency chooses, in its discretion and supported by substantial evidence, to treat as a tribal cultural resource.

The California Public Resources Code section 21084.2 now establishes that "[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment." The Public Resources Code requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project.

There are no known resources on or adjacent to the Project site that would be considered a tribal cultural resource. Therefore, no such resources are listed or eligible for listing in the California Register of Historic Resources or significant pursuant to

Public Resources Code Section 5024.1. No Native American tribe has contacted Fresno State or the Trustees of the California State University and requested consultation related to Fresno State properties or projects. Therefore, the Project would not cause a substantial adverse change in the significance of a tribal cultural resource, as defined in Public Resources Code 21074 (see also Items b and d above).

3.6 Geology and Soils

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

DISCUSSION

a.i) **No impact.** Based on a preliminary geotechnical report completed for the Project (RMA GeoScience 2017), there are no active or potentially active faults

identified on or near the Fresno State campus. The nearest active earthquake fault zones (i.e., evidence of displacement within the past 11,000 years) are the Nunez, San Joaquin, and Owens Valley faults, located approximately 56 miles southwest, 58 miles west, and 97 miles east, respectively, of the Project site. The potential for fault rupture on the campus and Project site is very low. Therefore, no impacts related to fault rupture would result with construction and operation of the Project.

a.ii, iii, c) **Less-than-significant impact.** Although the Project site is located in excess of 50 miles from the nearest active fault, moderate to strong earthquakes may occur at the Project site. To address these seismic concerns, the preliminary geotechnical report (RMA GeoScience 2017) developed seismic design parameters for the Project site, using the online U.S. Geological Survey Seismic Design Calculator, which is based on 2016 California Building Code (CBC) Seismic Parameters. Based on this analysis, a peak earthquake ground acceleration of 0.301g (percent of gravity) has been estimated for the Project site.

Potential secondary seismic hazards that could affect the Project include liquefaction, lateral spreading, seismically induced settlement, and differential compaction. Based on the relative density of the soil at the Project site and the depth to groundwater, which is estimated at 150 feet below ground surface, there is a negligible risk of liquefaction and associated lateral spreading occurring at the Project site during a design level seismic event. Similarly, based on Project soil types, a peak ground acceleration of 0.301g, and the distance to the nearest active faults, there is a low risk of any significant seismic settlement and differential compaction occurring during a design seismic event. For design purposes, it is estimated that the seismically induced settlement would be less than 0.5 inch, with the potential for differential settlement/compaction of up to 0.5 inch over a distance of 40 feet, during a seismic event (RMA GeoScience 2017). These results and other recommendations of the geotechnical report would be incorporated into the Project structural design.

Moreover, final design of the Project would comply with the CBC, which includes specific provisions for structural seismic safety. The Project would also be subject to review and recommendations by the CSU Seismic Review Board. Therefore, with the above provisions, the impact of the Project related to seismic-related ground shaking would be less than significant.

a.iv, c) **Less-than-significant impact.** The topography of the Project site is relatively flat to gently sloping. Based on the preliminary geotechnical report completed

for the Project (RMA GeoScience 2017), the original ground surface, prior to stadium construction, varied in elevation from 329 to 337 feet within the stadium area. Portions of the stadium were constructed on a fill embankment (berm), which is up to 32 feet high and has an exterior embankment slope of approximately 2:1 (horizontal to vertical). This slope angle is standard for finished fill slopes and is not prone to failure.

As part of the Project, excavations would be completed into the existing embankment. Four new concourse plazas would be constructed as open plazas or sunken courtyards in each quadrant of the stadium. The plazas would be constructed by excavating into the middle of the existing berm and locating the plazas at heights that would be fully accessible to the new cross-aisle, via a large tunnel on the south and voids in the seating bowl in the north. By removing the middle of the berm, the outer slope of the berm would be left visually intact so the natural organic shape surrounding the stadium would be retained with the Project. In addition, a below grade floor would be constructed at the top of the west sideline berm, as part of the proposed west sideline tower structure. Retaining walls up to 15 feet high are anticipated as part of the Project (RMA GeoScience 2017).

Temporary excavations/slopes and permanent slopes would be performed by qualified contractors. Plans, specifications, and construction contracts would incorporate stipulations regarding standard CSU and CBC requirements and acceptable construction practices, including grading and demolition, safety measures, excavation stability, erosion control, and drainage alteration, all of which have an effect on slope stability. Temporary excavations would also be completed in accordance with requirements established by the Occupational Safety and Health Administration (OSHA), to prevent cave-ins and failures. Existing embankment slopes would not be permanently altered, as part of the Project, and proposed temporary excavations/slopes and permanent slopes would be constructed in accordance with industry standards and the recommendations of the Project geotechnical report. Therefore, Project impacts related to slope instability would be less than significant.

b) **Less-than-significant impact.** The Project would include cut and fill grading, trenching, and removing trees and other vegetation. More specifically, the north plaza would be enlarged, regraded, and repaved, and would include new concession and restroom facilities. Four new concourse plazas would be constructed as open plazas or sunken courtyards in each quadrant of the stadium. Excavations would be completed for the proposed west sideline tower

structure. The existing maintenance building would be demolished and replaced with a TV truck compound and utility yard, which would include a new central plant. Each of these activities would include ground disturbance, which would potentially result in short-term soil erosion.

However, because the Project is greater than one acre, it would be subject to the National Pollutant Discharge Elimination System (NPDES) permit requirements for construction site stormwater discharges, and would comply with those requirements. A Storm Water Pollution Prevention Plan (SWPPP) is required to be prepared and implemented under these requirements, which includes appropriate erosion-control and water-quality-control measures during site preparation, grading, construction, and post-construction. Implementation of the SWPPP for the Project would minimize short-term erosion impacts. Long-term impacts of the Project would not result in substantial erosion, as the soils would be covered by buildings, pavement, vegetation, and landscaping. Therefore, Project impacts related to erosion would be less than significant.

d) **No impact.** Expansive soils are those that possess "shrink/swell" characteristics, and are usually fine-grained clay sediments that expand and contract due to moisture and desiccation. Based on a preliminary geotechnical report completed for the project (RMA GeoScience 2017), soils at the site have a very low expansion potential for design purposes. Therefore, no impacts related to expansive soils would result with construction and operation of the Project.

e) **No impact.** The Project would not include installation of septic tanks, as the proposed Project facilities would connect to sewer services. Therefore, the capability of the soils to support the operation of such tanks does not need to be evaluated. No impact would occur in association with construction and operation of the Project.

3.7 Greenhouse Gas Emissions

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS – Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

DISCUSSION

a) Less-than-significant impact. The SJVAPCD has adopted the Climate Change Action Plan (CCAP), which directed the Air Pollution Control Officer to develop guidance documents to assist land use and other permitting agencies in addressing greenhouse gas (GHG) emissions as part of the CEQA process. The SJVAPCD has adopted the Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA and the policy Addressing GHG Emission Impacts for Stationary Source Projects under CEQA When Serving as the Lead Agency (SJVAPCD 2009a, SJVAPCD 2009b). The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards (BPS) to assess significance of project-specific GHG emissions on global climate change during the environmental review process. SJVAPCD's adopted BPS are specifically directed at reducing GHG emissions from stationary sources; therefore, because the Project includes development of a new central plant including the operation of two condensing boilers and an emergency generator, the adopted BPS would be applicable to the Project. Any project that implements BPS would be determined to have a less than cumulatively significant impact. The SJVAPCD guidance does not limit a lead agency's authority in establishing its own process and guidance for determining significance of project-related impacts on global climate change. SJVAPCD supports the use of the interim thresholds as established by the California Air Pollution Control Officers Association (CAPCOA) when adopted thresholds are not applicable (SJVAPCD 2009c). As such, for the purposes of establishing a quantitative threshold for GHG emissions, the interim threshold established by CAPCOA is used herein (900 metric tons of carbon dioxide equivalent per year). This threshold is consistent with California's climate-stabilization target (identified in Assembly Bill 32).

Construction of the Project would result in GHG emissions, which are primarily associated with use of off-road construction equipment, on-road vendor trucks, and worker vehicles. The SJVAPCD recommends that construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures would address construction GHG emissions as part of operational GHG reduction strategies. Thus, the

total construction GHG emissions were calculated, amortized over 30 years, and compared with the CAPCOA GHG significance threshold of 900 metric tons (MT) of carbon dioxide equivalent (CO_2E) per year.

The Project's GHG emissions were estimated using CalEEMod and is based on the same construction scenario used for the air quality analysis. Table 4 presents total construction-related GHG emissions over the anticipated 18 to 24 month period during which construction activities would occur. Details of the emission calculations are provided in Appendix B.

TABLE 4
ESTIMATED ANNUAL CONSTRUCTION GREENHOUSE GAS EMISSIONS

Year	CO_2	CH_4	N_2O	CO_2E
	Metric tons per year			
2019	293.32	0.07	0.00	295.03
2020	539.00	0.09	0.00	541.34
2021	200.42	0.04	0.00	201.34
Total	**1,032.74**	**0.02**	**0.00**	**1,037.71**

Notes: CH_4 = methane; CO_2 = carbon dioxide; CO_2E = carbon dioxide equivalent; N_2O = nitrous oxide
See Appendix B for complete results.

As shown in Table 4, the Project would result in approximately 295 MT CO_2E in 2019, 541 MT CO_2E in 2020, and 201 MT CO_2E in 2021, for a total of 1,038 MT CO_2E over the construction period. Estimated Project-generated construction emissions amortized over 30 years would be approximately 35 MT CO_2E per year, which does not exceed the significance threshold of 900 MT CO_2E per year. GHG emissions generated during construction of the Project would be short-term in nature, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions.

Operation of the Project would continue to generate GHG emissions through motor vehicle trips to and from the Project site, energy use (natural gas combustion and generation of electricity consumed by the Project), solid waste disposal, and generation of electricity associated with water supply and wastewater treatment. Currently, Bulldog Stadium average attendance over the last 5-year period is 22,233. Although the Project would decrease the existing seating capacity by 3,038 seats, it is expected that attendance resulting from the Project would be similar to the 5-year average attendance and would continue to fluctuate year-to-year based on team performance. The stadium would continue to be used for other campus sports events and the Project would not change the frequency or size of these sports events. While the Project could result in an

increase in the frequency and size of private events, these events would still occur occasionally (approximately once a month). Approximately, four of these monthly events could be larger private events drawing approximately 2,000 people. Overall, the Project would not substantially increase the amount of vehicle trips to the Project site. Therefore, it is reasonable to assume that the Project would result in a minimal change in the stadium's existing operational GHG emissions from mobile sources, which are typically the primary source of GHG emissions for land use development projects.

In regards to non-mobile GHG emissions, the new west sideline tower building may result in less GHG emissions per square foot compared to the existing buildings on the east sideline, as the new tower building would be constructed in accordance with, at minimum, the most recent adopted California Energy Code (Part 6, Title 24, California Code of Regulations) in addition to LEED Silver. Furthermore, indoor and outdoor water consumption and wastewater generation is anticipated to be similar to existing conditions and would not substantially increase the campus's demand for water and generation of wastewater. Accordingly, electricity consumption associated with water supply, treatment, and distribution and wastewater treatment would be similar to the existing electricity required to provide such water and wastewater services. GHG emissions associated with solid waste generation would also be similar to existing solid waste generation.

As discussed previously, amortized construction GHG emissions resulting from construction activities is anticipated to be approximately 35 MT CO_2E per year, which does not exceed the significance threshold of 900 MT CO_2E per year. As such, the Project would not result in a substantial increase in long-term GHG emissions and therefore GHG impacts would be less than significant.

b) **Less-than-significant impact.** Under the SJVAPCD's CEQA thresholds for GHGs, a project would not have a significant GHG impact if it is consistent with an applicable plan to reduce GHG emissions, and a CEQA-compliant analysis was completed for the GHG reduction plan. At this time, Fresno State has not adopted a Climate Action Plan or similar GHG reduction strategy that would be applicable to the Project. Fresno State is however committed to taking the necessary steps in reducing GHG emissions through implementation of a variety of sustainable practices. Initiatives that would help CSU Fresno reduce its GHG emissions include: energy efficiency and renewable energy projects, energy saving programs, integrating design construction practices, 'greening' interiors development, working towards a waste diversion goal of 100 percent, integrating low water vegetation in outdoor spaces, and retooling campus' water infrastructure to increase water efficiency.

While not directly applicable to the Project because it does not account for Fresno State's future growth projections, the Fresno Council of Governments (FCOG's) Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) was adopted for the purpose of reducing GHGs from the land use and transportation sectors and was adopted after completion of a Program EIR. CARB approved the RTP/SCS in 2015.

SB 375 requires FCOG to demonstrate in its SCS that it will reduce car and light truck GHG emissions 5% per capita by 2020, and 10% by 2035. The FCOG SCS has projected to exceed the goal by committing to a 9% reduction by 2020 and 11% reduction by 2035. The GHG emission goals in the FCOG RTP/SCS are based on demographic data trends and projections that include household, employment, and total population statistics. The Project would not result in population growth, but could result in the hiring of two new full-time staff and up to 25 new part-time employees/vendor staff, which would not substantially increase traffic to the Project area. Therefore, the Project would not conflict the FCOG 2014 RTP/SCS.

The Scoping Plan, approved by CARB in 2008 and updated in 2014 and 2017, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. The Scoping Plan is not directly applicable to specific projects, nor is it intended to be used for project-level evaluations. Relatedly, in the Final Statement of Reasons for the Amendments to the CEQA Guidelines, the California Natural Resources Agency (CNRA) observed that "[t]he [Scoping Plan] may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan." Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high Global Warming Potential GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., low-carbon fuel standard), among others. The Project would comply with all applicable regulations adopted in furtherance of the Scoping Plan to the extent required by law.

Regarding consistency with post-2020 statewide targets, specifically Senate Bill 32 (goal of reducing GHG emissions to 40% below 1990 levels by 2030) and Executive Order S-3-05 (goal of reducing GHG emissions to 80% below 1990 levels by 2050), there are no established protocols or thresholds of significance for that future-year analysis. However,

CARB forecasts that compliance with the current Scoping Plan puts the state on a trajectory of meeting these long-term GHG goals, although the specific path to compliance is unknown. The Scoping Plan Second Update reaffirms that the state is on the path toward achieving the 2050 objective of reducing GHG emissions to 80 percent below 1990 after the adoption of Senate Bill 32 and Assembly Bill 197 in 2016. As discussed previously, the Project would generate minimal short-term GHG emissions in addition to producing similar operational GHG emissions compared with existing conditions. As such, the Project would not conflict with the state's trajectory toward future GHG reductions. With respect to future GHG targets under Senate Bill 32 and Executive Order S-3-05, CARB has also made clear its legal interpretation that it has the requisite authority to adopt whatever regulations are necessary, beyond the Assembly Bill 32 horizon year of 2020, to meet the reduction targets in 2030 and in 2050. This legal interpretation by an expert agency provides evidence that future regulations will be adopted to continue the state on its trajectory toward meeting these future GHG targets.

Based on the preceding considerations, the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and impacts would be less than significant.

3.8 Hazards and Hazardous Materials

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS – Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site that 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?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

DISCUSSION

a) **Less-than-significant impact.** The Project would result in a slight increase in the routine use of hazardous materials. The Project would include use of heavy equipment for demolition, grading, excavations, and construction. Fueling and maintenance of such equipment could result in incidental spills of petroleum products and hazardous materials in the unpaved construction staging area, located immediately west of the stadium, on an existing playing field. Proposed use of the paved parking lot to south of the stadium as a staging area would eliminate incidental spills directly to on-site soils.

However, such incidental spills would likely be minor and would be minimized through implementation of standard best management practices (BMPs) included in a NPDES-mandated SWPPP during construction. Relevant BMPs would typically include creation of designated fueling and maintenance areas located not in proximity to drainages and equipped with temporary spill containment booms, absorbent pads, and petroleum waste disposal containers. Some hazardous materials use would continue to occur in association with Project operations, including natural gas for the emergency generator, fertilizers, cleaning supplies, etc. Use of hazardous materials are required to meet all applicable regulations related to the transport, use and storage of such materials. Therefore, Project impacts associated with routine transport, use, and disposal of hazardous materials would be less than significant.

b, c) **Less-than-significant impact.** The Project would include demolition activities on Fresno State campus grounds prior to new construction. The federal government banned consumer use of lead-based paint in 1978 and the stadium was constructed in 1980. Therefore, lead-based paint would not be encountered during demolition activities. Although many asbestos-containing materials (ACMs) were banned in construction products in 1989, many other ACM-containing building materials were not banned. As a result, ACMs may be encountered during demolition activities. In addition, other regulated materials such as fluorescent lights may be present.

The removal of ACMs would be subject to the Asbestos Program administered by the San Joaquin Valley Air Pollution Control District (SJVAPCD), which protects the public from uncontrolled emissions of asbestos through enforcement of the Federal Asbestos Standard. The Program includes survey and notification requirements prior to beginning a project, as well as work practice standards and disposal requirements (City of Fresno 2014, San Joaquin Valley APCD 2012).

Additionally, under California law, fluorescent lamps cannot be disposed as municipal waste. Fluorescent tubes and bulbs may be managed as universal wastes under Title 22, Chapter 23 of the California Code of Regulations and are typically recycled. With implementation of these regulations, Project impacts related to removal of ACMs and fluorescent lamps during demolition would be less than significant.

d) **Less-than-significant impact with mitigation.** The Project site is not included on a list of hazardous materials sites compiled pursuant to Government Code 65962.5 (Cortese List), which requires the California Environmental Protection Agency to develop at least annually an updated site list (DTSC 2017). However, it is possible that the Project site, or adjacent properties, may be listed on other environmental databases pertaining to prior releases of petroleum products and/or hazardous substances, or that existing unidentified contamination exists on the site. Although most of the proposed ground excavations would be completed into the existing large stadium berm, which consists of fill material, excavations into native soils would be completed locally. Prior to stadium construction, the Project area consisted primarily of agricultural land; therefore, the potential for encountering contaminated soil during Project excavations is low. However, in the event that soil contamination is encountered as a result of unknown prior Project site activities, potentially significant short-term human health and safety impacts to onsite workers could occur. Mitigation Measure HAZ-1 would be implemented in conjunction with the Project, which requires a soil contamination contingency plan to be in-place during demolition and construction activities.

Implementation of this mitigation measure would reduce this potentially significant impact related to construction activities to less than significant.

> **Mitigation Measure HAZ-1**: Fresno State shall require a soil contamination contingency plan be in-place prior to initiation of demolition, grading, excavations, and construction. A contractor trained in identifying contaminated soil shall observe all excavations into native and/or pre-stadium fill soils that are not part of the large stadium fill berm. In the event that contaminated soil is encountered, all on-site personnel handling or working in the vicinity of the contaminated material shall be trained in accordance with OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) guidelines. Unless otherwise authorized by the lead regulatory agency, which would depend on the type of contamination encountered (e.g., hazardous, nonhazardous/petroleum), areas of soil contamination shall be remediated prior to, or in conjunction with, Project demolition, grading, and construction. Fresno State shall include the above requirements in construction bid documents and construction contracts for the Project.

e, f) **No impact.** The closest public or private airport/airstrip to the Project site is the Fresno Yosemite International Airport, located approximately 2.3 miles to the southeast. The Project site is not located within any airport designated safety zone (City of Fresno 2014). Therefore, no aircraft-related safety impacts would occur in association with construction and operation of the Project.

g) **No impact.** The Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. The closest campus evacuation, on-campus assembly point is parking lot P26, located south of the Project site (Fresno State 2015). Access to this assembly area would not be impaired as a result of construction or operation of the Project. Therefore, no impacts would occur.

h) **No impact.** The Fresno State campus, including the Project site, is not on or adjacent to wildlands. Therefore, no impacts would result related to exposure to wildland fire hazards.

3.9 Hydrology and Water Quality

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

DISCUSSION

a, f) Less-than-significant impact. The Fresno Metropolitan Flood Control District (Flood Control District) is responsible for flood control and storm water planning and

management. As the owner and operator of the storm water drainage system, the District has primary responsibility for implementing the U.S. Clean Water Act requirements, through a NPDES discharge permit issued by the Central Valley RWQCB. This program is comprised of pollutant removal in the stormwater basins and education to avoid storm water pollution; BMPs for commercial, industrial, and new development storm water quality control; monitoring to asses storm water impacts upon the quality of receiving water; and the preparation of ordinances for adoption by local governments to enforce storm water quality measures. The Flood Control District's programs include water conservation efforts through its design and operation of storm water drainage facilities to detain and retain water from storm events, as well as receive dry season surface water supplies for groundwater recharge (City of Fresno 2014).

A Storm Water Quality Management Program (SWQMP) was developed pursuant to Order No. R5-2013-0080, as a five-year management strategy for controlling the discharge of pollutants in stormwater and urban runoff from the Fresno-Clovis metropolitan area. The municipal NPDES stormwater permit (MS4) was issued to the Flood Control District, the cities of Fresno and Clovis, the County of Fresno, and Fresno State, by the Central Valley RWQCB, on May 31, 2013. The SWQMP includes specific pollution prevention and control practices for Fresno-Clovis urban drainage system planning, design, construction, and maintenance. The Program also includes public education to prevent stormwater pollution; specifies construction, industrial/commercial, municipal, and new development control practices; procedures to prevent and respond to illicit discharges and connections; monitoring to assess stormwater impacts on receiving waters; and program effectiveness assessments, to evaluate the effectiveness of BMPs (Flood Control District, County of Fresno, City of Clovis, City of Fresno, and Fresno State 2013).

Implementation of the Project would not substantially alter the amount or type of pollutants in stormwater runoff. Stormwater runoff at the Project site occurs as sheet flow, which is transmitted into existing 12- to 18-inch storm drains. These storm drains feed into a Flood Control District surface water detention basin located immediately southwest of the Project site. Runoff associated with the Project would similarly be discharged to this basin. Most of the runoff would percolate into the sandy soils of the detention basin, thus minimizing potentially contaminated runoff from flowing downstream of the detention basin.

In addition, construction of the Project would result in short-term soil-disturbing activities that could lead to increased erosion and sedimentation. However, the Project

would comply with the NPDES requirements for construction site stormwater discharges because the Project site is greater than one acre. Therefore, a SWPPP is required to be prepared and implemented under these requirements, which includes appropriate erosion-control and water-quality-control measures during site preparation, grading, construction, and post-construction. Implementation of the SWPPP for the Project would minimize erosion and related impacts on water quality, such that construction-related impacts would be less than significant.

Therefore, with implementation of BMPs mandated by the municipal NPDES stormwater permit, SWQMP, and construction-related NPDES permit, in combination with capture and filtration of surface runoff by the offsite stormwater detention basin, water quality impacts associated with Project construction and operation would be less than significant.

b) **Less-than-significant impact.** Fresno State has its own water supply and distribution system. Fresno State presently, and historically, depends groundwater as the source of its domestic water supply. The campus groundwater system consists of six domestic groundwater wells located primarily along the west and north sides of the main academic core of the campus, one elevated storage tank and approximately seven miles of water mains that provide service throughout the campus, including the Project site. The total pumping capacity of the existing domestic water wells on campus is 2,782 gallons per minute, or 4 million gallons per day (mgd). The campus currently pumps a yearly average of approximately 0.8 mgd to meet the various water needs of the campus (Land Use Associates 2006). Total pumping capacity was increased in 2015 with an upgrade to Well #5 (Johnson, pers. comm. 2017). Therefore, excess pumping capacity exists in the Fresno State groundwater system.

The campus groundwater system, as well as other local agencies and districts, extract groundwater from the Kings Subbasin. The City of Fresno's 2015 Urban Water Management Plan (UWMP)[4] was reviewed and used herein to provide a description of the existing conditions related to groundwater in the Kings Subbasin (Provost & Pritchard Consulting Group 2016). According to the City's UWMP, this 1,530-square mile subbasin is in the greater Tulare Lake hydrologic region and also within the larger

[4] The City's UWMP presents the best available information pending the implementation of the Sustainable Groundwater Management Act (SGMA) requirements. As required by SGMA, each groundwater basin is to develop a Groundwater Sustainability Agency or Agencies, and a Groundwater Sustainability Plan, and attain sustainability within twenty years. New information forthcoming from this process may influence the values presented in the UWMP (Provost & Pritchard Consulting Group 2016).

San Joaquin Valley Groundwater Basin. The subbasin is generally bounded: on the north by the San Joaquin River; on the west by the Fresno Slough; on the south by the Kings River and Cottonwood Creek; and on the east by the Sierra foothills same groundwater basin.

California Department of Water Resources (DWR) classified the Kings Subbasin as being in a state of critical overdraft in the DWR 118-80 Bulletin. However, according to the City's UWMP the rate of groundwater decline has slowed since 2004 when the City's first surface water treatment facility came on line in northeast Fresno (NESWTF) and when renewed focus on intentional groundwater recharge operations regained momentum. Since around 2004, groundwater levels stabilized and since then have generally held level over the last ten years (Provost & Pritchard Consulting Group 2016). To facilitate the further reduction of its reliance on groundwater the City has started construction on a new 80 mgd surface water treatment facility in southeast Fresno (SESWTF). The combination the NESWTF and SESWTF will maximize the use of available surface water and afford the City with greater water supply reliability, increase operational flexibility, and decrease the City's dependency on groundwater supplies (Provost & Pritchard Consulting Group 2016).

The modernized stadium would continue to be served by the existing potable water infrastructure on the Project site and by Fresno State's groundwater well system. The Project would result in a minor increase in the amount of potable water used annually as compared to existing conditions, given that attendance is not expected to substantially increase with the Project. According to information provided by AECOM, the Project designer, the existing stadium uses approximately 333,000 gallons per year of potable water, based on the average game day attendance (22,233, as provided in Section 2.3). With the implementation of the Project, potable water use is expected to increase to 348,000 gallons per year, based on the addition of kitchen and water using devices in the new tower building (Mueller pers. comm. 2017).

Given that Project water demand would not substantially increase, the Project would not contribute to groundwater overdraft in the Kings Subbasin and the impact would be less than significant.

c, d, e) **Less-than-significant impact.** Stormwater runoff at the Project site occurs as sheet flow, which is transmitted into existing 12- to 18-inch storm drains. These storm drains feed into a surface water detention basin located immediately southwest of the stadium. This basin would not be directly modified by construction or operation of the Project. Stormwater from the Project site would continue to be directed to this basin. Therefore, indirect impacts to this basin are not expected.

As the existing impermeable area of approximately 509,000 square feet would increase approximately 5,000 to 10,000 square feet, or 1% to 2%, the Project would not require an increase in the capacity of the downstream storm drain system, including the stormwater detention basin located immediately southwest of the stadium. The Project would not exceed the capacity of existing or planned stormwater drainage systems and would not cause on- or off-site flooding. Therefore, Project drainage impacts would be less than significant.

As previously discussed, construction of the Project would result in short-term soil-disturbing activities that could lead to increased erosion and sedimentation. However, the Project would comply with the NPDES requirements for construction site stormwater discharges, including appropriate erosion-control and water-quality-control measures during site preparation, grading, construction, and post-construction. Implementation of the SWPPP for the Project would minimize erosion and related impacts on water quality, such that construction-related impacts would be less than significant.

g–j) **No impact.** The Project site is located in an area that is not within a 100-year flood zone or in an area that would be inundated in the event of a dam failure. Based on Flood Insurance Rate Map (FIRM) 06019C156OH, effective February 18, 2009, and the Fresno General Plan (City of Fresno 2014), the Project site is located with flood Zone X, which designates base floodplains of little hazard, such as those with average depths of less than one foot (FEMA 2017). In addition, the Project would not be subject to inundation as a result of seiche, tsunami, or mudflow. Therefore, no flood-related impacts would occur in association with construction and operation of the Project.

3.10 Land Use and Planning

		Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
X.	**LAND USE AND PLANNING** – Would the project:				
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

DISCUSSION

a) **No impact.** The Project site is located on the site of the existing Bulldogs Stadium on the Fresno State campus. The Project site is currently developed with the Fresno State Bulldogs football stadium, and changes resulting from the Project would only occur to the existing football stadium and areas immediately surrounding the stadium. No barriers, roadways, or other dividing features that would physically divide an established community would be constructed as part of the Project. Therefore, no impacts related to division of an established community would result with implementation of the Project.

b–c) **No impact.** The Project would be constructed entirely on Fresno State property and therefore would be under the land use jurisdiction of the CSU Board of Trustees. There are no local ordinances or policies of the City of Fresno that would apply to projects on the Fresno State campus, as the City does not have jurisdiction over campus lands. As the Project would result in the continued use of the site for a stadium, the Project is consistent with the existing master plan map for the campus. No habitat conservation plans apply to the campus or the Project site. Therefore, no impacts related to conflicts with adopted plans or policies would result with construction and operation of the Project.

3.11 Mineral Resources

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

DISCUSSION

a–b) No impact. The Project site is located on the site of the existing Bulldogs Stadium on the Fresno State campus. The Project site is currently developed with the existing stadium and is surrounded by developed, urban uses. The Project would not result in the loss of availability of mineral resources, because the Project would occur within a developed urban area with no available mineral resources. Therefore, no impacts to known mineral resources or locally-important mineral resource recovery sites would result with construction and operation of the Project.

3.12 Noise

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. NOISE – Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

DISCUSSION

A Noise Analysis was prepared for the Project by Dudek in October of 2017 (see Appendix C). The report includes the results of ambient noise measurements in the Project area, an assessment about whether noise would increase during construction and operation of the Project, and a determination about whether any changes in temporary and permanent noise would result in a significant impact. Appendix C also provides definition of terms and analysis methodology. The analysis in this section is based on the findings and results of the Noise Analysis presented in Appendix C.

a) **No impact**. As the Project site is located on Fresno State property, the City of Fresno does not have jurisdictional or approval authority over the Project. Therefore, the City's General Plan and Noise Ordinance and associated standards do not apply to the Project. Additionally, Fresno State and the CSU System do not have applicable standards to use in the evaluation of any Project noise level increases. Therefore, no impacts related to exceedance of such standards would result.

c) **Less-than-significant impact**. Long-term and short-term noise measurements were taken near the Project site in May 2017 to document existing sound levels. Figure 13 shows the noise measurements locations. The calculated Community Noise Equivalent Levels (CNELs) based on the 2017 long-term measurements are shown in Table 5.

TABLE 5
LONG-TERM NOISE MEASUREMENT RESULTS

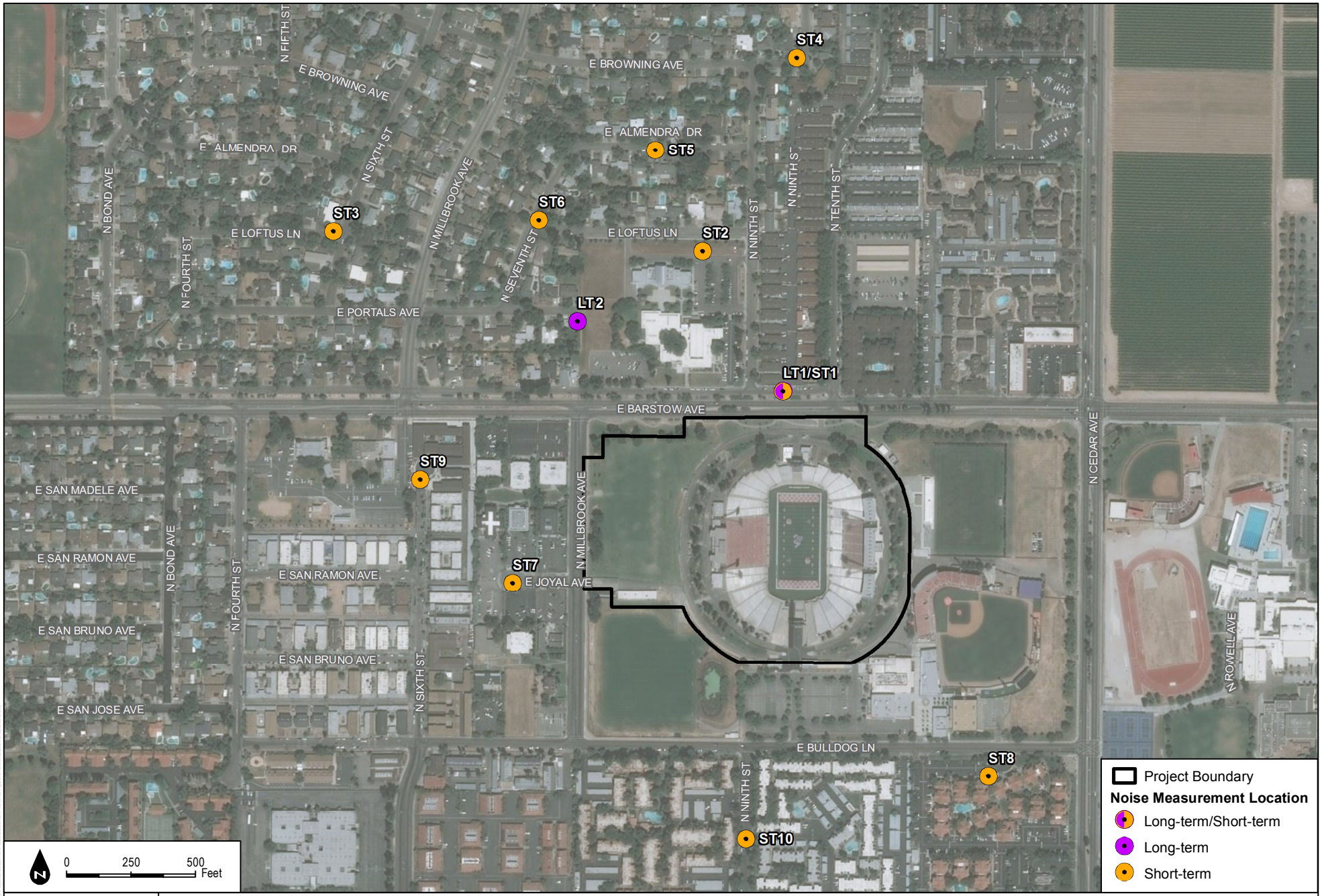
Location	CNEL (dBA)	L_{dn} (dBA)
LT1	66	65
LT2	60	58

Notes: CNEL = Community Noise Equivalent Level; dBA = A-weighted decibel (adjusted for human frequencies); L_{dn} = day-night average sound level.

Table 6 presents the results of the short-term noise measurements. L_{eq} results range from 49 to 71 dBA. At most of the locations, the dominate noise source was traffic on nearby roads. Other common noise sources for urban areas were observed. Those sources include: aircraft; birds; people talking; heating, ventilation, and air conditioning equipment; leaves rustling in the wind; dogs barking; and lawn work. The highest noise levels were measured near the busiest road in the Project vicinity, East Barstow Avenue. Other measurements were located in residential areas farther away from this road. These measurements show L_{eq} that range from the high 40s to the low 60s dBA. Traffic and residential sources were the common sources of the measured levels.

The Noise Report for the *Master Plan Revision and Football Stadium Expansion Environmental Impact Report* (Fresno State 1989) analyzed the previous stadium expansion project. Continuous measurements were taken at a location at the end of East Portals Avenue between 5:40 p.m. and 9:00 a.m. in September 1988. During the measurements, there was a football game that started at 7:00 p.m. and ended at approximately 10:30 p.m.

The hourly comparisons between LT2 and the 1988 measurements show that a game night has higher levels from the afternoon to approximately 1:00 a.m. Between 5:40 p.m. and midnight, the 1988 measurements were consistently 5 to 10 dB greater than the 2017 measurements at the same location (LT2). LT1 has consistently higher levels than LT2 due to the close proximity to East Barstow Avenue. See Figure 14 for comparisons of the 1988 and 2017 long-term noise measurements.



SOURCE: Fresno County GIS, 2017; Bing Maps 2017

FIGURE 13

Noise Measurement Locations

DUDEK

Fresno State Bulldog Stadium Modernization Project IS/MND

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Mechanical Noise

As described in Section 2, mechanical noise sources for the Project include water pumps, boilers, air-handling units, and an emergency generator (collectively described as "mechanical equipment"). The noise levels (L_{eq}) from the equipment and the combined noise levels of all of the equipment are provided in Table 7. Since the generator is not expected to run during typical operations, it is not included in the total noise level calculated from all mechanical equipment.

TABLE 6
MEASURED AMBIENT NOISE LEVELS (DBA)

Measure Number	Location Description	Time hh:mm	L_{eq}	L_{eq}					Noise Sources
				L_{max}	L_{min}	L_{10}	L_{50}	L_{90}	
1	East Barstow Avenue, 7 feet from the edge of the pavement	3:59 p.m.	71	81	47	75	67	56	Traffic, birds, distant traffic
2	North 9th Street, 8 feet from the edge of pavement	4:31 p.m.	50	66	41	52	45	43	Birds, aircraft, distant conversation, distant traffic
3	East Loftus and North 6th Street, 3 feet from the edge of pavement	4:53 p.m.	47	63	40	48	43	42	Birds, aircraft, distant conversation, distant kids playing, rustling leaves
4	West Browning, 2 feet from the edge of pavement	5:22 p.m.	57	80	44	57	48	46	Residences in yard, dogs barking, birds, aircraft, distant conversation, distant kids playing, rustling leaves
5	East Almedra Drive	5:39 p.m.	49	57	44	52	48	45	Residences, birds, distant aircraft, distant conversation, distant kids playing, distant traffic, rustling leaves
6	Loftus Lane and 7th Street, 1.5 feet from the edge of pavement	5:52 p.m.	61	85	40	51	43	41	Birds, distant aircraft, distant conversation, dog barking, distant landscaping, distant kids playing, distant traffic, rustling leaves
7	East Joyal Court	6:09 p.m.	55	72	45	58	50	47	Birds, distant aircraft, distant conversation, distant kids playing, distant traffic, rustling leaves
8	Bulldog Village	6:27 p.m.	61	74	45	65	53	48	Birds, distant traffic, distant landscaping, distant kids playing, distant traffic, rustling leaves

TABLE 6
MEASURED AMBIENT NOISE LEVELS (DBA)

Measure Number	Location Description	Time hh:mm	L_{eq}	L_{eq}					Noise Sources
				L_{max}	L_{min}	L_{10}	L_{50}	L_{90}	
9	North 6th Street	6:47 p.m.	53	64	48	56	51	49	Birds, distant aircraft, distant conversation, distant kids playing, distant traffic, rustling leaves
10	North 9th Street	7:04 p.m.	56	70	46	58	50	48	Birds, distant aircraft, distant conversation, distant kids playing, rustling leaves

Figure 14. Comparison of Long-Term Noise Measurements

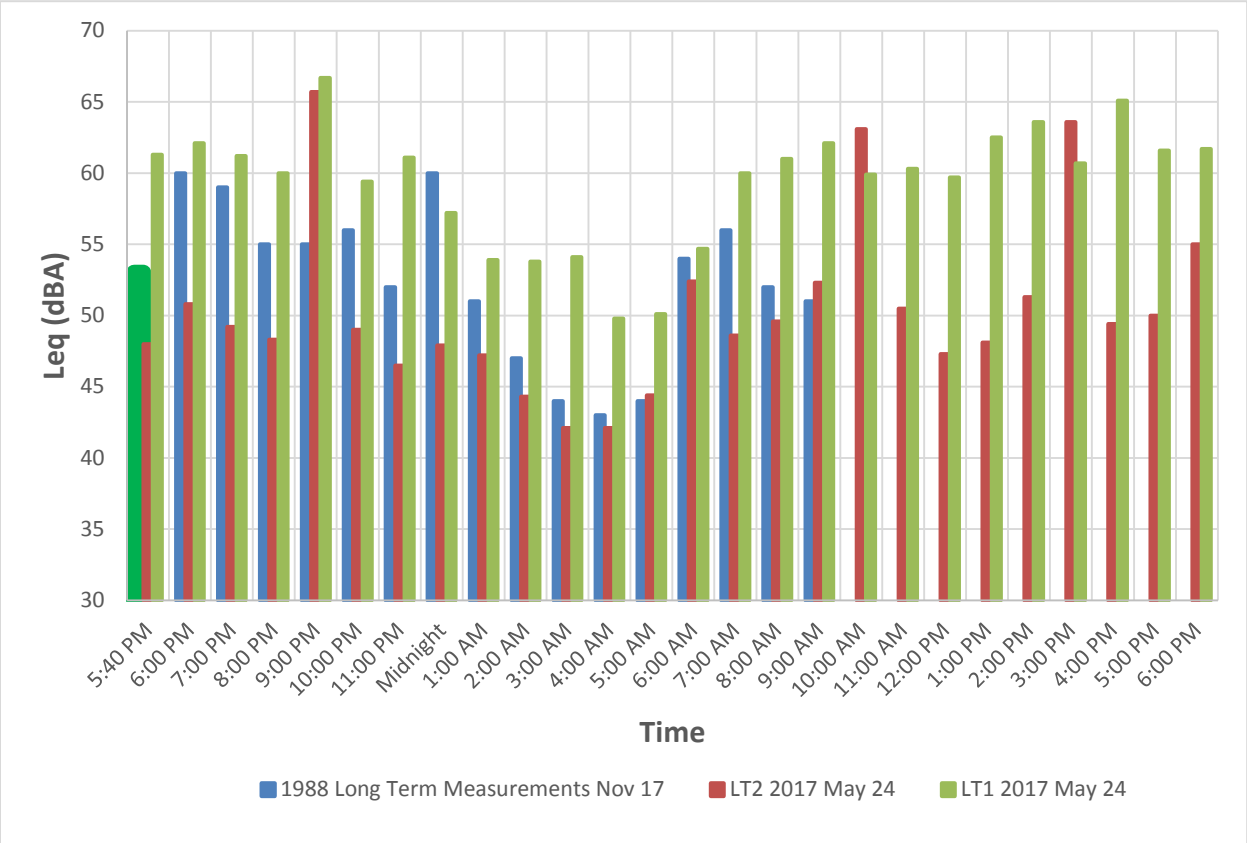

TABLE 7
MECHANICAL EQUIPMENT NOISE AT NEAREST RESIDENCE

Mechanical Noise Source	Noise Level At Nearest Student Residences (dBA)	Noise Level At Nearest Single-Family Home Residences (dBA)
Chillers	56	49
Generator	57	48
Well pumps	51	48
Well air handling units	45	42
Total	**60**	**53**

Notes: dBA = A-weighted decibel (adjusted for human frequencies)

Daytime measured sound levels near the closest residential receptor are approximately 60 dBA, with nighttime levels around 54 dBA during the nighttime (midnight to approximately 3:00 a.m.) and 50 dBA during the late night (3:00–4:00 a.m.) hours. Based

on the recent measurements in the site vicinity, the mechanical equipment is not likely to increase the ambient noise levels at the single-family homes northwest of the stadium. Existing measured CNEL in the single family homes north of the stadium are 60 dBA (see Table 5). Assuming the mechanical equipment continuously operated from about 8:00 a.m. to 10:00 p.m., the resulting expected increase in the CNEL would be less than 1 dBA. Changes in a community noise level of less than 3 dBA are not typically noticed by the human ear. Therefore, Project mechanical noise would not result in a substantial permanent increase in ambient noise levels in the Project vicinity.

While mitigation measures are not required to reduce a significant impact, design BMP NOI-1 will reduce noise from Project mechanical equipment.

> **BMP NOI-1:** Mechanical Equipment: Screw or scroll chillers should be avoided or treated with proper noise mitigation treatments due to the tonal nature of the noise they produce.

Stadium Sound System Noise

The Bulldog Stadium is currently equipped with a public address sound system (PA system). Installation of an updated sound system is part of the Project. General assumptions were used to analyze the PA system sound levels outside of the stadium.

The proposed PA system is designed to provide approximately 90 dBA of signal to the majority of the stadium. Some seats at the perimeter of the stadium have levels that drop to 85 dBA. Dudek estimates that the distance from the nearest PA speaker to those seats is approximately 185 feet. The distance from that speaker location to the nearest student residences across East Barstow Avenue is approximately 482 feet. Based on the added distance from the source, the PA system level could be approximately 77 dBA at the closest residences. This estimate is based the sound system noise level details (see Appendix C), which focus on sounds from the PA system only when it is operating. This sound level is not comparable to existing sound levels presented in Figure 14, as this information was based on hourly measurements, which include long periods of silence between PA announcements.

This updated sound system is expected to improve the quality of the announcements with speaker directivity focused on the stadium seats. As such, it is expected that the sound system would produce noise levels that are approximately the same or less than the existing PA system at noise sensitive locations outside of the stadium. It is expected that announcements during games would continue to be occasionally audible in the single-family residences to the northwest, as under existing conditions. Therefore, noise

associated with the new PA system would not result in a substantial permanent increase in ambient noise levels in the Project vicinity.

While mitigation measures are not required to reduce a significant impact, design BMP NOI-2 will reduce noise from the Project PA system.

> **BMP NOI-2:** Sound System: To the extent feasible, the sound system designer should use state-of-the-art design techniques to reduce noise levels outside the stadium.

Other Game-Related Noise

As indicated in Section 2, the Project would reduce the overall capacity of the stadium from 41,193 to 38,155, a reduction of 3,038 seats. This reduction in capacity with the Project is not expected to reduce game-day attendance given that the 5-year game average attendance is only 22,233, or about half of the existing capacity. Attendance at games varies substantially depending on how well the Bulldogs are performing in a given season, what team they are playing, and other factors such as the weather. While the Project would improve fan amenities and access, it is still expected that the factors stated above about team performance would continue to drive attendance to football games. The Project would also not change the frequency or size of the soccer events at the stadium.

Given that no significant change in football or soccer game operations has been proposed as part of the Project, game-day noise is expected to continue to be part of the ambient noise levels in the area during events without a significant increase in noise level due to attendance level. As the Project would not change the frequency or substantially change the size of games and would not result in increases or modifications to the existing parking or access routes into and out of the stadium, vehicle trips are not expected to substantially increase with the Project. Therefore, vehicle-related noise along area roadways would not be expected to increase on game days and the impact would be less than significant.

b) **Less-than-significant impact.** As the Project would involve typical construction activities using conventional construction techniques and equipment, it would not generate excessive ground vibration or groundborne noise. Pile driving, blasting, and other special construction techniques, which typically cause ground vibration and groundborne noise, would not be used for demolition or construction of Project facilities. Impacts related to ground vibration and groundborne noise during construction would be less than significant.

d) **Less-than-significant impact.** Construction noise levels would vary on a day-to-day basis during each phase of construction, depending on the specific task being completed. Each construction phase would require a different combination of construction equipment necessary to complete the task and differing usage factors for such equipment. Construction noise would primarily result from demolition, operation of heavy construction equipment, and the arrival and departure of heavy-duty trucks. Construction equipment with substantially high noise generation characteristics (such as pile drivers, rock drills, and blasting equipment) would not be necessary for development of the Project. The noise analysis in Appendix C summarizes noise levels for typical construction equipment that might be used for this Project (see Appendix C, Table 5).

Noise levels generated by construction equipment (or by any point source outdoors) decrease at a rate of approximately 6 dBA per doubling of distance from the source. Therefore, if a particular construction activity generated average noise levels of 88 dBA at 50 feet, the L_{eq} would be 82 dBA at 100 feet, 76 dBA at 200 feet, 70 dBA at 400 feet, and so on. Intervening structures that block the line of sight, such as buildings, would further decrease the resultant noise level by a minimum of 5 dBA.

The distance to sensitive receptors used in the analysis of construction noise levels is 200 feet for the student residences. This is a worst-case separation distance between construction activities and the nearest residential receptor. This is the distance from the outer edge of the stadium to the residence located north across East Barstow Avenue. The nearest single-family home is approximately 700 feet from the stadium. The single-family homes are considered more noise sensitive than the student residences.

A noise analysis was performed using a model developed under the Federal Highway Administration (FHWA) called the Roadway Construction Noise Model (RCNM; FHWA 2008). This construction noise model includes representative sound levels for the most common types of construction equipment and the approximate usage factors of such equipment that were developed based on an extensive database of information. The usage factors represent the percentage of time that the equipment would be operating at full power. Table 8 presents the summary results of the construction noise analysis. See Appendix C for detailed information.

TABLE 8
DAYTIME CONSTRUCTION NOISE AT RECEIVERS

Construction Phase	Calculated Noise Level L_{eq} (dBA) at 200 Feet	Calculated Noise Level L_{eq} at Single-Family Home (700 feet)
Demolition	74	64
Site preparation	74	63
Grading	75	64
Building construction	70	59
Paving	74	63
Architectural coatings	62	51

Notes: dBA = A-weighted decibel (adjusted for human frequencies); L_{eq} = equivalent sound level over a given period.

Temporary noise from construction may be clearly audible at the nearby sensitive receptors and at times could represent a temporary increase. The construction noise levels would not be anticipated to be greater than 75 dBA $L_{eq(8hr)}$ during the daytime and evening for the closest residences, which are student housing. For the single-family homes, the highest construction L_{eq} is 64 dBA during the demolition and grading phases.

Maximum noise levels for construction activities along the site boundaries near the noise sensitive receivers were also assessed. Based on these calculations, construction noise levels may intermittently reach levels as high as 78 dBA at the closest noise sensitive receivers. For the single-family homes, L_{max} is expected to be approximately 67 dBA during demolition.

As Project construction noise would be temporary over the 18 to 24 month construction schedule, would be intermittent depending on construction activities and would avoid nighttime construction activities, as described in Section 2.4, the Project would not result a substantial temporary or periodic increase in ambient noise levels in the project vicinity. The construction noise impact would be less than significant.

While mitigation measures are not required to reduce a significant impact, construction BMP NOI-3 through BMP NOI-8 will reduce noise from the Project construction.

> **BMP NOI-3:** Construction hours, allowable workdays, and the phone number of the job superintendent should be clearly posted at all construction entrances to allow surrounding property owners/users to contact the job superintendent if necessary. In the event the City receives a complaint, appropriate corrective actions should be implemented and a report of the action provided to the reporting party.

BMP NOI-4: The project contractor should, to the extent feasible, schedule construction activities to avoid the simultaneous operation of construction equipment so as to minimize noise levels resulting from operating several pieces of high noise level emitting equipment.

BMP NOI-5: All construction equipment, fixed or mobile, should be equipped with properly operating and maintained mufflers.

BMP NOI-6: Construction noise reduction methods such as shutting off idling equipment, maximizing the distance between construction equipment staging areas and residences. Use of electric air compressors and similar power tools, rather than diesel equipment, should be used where feasible.

BMP NOI-7: During construction, stationary construction equipment should be placed such that emitted noise is directed away from or shielded from sensitive receptors, including student residences.

BMP NOI-8: During construction, stockpiling and vehicle staging areas should be located as far as practical from noise sensitive receptors, including student residences.

e–f) **No impact.** The Project site is not located within an airport land use plan or within 2 miles of a public airport or private airstrip. The Fresno Yosemite International Airport (FYI) is located approximately 2.3 miles southeast of Fresno State. No impacts related to airport noise would occur.

3.13 Population and Housing

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

DISCUSSION

a) **Less-than-significant impact.** The Project would not directly or indirectly induce substantial population growth. The Project involves improvements to the existing Bulldog Stadium which would include new amenity concourses located in each of the four corners of the stadium and a new plaza at the north entrance, modifications to the stadium seating bowl to provide a cross-aisle, and creation of a new multi-level tower structure on the west sideline. The Project would not extend roads or infrastructure that would induce development, as the Project site is located in an urban area and is surrounded by existing development.

The stadium would continue to be used for football practices, games, and other sports activities, as well as for private events. Attendance at games is dependent upon how well the Bulldogs are performing in a given season, what team they are playing, and other factors such as the weather. The most recent 5-year game average attendance during the regular season was 22,233, which is about 54% of existing stadium capacity of 41,193. The Project would reduce the overall capacity of the stadium from 41,193 to 38,155, a reduction of 3,038 seats. This reduction in capacity with the Project is not expected to reduce game-day attendance, as it is still expected that the factors stated above about team performance would continue to drive attendance to football games. As the modernized stadium would not be open to the public on an on-going basis, and would continue to support existing uses, it would not induce population growth within the area or on the campus.

The Project could result in the need for up to two new full-time staff to manage private events and up to 25 new part-time employees/vendor staff would be required to serve new vendor locations in the tower building and new concourses. These jobs are expected to be filled by the local population. Therefore, the Project would not result in substantial population growth in the area and the impact is less than significant.

b–c) No impact. The Project site is located on the site of the existing Bulldogs Stadium on the Fresno State campus. No housing is located on the Project site and no housing or people would be displaced as a result of the Project. Therefore, no impacts related to displacement of housing or people would result with construction and operation of the Project.

3.14 Public Services

	Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. 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:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

DISCUSSION

a) No impact. The Fresno State campus is served by the Fresno State Police Department (FSPD) for its law enforcement needs. FSPD operates all year, 24 hours a day, and includes 21 sworn officers, 21 traffic operations officers, 7 dispatchers, and 5 administrative support staff members within two operational areas, Patrol Operations and Traffic Operations. The department serves the Fresno State property and one mile beyond the campus property (Fresno State 2017). The Fresno Fire Department (FFD) provides fire protection services to the campus. The FFD has 24 fire stations and responds to fire, EMS, urban search and rescue, and hazardous materials incidents within the City of Fresno and on the campus. The department has 89 firefighters on duty everyday throughout its response area (City of Fresno 2017). The FSPD and FFD currently support the Project site and would continue to provide police and fire

protection services to the Project site. As the Project would not result in substantial population growth within the area (see Section 3.13-a), it would not result in increased demand for police or fire protection services on the Project site. Furthermore, the Project would not result in substantial school, park, or other public services impacts, as the Project site would continue to support the same uses and would not support significantly more people. As the demand for services would not substantially increase, the Project would not result in the need for new or physically altered governmental facilities. Therefore, no impacts related to the provision of public services would result with construction and operation of the Project.

3.15 Recreation

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

DISCUSSION

a–b) No impact. The Project would be constructed entirely on Fresno State property and would not include recreational facilities. Given adequate existing and planned recreational facilities on campus, the Project would not require the construction or expansion of recreational facilities. As the Project would only involve improvements to the existing Bulldog Stadium, which is used for football practice, football games, and other sports activities, it would not create increased demand for recreational facilities. Therefore, implementation of the Project would not result in significant use of off-campus parks or recreational facilities, or generate the need for new or expanded recreational facilities. No impacts to parks and recreational facilities would result with construction and operation of the Project.

3.16 Transportation and Traffic

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

DISCUSSION

a-b) Less-than-significant impact. The modernization of Bulldog Stadium with the Project would not cause degradation of level of service (LOS) on area roadways. A detailed transportation impact assessment is not warranted for the Project, as the Project would not result in the addition of more than 100 peak-hour trips to the roadway network, per the City of Fresno Traffic Impact Study Report Guidelines (City of Fresno Department of Public Works 2006). The peak hours are defined as 7:00am to 9:00am and 4:00pm to 6:00pm in both the City of Fresno guidelines and in the CSU Transportation Impact Study Manual (Fehr & Peers 2012).

As described in Section 2, the Project would not change the operations of the stadium for football games or other sports, such as soccer. The frequency, scheduling and approximate size/attendance of such events would not change as a direct result of the Project. The stadium is currently used for football practice, starting in summer and through the football season, and for football games during the pre-season, regular season, and playoffs, which run from September through November. The regular season consists of approximately six to eight games. The majority of games are held on Saturdays, depending on television contracts scheduling requirements. The Project would not change the use of the stadium for football practice and games, or the scheduling of games.

Attendance at games varies substantially depending on how well the Bulldogs are performing in a given season, what team they are playing, and other factors such as the weather. The 5-year game average attendance (2012 to 2016) during the regular season was 22,233, which is about 54% of existing stadium capacity of 41,193 (Fresno State 2017). The range in per-game attendance over the 5-year period varied from a low of about 7,000 in 2016 (17% capacity) to a high of approximately 37,000 in 2013 (90% capacity).

The Project would reduce the overall capacity of the stadium from 41,193 to 38,155, a reduction of 3,038 seats. This reduction in capacity with the Project is not expected to reduce game-day attendance given that the 5-year game average attendance is only 22,233, or about half of the existing capacity. While the Project would improve fan amenities and access it is expected that the factors stated above about team performance would continue to drive attendance to football games.

While the stadium is not open for public use, private events would continue to be held at the stadium once the Project is completed. While the Project could result in an increase in the frequency and size of private events, these events would still occur occasionally (approximately once a month) and of these events, the larger private events drawing approximately 2,000 people would occur approximately four times a year. As under existing conditions, these events occur occasionally, are small in comparison to game-day attendance, and are typically held during mid-day, evening, or weekend periods at off-peak travel times. The stadium would not be used for much larger events such as rock concerts.

The Project could result in the hiring of two new full-time staff to manage private events and up to 25 new part-time employees/vendor staff to serve visitors in new areas of the stadium (tower building and new concourses). The full-time staff, and at times the part-time staff, could travel during the am and pm peak hours (7:00am to

9:00am and 4:00pm to 6:00pm). This contribution to peak hour travel would not be substantial and would not meet the aforementioned criteria for preparing a detailed transportation impact assessment.

Additionally, the existing vehicle access and parking would remain unchanged with the Project. Attendees would continue to use the existing informal game-day parking around the stadium and other existing parking on the Fresno State campus. Overall, the Project would not substantially increase the amount of vehicle trips or vehicle miles traveled to the Project site and impacts would be less than significant.

c) **No impact.** The Fresno Yosemite International Airport (FYI) is located approximately 2.3 miles southeast of Fresno State. The Project site is not located within any airport designated safety zone (City of Fresno 2014). The Project would continue to attract attendees from Fresno State or nearby and would not result in a change to air traffic patterns or levels. Therefore, the Project would have no impact on air traffic patterns or safety.

d) **Less-than-significant impact.** The Project would not alter any intersections or roadways and does not include any design features that would create a hazard. The Project would include repaving the existing asphalt road at the perimeter of the stadium with concrete. Additionally, a new loading dock area would be installed into the berm on the southwest side of the stadium to provide for more convenient delivery of goods to the stadium. Most deliveries are currently sent to the Fresno State warehouse and then transported in a smaller vehicle to the stadium. The stadium currently receives approximately seven truck deliveries per week during the football season. The number of truck deliveries directly to the stadium would increase to up to 18 deliveries per week with the Project, due to the addition of a loading dock at the stadium.

The loading dock is located on the concession level in the southwest quad and would be accessible using the existing perimeter road with access from the southern entrance. The loading activities would not pose a hazard or introduce incompatible uses because it is separated from vehicle, bicycle or pedestrian activity with fencing. Therefore, the Project impact regarding hazards due to design features would be less than significant.

e) **No impact.** Emergency access would not change with the Project and therefore there is no impact. See Section 3.8 for additional information.

f) **Less-than-significant impact.** The Fresno State and City of Fresno Active Transportation Plans include plans for a Class I facility (bike path) on the north side of East Bulldog Lane and a Class III facility (bike route) on East Bulldog Lane (City of

Fresno 2016 and Fresno State 2015). The Project boundary terminates just south of the stadium and does not extend to East Bulldog Lane. No modifications would be made to parking lots or transportation infrastructure as part of the Project. Since the Project would not alter these facilities there would be no change from existing conditions. However, as recommended in the Fresno State Active Transportation Plan, the University will work with the City to implement these improvements when funding becomes available. As the Project would not change existing conditions and would not conflict with above plans, the impact is less than significant.

3.17 Utilities and Service Systems

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

DISCUSSION

a) **Less-than-significant impact.** Refer to Section 3.9, Hydrology and Water Quality.

b-e) **Less-than-significant impact.** As indicated in Section 3.9, the Project would continue to be served by the Fresno State water supply and distribution system, which has excess capacity, and by existing domestic water services located on the Project site. The Project would result in a minor increase in the amount of potable water used annually as compared to existing conditions, given that attendance is not expected to substantially increase with the Project. The existing stadium uses approximately 333,000 gallons per year of potable water, based on the average game day attendance. With the implementation of the Project, potable water use is expected to increase to 348,000 gallons per year, based on the addition of kitchen and water-using devices in the new tower building (Mueller pers. comm. 2017). As water demand is not expected to substantially increase with the Project the capacity of Fresno State's system is adequate to serve the Project. No new water sources or entitlements are required for the Project. Therefore, Project impacts related to water supply would be less than significant. See also Section 3.9 for information about groundwater impacts of the Project.

Wastewater from the Project site would continue to be directed to the City of Fresno's wastewater collection and treatment system. The Project would result in a minor increase in the amount of wastewater generated annually as compared to existing conditions, given that attendance is not expected to substantially increase with the Project. The existing stadium generates approximately 333,000 gallons per year of wastewater, based on the average game day attendance. With the implementation of the Project, wastewater generation is expected to increase to 348,000 gallons per year, based on the addition of kitchen and water using devices in the new tower building (Mueller pers. comm. 2017). As wastewater generation is not expected to substantially increase with the Project modification or expansion of the City of Fresno's wastewater distribution and treatment system would not likely be required. Project impacts related to wastewater would be less than significant.

As indicated in Section 3.9, stormwater drainage impacts would also be less than significant.

f) **Less-than-significant impact.** Garbage is currently taken by Republic Services, loaded onto large trucks, and taken out to American Avenue Landfill in Kerman. American Avenue Landfill is owned and operated by Fresno County. It is estimated that the landfill will be able to continue operation until 2031 when it is expected to reach capacity and will have to be closed (City of Fresno 2017).

The Project would not change existing operations for football or other sports. While the Project would improve fan amenities, it is expected that team performance and other existing factors would continue to drive attendance to football games. Therefore, average attendance is not expected to change as a result of the Project. While there may be an increase in private events, such events would still occur only occasionally (once a month). The Project could result in a modest increase in solid waste generation due to the increase in private events. However, the Project impact would be less than significant, as the Project would continue to be served by a landfill with adequate capacity and Fresno State would meet all applicable regulations related to solid waste.

3.18 Mandatory Findings of Significance

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

DISCUSSION

a) Less-than-significant impact with mitigation. The Project would not substantially reduce habitat of fish or wildlife species or other special-status species, as the SF State campus constitutes a built environment. There are no sensitive habitats or wetlands located on the Project site, and no special-status species are known to occupy the site. However, special-status or other protected birds could potentially nest is trees on the Project site. Because some of the landscape trees on the Project site would be

removed, the Project would implement Mitigation Measure BIO-1, which requires preconstruction nesting bird surveys and other measures if demolition or construction occurs during the typical avian nesting season (see Section 3.4-a). Implementation of this mitigation measure would reduce the potential impact on nesting special-status or other protected birds to less than significant.

The Project would not result in impacts to built historic resources, as the existing stadium is less than 50 years old and current and prior surveys did not identify any historic resources on the Project site. Although it is not anticipated that new archaeological resources would be encountered, Mitigation Measures CULT-1 and CULT-2, would be implemented with the Project to ensure that impacts related to inadvertent discovery of cultural resources would be reduced to less than significant.

b) **Less-than-significant impact.** The Project would not result in cumulatively considerable impacts. As indicated in Section 3.3, the Project would not result in cumulatively considerable air quality impact as annual construction emissions associated with the Project would not exceed the SJVAPCD significance thresholds, the Project is not expected to generate a substantial increase in long-term operational emissions over existing conditions, and the Project would not conflict with the SJVAPCD Ozone Attainment Plans, or the PM_{10} or $PM_{2.5}$ Attainment Plan, which address the cumulative emissions in the SJVAB. As indicated in Section 3.7, the Project would not result in significant impacts related to GHG emissions and therefore the Project would not result in a cumulatively considerable contribution to global climate change. Additionally, as indicated in Section 3.16, the Project would not substantially increase vehicle trips or vehicle miles travelled and therefore would not result in a cumulatively considerable contribution to congestion on area roadways.

c) **Less-than-significant impact with mitigation.** The Project would not result in hazards to humans related to exposure to emergency response, proximity to airport activities, or transportation hazards. Mitigation Measure HAZ-1, requiring a soil contamination contingency plan be in-place during demolition and construction activities, would reduce potentially significant impacts related to potential discovery of as yet unknown areas of soil contamination during construction activities to less than significant.

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5 FINDINGS

The Board of Trustees of the California State University (Board of Trustees) finds that the proposed California State University, Fresno (Fresno State) Bulldog Stadium Modernization Project (Project) would not have a significant adverse effect on the environment, based on the Initial Study Environmental Checklist and the Evaluation of Environmental Impacts (see Chapter 3). Some potentially significant effects have been identified, and mitigation measures have been incorporated into the Project to ensure that these effects remain at less-than-significant levels. A mitigated negative declaration is therefore proposed to satisfy the requirements of the California Environmental Quality Act (CEQA). The conclusion that there would be not significant effects is supported by the following findings.

1. **Aesthetics.** Project implementation would not significantly affect aesthetic resources (see Section 3.1, Aesthetics).

2. **Agriculture and Forestry Resources.** Project implementation would not significantly affect agricultural resources (see Section 3.2, Agriculture and Forestry Resources).

3. **Air Quality.** Project implementation would not significantly affect air quality (see Section 3.3, Air Quality).

4. **Biological Resources.** A mitigation measure has been incorporated into the Project to reduce potential impacts to biological resources to below a level of significance (see Section 3.4, Biological Resources).

5. **Cultural Resources.** Mitigation measures have been incorporated into the Project to reduce potential impacts to cultural resources to below a level of significance (see Section 3.5, Cultural Resources).

6. **Geology and Soils.** Project implementation would not significantly affect geology and soils (see Section 3.6, Geology and Soils).

7. **Greenhouse Gas Emissions.** Project implementation would not significantly affect global climate change due to GHG emissions (see Section 3.7, Greenhouse Gas Emissions).

8. **Hazards and Hazardous Materials.** A mitigation measure has been incorporated into the Project to reduce potential impacts related to hazardous conditions to below a level of significance (see Section 3.8, Hazards and Hazardous Materials).

9. **Hydrology and Water Quality.** Project implementation would not significantly affect hydrology and water quality (See Section 3.9, Hydrology and Water Quality).

10. **Land Use and Planning.** The Project would be compatible with existing and planned land uses in the project vicinity and would therefore not conflict with applicable land use plans and/or programs (see Section 3.10, Land Use and Planning).

11. **Mineral Resources.** Project implementation would not affect mineral resources (see Section 3.11, Mineral Resources).

12. **Noise.** Project implementation would not significantly increase ambient noise (see Section 3.12, Noise).

13. **Population and Housing.** Project implementation would not significantly increase population or associated housing needs (see Section 3.13, Population and Housing).

14. **Public Services.** The Project would not affect public services (see Section 3.14, Public Services).

15. **Recreation.** The Project would not result in an increase in demand for parks or involve construction activities that would affect park facilities (see Section 3.15, Recreation).

16. **Transportation and Traffic.** Project implementation would not significantly affect area circulation or roadways (see Section 3.16, Transportation and Traffic).

17. **Utilities and Service Systems.** Project implementation would not significantly affect utilities and service systems (see Section 3.17, Utilities and Service Systems).

18. **Mandatory Findings of Significance.** The Project has limited potential to degrade the quality of the environment and would not result in the number of a threatened, endangered, rare or otherwise sensitive plant or wildlife species dropping below population-sustaining levels, nor would the project eliminate an important cultural resource. Project impacts are not cumulatively considerable. Finally, no feature of the Project would result in substantial adverse effects on human beings, either directly or indirectly. As indicated in items 4, 5, and 8 above, mitigation measures have been incorporated into the Project to reduce potential impacts to below a level of significance (see Section 3.18, Mandatory Findings of Significance).

6 LIST OF PREPARERS

6.1 Board of Trustees of the California State University

Steve Lohr
Chief, Land Use Planning and Environmental Review

6.2 Fresno State

Deborah Adishian-Astone
Vice President for Administration

Sara Mitchel
Manager of Construction Services

Andy Bennett
Director, Special Projects

John Kriebs
Associate Director of Athletics

6.3 Dudek

Ann Sansevero, AICP
Principal and Project Manager

Shilpa Iyer
Environmental Planner

Josh Saunders
Visual Resource Specialist

Ian McIntire
Air Quality and Greenhouse Gas Specialist

Paul Caligiuri
Visual Simulations Designer

Rachel Strobridge
GIS Technician

Lindsey Messner
Technical Editor

Devin Brookhart
Publications Specialist Lead

Taylor Eaton
Publications Specialist

APPENDIX A

Lighting Study

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

MEMORANDUM

To:	Sara Mitchell, Interim Director of Planning, Design and Construction
From:	Shilpa Iyer and Josh Saunders, Dudek
Subject:	Fresno State Bulldog Stadium Modernization Project Lighting Evaluation
Date:	October 2017
cc:	Ann Sansevero, Dudek
Attachment(s):	Figures 1-3

Introduction

Dudek reviewed existing light level measurements and Musco's proposed lighting design, based on the 75% Schematic Design Drawings and Specifications (AECOM 2017), and calculated light levels for the California State University, Fresno (Fresno State) Bulldog Stadium Modernization Project (Project) to determine potential nighttime lighting impacts associated with spillover to nearby residential properties and public roads. The California Environmental Quality Act (CEQA) statutes and guidelines specifically address new sources of substantial lighting generated by projects and require an analysis regarding whether new lighting sources could adversely affect nighttime views. As this memorandum demonstrates, the light levels that would be produced from the Project and received at nearby residential properties and public roads would be minimal and light spill from new Bulldog Stadium lighting and projected future light levels at each identified measurement location would be reduced when compared to existing conditions.

Purpose of Lighting Evaluation

The purpose of this Lighting Evaluation is to report on anticipated lighting spill levels at nearby residential properties and public roads associated with the Project. The change in lighting spill levels over existing conditions is identified and evaluated herein.

Lighting Terminology

Footcandle

Footcandles are the most common unit of measure used by lighting professions in the United States to calculate light levels in businesses and outdoor spaces. A footcandle is a measurement of light intensity received on a plane and is defined as the illuminance on a one-square foot surface from a uniform source of light.

Horizontal Footcandle

The intensity of light received on a horizontal surface such as a roadway or parking lot pavement.

Vertical Footcandle

The intensity of light received on a vertical surface such as a billboard or building façade.

Evaluation Methodology

To provide for a quantitative assessment of lighting effects, an impact threshold must be identified as the basis for determining whether an impact would be significant. The California State University system does not have lighting regulations or a lighting impact threshold that can be used to determine impact significance. However, Dudek determined that local light trespass regulations could be used for this purpose, as further described below.

In June 2017, Dudek reviewed the City of Fresno Citywide Development Code Section 15-2015, Outdoor Lighting and Illumination, to identify local regulations related to light trespass on adjacent properties. While the City of Fresno has no jurisdictional or approval authority over the Project, the above regulations could potentially be used as the basis for establishing a quantitative impact threshold and were reviewed and considered for that purpose. The regulations established in Section 15-2015 are applicable to new lights and new development; however, park/athletic field lights used within a school campus or public or private park are specifically exempt from the requirements of the section (see Section 15-2015 (4)(b)). Regardless, the Citywide Development requirements concerning light trespass can be used as an impact threshold to determine whether potential adverse effects to nighttime views may result from Project. The light trespass requirements of the Citywide Development Code, referred to as "light trespass thresholds" in the remainder of this memo, are as follows:

- **Light Trespass**. Lights shall be placed to deflect light away from adjacent properties and public streets, and to prevent adverse interference with the normal operation or enjoyment of surrounding properties.
    - Direct or sky-reflected glare from floodlights shall not be directed into any other property or street.
    - No light or combination of lights, or activity shall cast light exceeding one-foot candle onto a public street, with the illumination level measured at the centerline of the street.

- No light, combination of lights, or activity shall cast light exceeding 0.5-foot candle onto a residentially zoned property, or any property containing residential uses.

For purposes of this analysis, the light trespass thresholds are understood to apply to new lighting that would exceed existing ambient light levels and would be operating within environments where the existing ambient light levels are below the thresholds.

On the night of June 21, 2017, Musco (with the assistance of Fresno State University Facilities Department staff) took existing light level measurements at specific locations in the area surrounding Bulldog Stadium. Light levels were measured with both the stadium lights off and on and included lighting generated by other existing Fresno State athletic facilities and off-campus lighting sources. Prior to the field visit, Dudek provided Musco with a map indicating measurement locations for nearby residential properties and along the centerline of adjacent public roads. Dudek used City of Fresno zoning and roads GIS data to identify and map residentially zoned property (or any property containing residential uses) and the centerline of adjacent public roads. Multiple data points were plotted along residentially zoned properties, properties containing residential uses, and the centerline of public roads. During the field visit, Musco measured the horizontal and vertical footcandle light levels at each plotted data point/measurement location.

In July 2017, Musco prepared a lighting plan and photometric plans for the Project, based on the 75% Schematic Design Drawings and Specifications (AECOM 2017). The photometric plan diagrams prepared by Musco reflect the projected on-field lighting and light spill at select locations (i.e., the previously identified data points plotted on nearby residential property lines and the centerline of adjacent public roads) surrounding Bulldog Stadium. In order to determine whether the proposed lighting planned for the Project would adversely affect nighttime views at residential properties and on public roads near the Project site, Dudek compared the Project's calculated light spill at the data points with the existing light level measurements recorded at the same location.

Summary of Evaluated Areas

This report evaluates the proposed lighting plan relative to existing stadium lighting. The areas of evaluation include residentially zoned property, property containing residential uses, and adjacent public streets near Bulldog Stadium. A regional and vicinity map depicting the location of the Project and surrounding land uses are presented as Figure 1, Regional Map and Figure 2, Vicinity Map.

Residential Area North of Barstow Avenue

Single- and multiple-family residential development is located north of Bulldog Stadium and Barstow Avenue. These uses are currently exposed to nighttime lighting from streetlights, exterior

and interior lights/security lights associated with the Bulldog Plaza commercial area and St. Paul Catholic Newman Center, and Fresno State athletic facilities lighting, including Bulldog Stadium.

Existing ambient light levels that include existing stadium lighting were measured and projected light spill associated only with the proposed project were calculated at the southern property line of several residentially zoned properties located on Barstow Avenue. Existing and proposed light level data for the location with the greatest projected light levels (i.e., R1) is presented in Tables 1 and 2, below.

Residential Area West of Millbrook Avenue

Two-story apartment complexes and sorority and fraternity homes are located west of Bulldog Stadium and across North Millbrook Avenue. Existing outdoor building lighting, streetlights, and Fresno State athletic facilities lighting (including Bulldog Stadium field lights) contribute to the existing nighttime lighting characteristics of this area. Lighting at local businesses and the surface parking lot of a nearby retail shopping center at the Bulldog Lane/6th Street intersection also generates visible nighttime lighting in the area.

Existing ambient light levels that include existing stadium lighting were measured and projected light spill associated only with the proposed project were calculated at the eastern property line of several residentially zoned properties fronting North Millbrook Avenue. Existing ambient and projected light levels for the location with the greatest projected light spill from the Project (i.e., R2) is presented in Tables 1 and 2, below.

Residential Area South of Bulldog Lane

Several two-story apartment complexes are located south of Bulldog Stadium and south of Bulldog Lane. Existing building lighting, surface parking lot lighting, streetlights, Fresno State athletic facilities lighting (including Bulldog Stadium field lights) and on-campus surface parking lot lighting illuminate this area during evening and nighttime hours. Buildings and surface parking lots in commercial centers near the Cedar Avenue/Shaw Avenue intersection also contribute visible lighting in this area.

Existing ambient light levels that include existing stadium lighting were measured and projected light levels associated only with the proposed project were calculated at the northern property line of several residentially zoned properties fronting Bulldog Lane. Existing ambient and projected light levels for the location with the greatest projected light spill from the Project (i.e., R3) is presented in Tables 1 and 2, below.

Barstow Avenue, Cedar Avenue, Bulldog Lane, and Millbrook Avenue

Lighting on roads surrounding the Project site is primarily from streetlights, lighting from adjacent buildings and parking lots, and Fresno State athletic facilities, including the existing Bulldog Stadium.

Existing ambient light levels that include existing stadium lighting were measured and projected light levels associated only with the proposed project were calculated at several locations along the centerline of Barstow Avenue, Bulldog Lane, and Millbrook Avenue. Because of distance and intervening uses and lighting sources, light levels were measured and projected for a single location on Cedar Avenue. Existing ambient and projected light levels for locations on Barstow Avenue, Bulldog Lane, and Millbrook Avenue with the greatest projected light spill from the Project (i.e., S1, S3, and S4) and the Cedar Avenue location (i.e., S2) is presented in Tables 1 and 2, below.

Existing and Projected Light Levels

Musco measured existing vertical and horizontal lighting levels and calculated future horizontal and vertical lighting levels associated with the Project at nearby residential areas and on adjacent public roads. Residential and public road measurement and calculations locations are shown on Figure 3, Existing and Proposed Spill Locations and Levels. As proposed, existing halide stadium field lights and other lighting at Bulldog Stadium would be replaced with modern and improved lamps and lighting fixtures. The proposed lighting system for Bulldog Stadium would incorporate Musco's most recent lighting technology that includes LED fixtures, improved light shields, and glare control systems, as called for in the 75% Schematic Design and Specifications (AECOM 2017), which reduce spill light and glare. This technological improvement would reduce the maximum spill light levels as compared to existing conditions.

The measured and projected horizontal and vertical l light levels at select off-site locations near the Project site are summarized in Tables 1 and 2. Existing light levels were measured by Musco on June 21, 2017 at several locations surrounding Bulldog Stadium and included ambient lighting levels with Bulldog Stadium lights on and ambient lighting levels with Bulldog Stadium lights off. The measured ambient light levels with Bulldog Stadium lights on and off were compared to determine the approximate existing light spill generated by Bulldog Stadium only. To approximate the projected future light levels at measurement locations, the projected light spill from the Project was added to the measured ambient light levels (with Bulldog Stadium lights off). As detailed in Tables 1 and 2 below, the projected future light levels would be less than the existing ambient light levels (with Bulldog Stadium lights on) at each measurement location.

Existing Light Level or Projected Future Light Level Scenario
Residential Area North of Barstow Avenue (R1)[1]
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]
Existing Lighting Spill from Bulldog Stadium lights only
Projected Light Spill from Project
Projected Future Light Level[3]
Residential Area West of Millbrook Avenue (R2)[1]
Existing Ambient Light Level (with Bulldog Stadium lights on) [2]
Existing Ambient Light Level (with Bulldog Stadium lights off) [2]
Existing Lighting Spill from Bulldog Stadium lights only
Projected Light Spill from Project only
Projected Future Light Level[3]
Residential Area South of Bulldog Lane (R3)[1]
Existing Ambient Light Level (with Bulldog Stadium lights on) [2]
Existing Ambient Light Level (with Bulldog Stadium lights off) [2]
Existing Lighting Spill from Bulldog Stadium lights only
Projected Light Spill from Project only
Projected Future Light Level[3]
Barstow Avenue (S1)[1]
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]
Existing Lighting Spill from Bulldog Stadium lights only
Projected Light Spill from Project only
Projected Future Light Level[3]
Cedar Avenue (S2)[1]
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]
Existing Lighting Spill from Bulldog Stadium lights only
Projected Light Spill from Project only
Projected Future Light Level[3]
Bulldog Lane (S3)[1]
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]
Existing Lighting Spill from Bulldog Stadium lights only
Projected Light Spill from Project only
Projected Future Light Level[3]
Millbrook Avenue (S4)[1]

Existing Light Level or Projected Future Light Level Scenario
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]
Existing Lighting Spill from Bulldog Stadium lights only
Projected Light Spill from Project only
Projected Future Light Level[3]

[1] Indicates data point location on Figure 3, Existing and Projected Future Light Levels and Spill Locations.
[2] Existing light level includes ambient lighting recorded at the measurement location by Musco on June 21, 2017.
[3] Projected future light level = existing ambient light level with existing Bulldog Stadium lights off + projected lighting spill from project.
[4] **Bold** and *italics* indicates that light levels exceed the light trespass threshold for residentially zoned property or any property containing residential uses (0.5-footcandles) or public street (1.0-footcandles).

Table 2
Maximum Vertical Light Levels at Measurement Locations

Existing Light Level or Projected Future Light Level Scenario	Vertical Footcandles
Residential Area North of Barstow Avenue (R1)[1]	
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]	***0.75***[4]
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]	0.43
Existing Lighting Spill from Bulldog Stadium lights only	*0.32*
Projected Light Spill from Project only	*0.14*
Projected Future Light Level[3]	***0.57***[4] *(0.43 + 0.14)*
Residential Area West of Millbrook Avenue (R2)[1]	
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]	0.43
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]	0.07
Existing Lighting Spill from Bulldog Stadium lights only	0.36
Projected Light Spill from Project only	*0.21*
Projected Future Light Level[3]	*0.28 (0.07 + 0.21)*
Residential Area South of Bulldog Lane (R3)[1]	
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]	0.44
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]	0.20
Existing Lighting Spill from Bulldog Stadium lights only	0.24
Projected Light Spill from Project only	*0.13*
Projected Future Light Level[3]	*0.33 (0.20 + 0.13)*
Barstow Avenue (S1)[1]	
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]	***1.42***[4]
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]	0.43
Existing Lighting Spill from Bulldog Stadium lights only	0.99
Projected Light Spill from Project only	*0.14*

Table 2
Maximum Vertical Light Levels at Measurement Locations

Existing Light Level or Projected Future Light Level Scenario	Vertical Footcandles
Projected Future Light Level[3]	*0.57 (0.43 + 0.14)*
Cedar Avenue (S2)[1]	
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]	0.18
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]	0.13
Existing Lighting Spill from Bulldog Stadium lights only	*0.05*
Projected Light Spill from Project only	*0.00*
Projected Future Light Level[3]	*0.13 (0.13 + 0.00)*
Bulldog Lane (S3)[1]	
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]	0.88
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]	0.25
Existing Lighting Spill from Bulldog Stadium lights only	0.63
Projected Light Spill from Project only	*0.41*
Projected Future Light Level[3]	*0.66 (0.41 + 0.25)*
Millbrook Avenue (S4)[1]	
Existing Ambient Light Level (with Bulldog Stadium lights on)[2]	0.42
Existing Ambient Light Level (with Bulldog Stadium lights off)[2]	0.03
Existing Lighting Spill from Bulldog Stadium lights only	*0.39*
Projected Light Spill from Project only	*0.31*
Projected Future Light Level[3]	*0.34 (0.03 + 0.31)*

[1] Indicates data point location on Figure 3, Existing and Projected Future Light Levels and Spill Locations.
[2] Existing light level includes ambient lighting recorded at the measurement location by Musco on June 21, 2017.
[3] Projected future light level = existing ambient light level with existing Bulldog Stadium lights off + projected lighting spill from project.
[4] **Bold** and *italics* indicates that light levels exceed the light trespass threshold for residentially zoned property or any property containing residential uses (0.5-footcandle) or public street (1.0-footcandles).

Lighting Evaluation and Impact Determination

As demonstrated in Tables 1 and 2 above, the projected future horizontal and vertical light levels with the project would be reduced over existing ambient light levels at the measured locations shown in Figure 3. Where existing halide lamps would be replaced with LED fixtures featuring improved lights shields and glare control systems (some of the original halide light fixtures have already been replaced with LED fixtures), light spill associated with Bulldog Stadium lighting would be reduced compared to existing conditions.

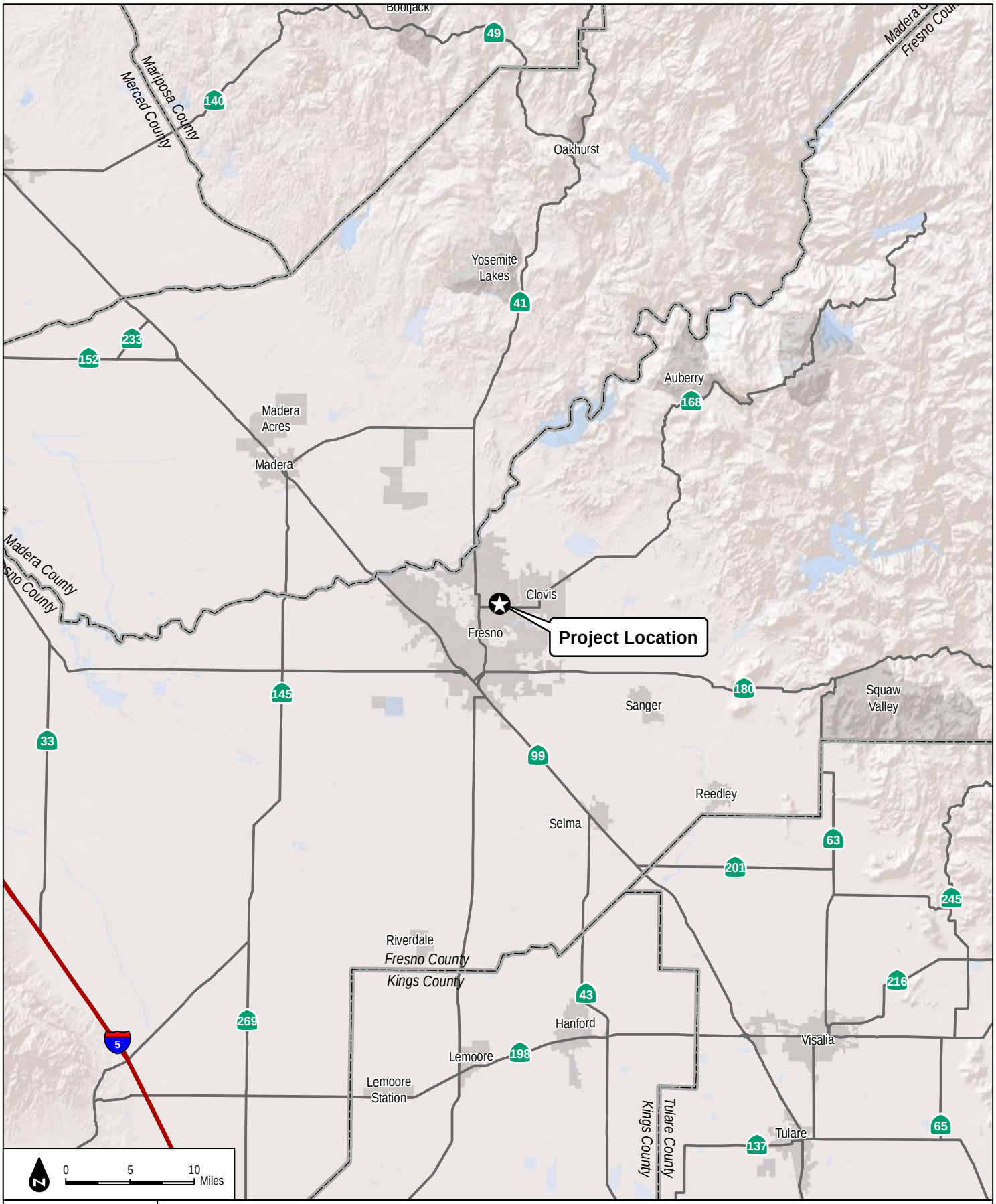
At residential location R2, the existing ambient horizontal light level (with Bulldog Stadium lights on) was measured to be 0.90-footcandles, which exceeds the threshold of 0.5-footcandles for

residentially zoned property or properties containing residential uses (see Table 1). Light spill only from the existing stadium lighting at Bulldog Stadium at this location is approximately 0.26-footcandles or approximately 29 percent of the overall existing ambient light level (with Bulldog Stadium lights on) measured at this location. While the projected future horizontal light level at the R2 location with the project would continue to exceed the threshold with a projected future light level of 0.67-footcandles, the project would reduce light spill at this location over ambient conditions by 0.23-footcandles.

At residential location R1, the existing ambient vertical light level (with Bulldog Stadium lights on) was measured to be 0.75-footcandles, which exceeds the threshold of 0.5-footcandles for residentially zoned property or properties containing residential uses (see Table 2). Light spill only from the existing stadium lighting at Bulldog Stadium at this location is approximately 0.32-footcandles or approximately 42 percent of the overall existing ambient light level (with Bulldog Stadium lights on) measured at this location. While the projected future vertical light level at the R1 location with the project would continue to exceed the threshold with a projected future light level of 0.57-footcandles, the project would reduce light spill at this location over ambient conditions by 0.18-footcandles.

At public street location S1, the existing ambient vertical light level (with Bulldog Stadium lights on) was measure to be 1.42-footcandles, which exceeds the threshold of 1.0-footcandles for public streets (see Table 2). Light spill only from the existing stadium lighting at Bulldog Stadium at this location is approximately 0.99-footcandles or approximately 70 percent of the overall ambient existing light level (with Bulldog Stadium lights on) measured at this location. With implementation of the proposed project, vertical light spill attributed to Bulldog Stadium lighting at this location would be reduced by 0.85-footcandles and projected future light levels would be 0.57-footcandles, which is well-below the threshold of 1.0-footcandles.

As the implementation of the proposed project would reduce light spill (horizontal and vertical footcandles) associated with Bulldog Stadium lighting and would reduce projected future light levels at identified residentially zoned properties and along public streets in the surrounding area, impacts to nighttime views due to proposed project lighting would be less than significant.



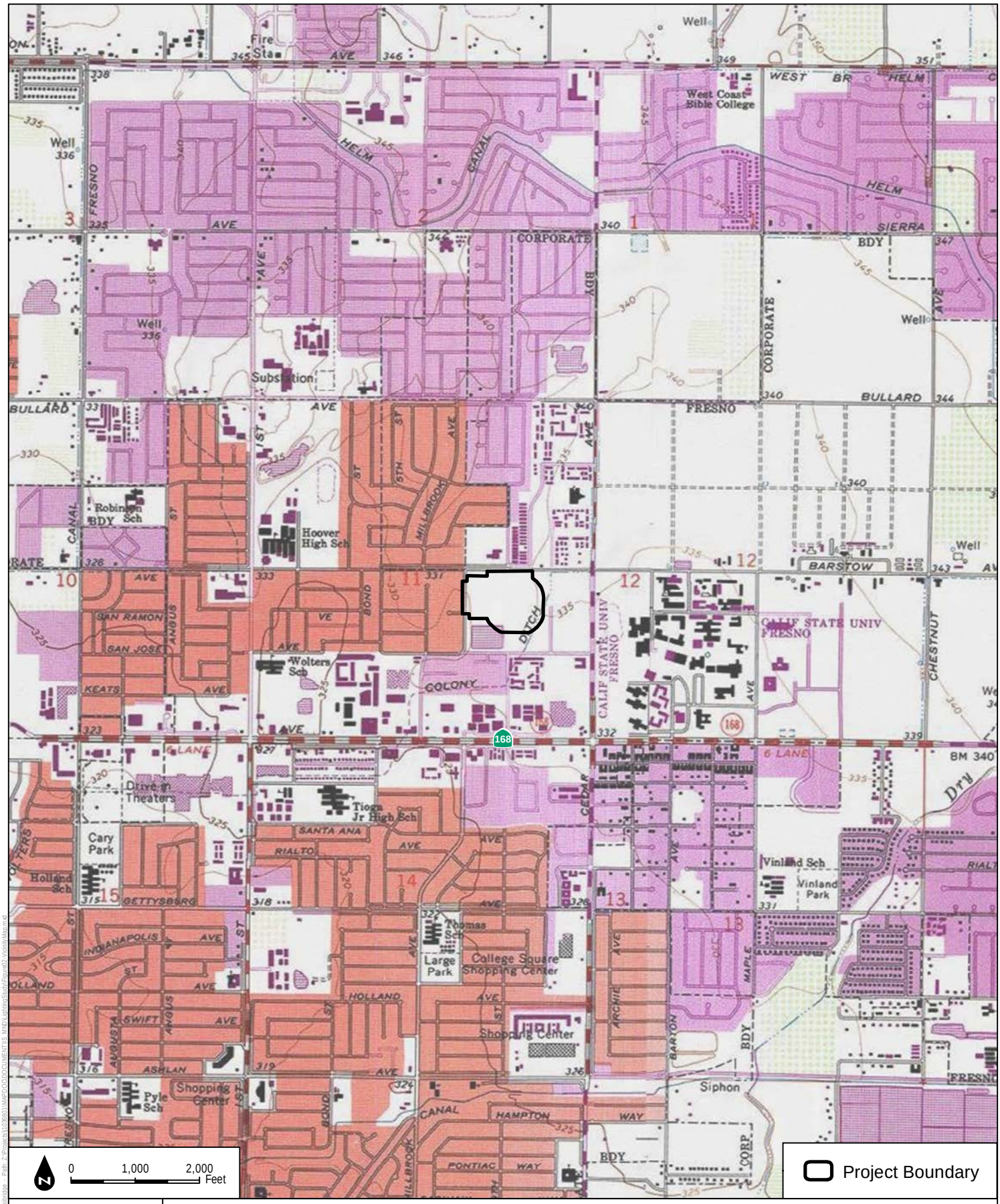
DUDEK

SOURCE: ESRI (2017)

FIGURE 1

Regional Map

Fresno State Bulldog Stadium Lighting Memorandum

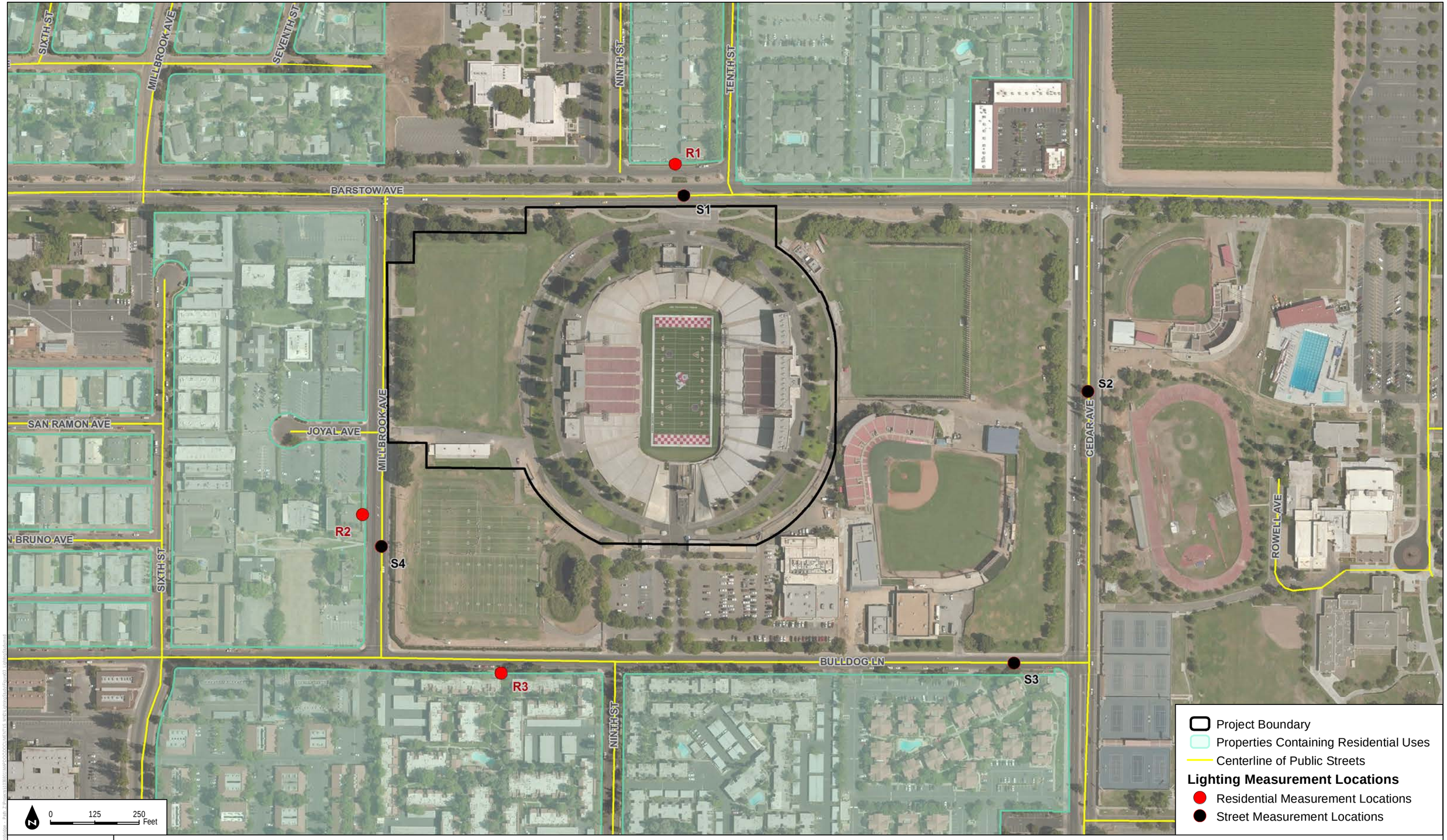


SOURCE: USGS 7.5-Minute Series Fresno North Quadrangle
Township 13S; Range 20E; Section 11

FIGURE 2
Vicinity Map

DUDEK

Fresno State Bulldog Stadium Lighting Memorandum



DUDEK

SOURCE: Bing Maps (Accessed 2017); Fresno County GIS (2017)

FIGURE 3

Existing and Projected Future Light Levels and Spill Locations

Fresno State Bulldog Stadium Lighting Memorandum

APPENDIX B

Air Quality and Greenhouse Gas Emissions Modelling

CalEEMod Version: CalEEMod.2016.3.1 Date: 10/5/2017 9:51 AM

CSU Fresno Stadium Modernization Project

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.00	Acre	3.00	130,680.00	0
Parking Lot	0.48	Acre	0.48	20,908.80	0
Arena	43.00	1000sqft	13.82	43,000.00	0
Other Non-Asphalt Surfaces	1.20	Acre	1.20	52,272.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CSU Fresno Stadium Modernization Project. Fresno County.

Land Use - Modified Land Use Based on Project Description. Development of a 43,000 sf sideline tower building, new concourses in four corners of the stadium, construction of a cross-aisle, and construction of a new plaza at the north entrance.

Construction Phase - Building Construction Assumed to Begin in July 2019 and completed by June 2021.

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Trips and VMT -

On-road Fugitive Dust - Use Defaults

Demolition - Demolition of Maintenance Building Based off Google Earth.

Grading - Assumed graded material to be balanced onsite.

Architectural Coating - Compliance with SJVAPCD Rule 4601, for non-flat coatings 150 g/l.

Construction Off-road Equipment Mitigation - Comply with SJVAPCD Rule 8021 : watering project site twice daily

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	300.00	420.00
tblConstructionPhase	PhaseEndDate	9/18/2020	6/25/2021
tblConstructionPhase	PhaseEndDate	7/24/2020	4/30/2021
tblConstructionPhase	PhaseEndDate	9/6/2019	9/20/2019
tblConstructionPhase	PhaseEndDate	8/21/2020	5/28/2021
tblConstructionPhase	PhaseStartDate	8/22/2020	5/29/2021
tblConstructionPhase	PhaseStartDate	9/7/2019	9/21/2019
tblConstructionPhase	PhaseStartDate	7/25/2020	5/1/2021
tblProjectCharacteristics	OperationalYear	2018	2022
tblVehicleTrips	ST_TR	10.71	0.00
tblVehicleTrips	SU_TR	10.71	0.00
tblVehicleTrips	WD_TR	10.71	0.00

2.0 Emissions Summary

2.1 Overall Construction

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	tons/yr										MT/yr					
2019	0.2402	2.3847	1.6181	3.2700e-003	0.2753	0.1138	0.3891	0.1172	0.1058	0.2231	0.0000	293.3250	293.3250	0.0683	0.0000	295.0327
2020	0.3561	3.2000	2.6895	6.0600e-003	0.1437	0.1505	0.2941	0.0390	0.1415	0.1805	0.0000	538.9941	538.9941	0.0940	0.0000	541.3445
2021	0.4631	1.0994	1.0288	2.2600e-003	0.0500	0.0497	0.0997	0.0136	0.0467	0.0602	0.0000	200.4186	200.4186	0.0370	0.0000	201.3442
Maximum	**0.4631**	**3.2000**	**2.6895**	**6.0600e-003**	**0.2753**	**0.1505**	**0.3891**	**0.1172**	**0.1415**	**0.2231**	**0.0000**	**538.9941**	**538.9941**	**0.0940**	**0.0000**	**541.3445**

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	tons/yr										MT/yr					
2019	0.2402	2.3846	1.6181	3.2700e-003	0.1484	0.1138	0.2622	0.0594	0.1058	0.1653	0.0000	293.3248	293.3248	0.0683	0.0000	295.0324
2020	0.3561	3.2000	2.6895	6.0600e-003	0.1437	0.1505	0.2941	0.0390	0.1415	0.1805	0.0000	538.9938	538.9938	0.0940	0.0000	541.3441
2021	0.4631	1.0994	1.0288	2.2600e-003	0.0500	0.0497	0.0997	0.0136	0.0467	0.0602	0.0000	200.4185	200.4185	0.0370	0.0000	201.3441
Maximum	**0.4631**	**3.2000**	**2.6895**	**6.0600e-003**	**0.1484**	**0.1505**	**0.2941**	**0.0594**	**0.1415**	**0.1805**	**0.0000**	**538.9938**	**538.9938**	**0.0940**	**0.0000**	**541.3441**

	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**	**27.06**	**0.00**	**16.21**	**34.07**	**0.00**	**12.47**	**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	7/1/2019	7/26/2019	5	20	
2	Site Preparation	Site Preparation	7/27/2019	8/9/2019	5	10	
3	Grading	Grading	8/10/2019	9/20/2019	5	30	
4	Building Construction	Building Construction	9/21/2019	4/30/2021	5	420	
5	Paving	Paving	5/1/2021	5/28/2021	5	20	
6	Architectural Coating	Architectural Coating	5/29/2021	6/25/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 4.68

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 64,500; Non-Residential Outdoor: 21,500; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20

Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
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
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Scrapers	2	8.00	367	0.48

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	6	15.00	0.00	95.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	104.00	40.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	21.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

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	tons/yr										MT/yr					
Fugitive Dust					0.0103	0.0000	0.0103	1.5600e-003	0.0000	1.5600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8672
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**0.0103**	**0.0180**	**0.0282**	**1.5600e-003**	**0.0167**	**0.0183**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8672**

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	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0143	1.9100e-003	4.0000e-005	8.1000e-004	6.0000e-005	8.7000e-004	2.2000e-004	5.0000e-005	2.8000e-004	0.0000	3.6603	3.6603	3.3000e-004	0.0000	3.6685
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	0.0000
Worker	7.1000e-004	4.7000e-004	4.6700e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0712	1.0712	3.0000e-005	0.0000	1.0720
Total	**1.1200e-003**	**0.0148**	**6.5800e-003**	**5.0000e-005**	**2.0100e-003**	**7.0000e-005**	**2.0800e-003**	**5.4000e-004**	**6.0000e-005**	**6.1000e-004**	**0.0000**	**4.7315**	**4.7315**	**3.6000e-004**	**0.0000**	**4.7405**

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	tons/yr										MT/yr					
Fugitive Dust					4.6200e-003	0.0000	4.6200e-003	7.0000e-004	0.0000	7.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8671
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**4.6200e-003**	**0.0180**	**0.0226**	**7.0000e-004**	**0.0167**	**0.0174**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8671**

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	tons/yr										MT/yr					
Hauling	4.1000e-004	0.0143	1.9100e-003	4.0000e-005	8.1000e-004	6.0000e-005	8.7000e-004	2.2000e-004	5.0000e-005	2.8000e-004	0.0000	3.6603	3.6603	3.3000e-004	0.0000	3.6685
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	0.0000
Worker	7.1000e-004	4.7000e-004	4.6700e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0712	1.0712	3.0000e-005	0.0000	1.0720
Total	**1.1200e-003**	**0.0148**	**6.5800e-003**	**5.0000e-005**	**2.0100e-003**	**7.0000e-005**	**2.0800e-003**	**5.4000e-004**	**6.0000e-005**	**6.1000e-004**	**0.0000**	**4.7315**	**4.7315**	**3.6000e-004**	**0.0000**	**4.7405**

3.3 Site Preparation - 2019

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	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0903**	**0.0120**	**0.1023**	**0.0497**	**0.0110**	**0.0607**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

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	tons/yr										MT/yr					
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	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	0.0000
Worker	4.3000e-004	2.8000e-004	2.8000e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6427	0.6427	2.0000e-005	0.0000	0.6432
Total	**4.3000e-004**	**2.8000e-004**	**2.8000e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6427**	**0.6427**	**2.0000e-005**	**0.0000**	**0.6432**

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	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	**0.0217**	**0.2279**	**0.1103**	**1.9000e-004**	**0.0407**	**0.0120**	**0.0526**	**0.0223**	**0.0110**	**0.0333**	**0.0000**	**17.0843**	**17.0843**	**5.4100e-003**	**0.0000**	**17.2195**

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	tons/yr										MT/yr					
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	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	0.0000
Worker	4.3000e-004	2.8000e-004	2.8000e-003	1.0000e-005	7.2000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6427	0.6427	2.0000e-005	0.0000	0.6432
Total	**4.3000e-004**	**2.8000e-004**	**2.8000e-003**	**1.0000e-005**	**7.2000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6427**	**0.6427**	**2.0000e-005**	**0.0000**	**0.6432**

3.4 Grading - 2019

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	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5520	83.5520	0.0264	0.0000	84.2129
Total	**0.0711**	**0.8178**	**0.5007**	**9.3000e-004**	**0.1301**	**0.0357**	**0.1658**	**0.0540**	**0.0329**	**0.0868**	**0.0000**	**83.5520**	**83.5520**	**0.0264**	**0.0000**	**84.2129**

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	tons/yr										MT/yr					
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	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	0.0000
Worker	1.4200e-003	9.3000e-004	9.3500e-003	2.0000e-005	2.4000e-003	2.0000e-005	2.4100e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	2.1424	2.1424	6.0000e-005	0.0000	2.1440
Total	**1.4200e-003**	**9.3000e-004**	**9.3500e-003**	**2.0000e-005**	**2.4000e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**1.0000e-005**	**6.5000e-004**	**0.0000**	**2.1424**	**2.1424**	**6.0000e-005**	**0.0000**	**2.1440**

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	tons/yr										MT/yr					
Fugitive Dust					0.0586	0.0000	0.0586	0.0243	0.0000	0.0243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5519	83.5519	0.0264	0.0000	84.2128
Total	**0.0711**	**0.8178**	**0.5007**	**9.3000e-004**	**0.0586**	**0.0357**	**0.0943**	**0.0243**	**0.0329**	**0.0572**	**0.0000**	**83.5519**	**83.5519**	**0.0264**	**0.0000**	**84.2128**

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	tons/yr										MT/yr					
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	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	0.0000
Worker	1.4200e-003	9.3000e-004	9.3500e-003	2.0000e-005	2.4000e-003	2.0000e-005	2.4100e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	2.1424	2.1424	6.0000e-005	0.0000	2.1440
Total	**1.4200e-003**	**9.3000e-004**	**9.3500e-003**	**2.0000e-005**	**2.4000e-003**	**2.0000e-005**	**2.4100e-003**	**6.4000e-004**	**1.0000e-005**	**6.5000e-004**	**0.0000**	**2.1424**	**2.1424**	**6.0000e-005**	**0.0000**	**2.1440**

3.5 Building Construction - 2019

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	tons/yr										MT/yr					
Off-Road	0.0850	0.7588	0.6179	9.7000e-004		0.0464	0.0464		0.0437	0.0437	0.0000	84.6375	84.6375	0.0206	0.0000	85.1530
Total	**0.0850**	**0.7588**	**0.6179**	**9.7000e-004**		**0.0464**	**0.0464**		**0.0437**	**0.0437**	**0.0000**	**84.6375**	**84.6375**	**0.0206**	**0.0000**	**85.1530**

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	tons/yr										MT/yr					
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	0.0000
Vendor	6.6300e-003	0.1947	0.0332	4.1000e-004	9.5400e-003	1.4100e-003	0.0110	2.7600e-003	1.3500e-003	4.1100e-003	0.0000	39.1712	39.1712	4.9800e-003	0.0000	39.2956
Worker	0.0177	0.0116	0.1167	3.0000e-004	0.0299	2.0000e-004	0.0301	7.9600e-003	1.8000e-004	8.1400e-003	0.0000	26.7371	26.7371	8.0000e-004	0.0000	26.7570
Total	**0.0243**	**0.2063**	**0.1499**	**7.1000e-004**	**0.0395**	**1.6100e-003**	**0.0411**	**0.0107**	**1.5300e-003**	**0.0123**	**0.0000**	**65.9083**	**65.9083**	**5.7800e-003**	**0.0000**	**66.0526**

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	tons/yr										MT/yr					
Off-Road	0.0850	0.7588	0.6179	9.7000e-004		0.0464	0.0464		0.0437	0.0437	0.0000	84.6374	84.6374	0.0206	0.0000	85.1529
Total	**0.0850**	**0.7588**	**0.6179**	**9.7000e-004**		**0.0464**	**0.0464**		**0.0437**	**0.0437**	**0.0000**	**84.6374**	**84.6374**	**0.0206**	**0.0000**	**85.1529**

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	tons/yr										MT/yr					
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	0.0000
Vendor	6.6300e-003	0.1947	0.0332	4.1000e-004	9.5400e-003	1.4100e-003	0.0110	2.7600e-003	1.3500e-003	4.1100e-003	0.0000	39.1712	39.1712	4.9800e-003	0.0000	39.2956
Worker	0.0177	0.0116	0.1167	3.0000e-004	0.0299	2.0000e-004	0.0301	7.9600e-003	1.8000e-004	8.1400e-003	0.0000	26.7371	26.7371	8.0000e-004	0.0000	26.7570
Total	**0.0243**	**0.2063**	**0.1499**	**7.1000e-004**	**0.0395**	**1.6100e-003**	**0.0411**	**0.0107**	**1.5300e-003**	**0.0123**	**0.0000**	**65.9083**	**65.9083**	**5.7800e-003**	**0.0000**	**66.0526**

3.5 Building Construction - 2020

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	tons/yr										MT/yr					
Off-Road	0.2777	2.5134	2.2072	3.5300e-003		0.1463	0.1463		0.1376	0.1376	0.0000	303.4091	303.4091	0.0740	0.0000	305.2596
Total	**0.2777**	**2.5134**	**2.2072**	**3.5300e-003**		**0.1463**	**0.1463**		**0.1376**	**0.1376**	**0.0000**	**303.4091**	**303.4091**	**0.0740**	**0.0000**	**305.2596**

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	tons/yr										MT/yr					
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	0.0000
Vendor	0.0196	0.6493	0.1037	1.4900e-003	0.0347	3.4400e-003	0.0382	0.0100	3.3000e-003	0.0133	0.0000	141.3153	141.3153	0.0175	0.0000	141.7520
Worker	0.0588	0.0373	0.3787	1.0400e-003	0.1089	7.0000e-004	0.1096	0.0290	6.5000e-004	0.0296	0.0000	94.2697	94.2697	2.5300e-003	0.0000	94.3329
Total	**0.0784**	**0.6866**	**0.4823**	**2.5300e-003**	**0.1437**	**4.1400e-003**	**0.1478**	**0.0390**	**3.9500e-003**	**0.0429**	**0.0000**	**235.5851**	**235.5851**	**0.0200**	**0.0000**	**236.0849**

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	tons/yr										MT/yr					
Off-Road	0.2777	2.5134	2.2072	3.5300e-003		0.1463	0.1463		0.1376	0.1376	0.0000	303.4087	303.4087	0.0740	0.0000	305.2592
Total	**0.2777**	**2.5134**	**2.2072**	**3.5300e-003**		**0.1463**	**0.1463**		**0.1376**	**0.1376**	**0.0000**	**303.4087**	**303.4087**	**0.0740**	**0.0000**	**305.2592**

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	tons/yr										MT/yr					
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	0.0000
Vendor	0.0196	0.6493	0.1037	1.4900e-003	0.0347	3.4400e-003	0.0382	0.0100	3.3000e-003	0.0133	0.0000	141.3153	141.3153	0.0175	0.0000	141.7520
Worker	0.0588	0.0373	0.3787	1.0400e-003	0.1089	7.0000e-004	0.1096	0.0290	6.5000e-004	0.0296	0.0000	94.2697	94.2697	2.5300e-003	0.0000	94.3329
Total	**0.0784**	**0.6866**	**0.4823**	**2.5300e-003**	**0.1437**	**4.1400e-003**	**0.1478**	**0.0390**	**3.9500e-003**	**0.0429**	**0.0000**	**235.5851**	**235.5851**	**0.0200**	**0.0000**	**236.0849**

3.5 Building Construction - 2021

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	tons/yr										MT/yr					
Off-Road	0.0817	0.7496	0.7127	1.1600e-003		0.0412	0.0412		0.0388	0.0388	0.0000	99.6040	99.6040	0.0240	0.0000	100.2048
Total	**0.0817**	**0.7496**	**0.7127**	**1.1600e-003**		**0.0412**	**0.0412**		**0.0388**	**0.0388**	**0.0000**	**99.6040**	**99.6040**	**0.0240**	**0.0000**	**100.2048**

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	tons/yr										MT/yr					
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	0.0000
Vendor	5.2000e-003	0.1936	0.0295	4.8000e-004	0.0114	5.2000e-004	0.0119	3.2900e-003	5.0000e-004	3.7900e-003	0.0000	45.9492	45.9492	5.5400e-003	0.0000	46.0878
Worker	0.0178	0.0109	0.1128	3.3000e-004	0.0358	2.2000e-004	0.0360	9.5000e-003	2.0000e-004	9.7100e-003	0.0000	29.8831	29.8831	7.4000e-004	0.0000	29.9016
Total	**0.0230**	**0.2045**	**0.1423**	**8.1000e-004**	**0.0472**	**7.4000e-004**	**0.0479**	**0.0128**	**7.0000e-004**	**0.0135**	**0.0000**	**75.8323**	**75.8323**	**6.2800e-003**	**0.0000**	**75.9893**

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	tons/yr										MT/yr					
Off-Road	0.0817	0.7496	0.7127	1.1600e-003		0.0412	0.0412		0.0388	0.0388	0.0000	99.6039	99.6039	0.0240	0.0000	100.2047
Total	**0.0817**	**0.7496**	**0.7127**	**1.1600e-003**		**0.0412**	**0.0412**		**0.0388**	**0.0388**	**0.0000**	**99.6039**	**99.6039**	**0.0240**	**0.0000**	**100.2047**

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	tons/yr										MT/yr					
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	0.0000
Vendor	5.2000e-003	0.1936	0.0295	4.8000e-004	0.0114	5.2000e-004	0.0119	3.2900e-003	5.0000e-004	3.7900e-003	0.0000	45.9492	45.9492	5.5400e-003	0.0000	46.0878
Worker	0.0178	0.0109	0.1128	3.3000e-004	0.0358	2.2000e-004	0.0360	9.5000e-003	2.0000e-004	9.7100e-003	0.0000	29.8831	29.8831	7.4000e-004	0.0000	29.9016
Total	**0.0230**	**0.2045**	**0.1423**	**8.1000e-004**	**0.0472**	**7.4000e-004**	**0.0479**	**0.0128**	**7.0000e-004**	**0.0135**	**0.0000**	**75.8323**	**75.8323**	**6.2800e-003**	**0.0000**	**75.9893**

3.6 Paving - 2021

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	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	6.3000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0132**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

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	tons/yr										MT/yr					
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	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	0.0000
Worker	6.0000e-004	3.7000e-004	3.7800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0023	1.0023	2.0000e-005	0.0000	1.0030
Total	**6.0000e-004**	**3.7000e-004**	**3.7800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0023**	**1.0023**	**2.0000e-005**	**0.0000**	**1.0030**

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	tons/yr										MT/yr					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	6.3000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0132**	**0.1292**	**0.1465**	**2.3000e-004**		**6.7800e-003**	**6.7800e-003**		**6.2400e-003**	**6.2400e-003**	**0.0000**	**20.0235**	**20.0235**	**6.4800e-003**	**0.0000**	**20.1854**

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	tons/yr										MT/yr					
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	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	0.0000
Worker	6.0000e-004	3.7000e-004	3.7800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0023	1.0023	2.0000e-005	0.0000	1.0030
Total	**6.0000e-004**	**3.7000e-004**	**3.7800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0023**	**1.0023**	**2.0000e-005**	**0.0000**	**1.0030**

3.7 Architectural Coating - 2021

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	tons/yr										MT/yr					
Archit. Coating	0.3415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.3437**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

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	tons/yr										MT/yr					
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	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	0.0000
Worker	8.4000e-004	5.1000e-004	5.3000e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4033	1.4033	3.0000e-005	0.0000	1.4041
Total	**8.4000e-004**	**5.1000e-004**	**5.3000e-003**	**2.0000e-005**	**1.6800e-003**	**1.0000e-005**	**1.6900e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4033**	**1.4033**	**3.0000e-005**	**0.0000**	**1.4041**

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	tons/yr										MT/yr					
Archit. Coating	0.3415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	**0.3437**	**0.0153**	**0.0182**	**3.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.8000e-004**	**0.0000**	**2.5576**

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	tons/yr										MT/yr					
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	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	0.0000
Worker	8.4000e-004	5.1000e-004	5.3000e-003	2.0000e-005	1.6800e-003	1.0000e-005	1.6900e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.4033	1.4033	3.0000e-005	0.0000	1.4041
Total	**8.4000e-004**	**5.1000e-004**	**5.3000e-003**	**2.0000e-005**	**1.6800e-003**	**1.0000e-005**	**1.6900e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.4033**	**1.4033**	**3.0000e-005**	**0.0000**	**1.4041**

CalEEMod Version: CalEEMod.2016.3.1 Date: 10/5/2017 9:53 AM

CSU Fresno Stadium Modernization Project

Fresno County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.00	Acre	3.00	130,680.00	0
Parking Lot	0.48	Acre	0.48	20,908.80	0
Arena	43.00	1000sqft	13.82	43,000.00	0
Other Non-Asphalt Surfaces	1.20	Acre	1.20	52,272.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CSU Fresno Stadium Modernization Project. Fresno County.

Land Use - Modified Land Use Based on Project Description. Development of a 43,000 sf sideline tower building, new concourses in four corners of the stadium, construction of a cross-aisle, and construction of a new plaza at the north entrance.

Construction Phase - Building Construction Assumed to Begin in July 2019 and completed by June 2021.

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Trips and VMT -

On-road Fugitive Dust - Use Defaults

Demolition - Demolition of Maintenance Building Based off Google Earth.

Grading - Assumed graded material to be balanced onsite.

Architectural Coating - Compliance with SJVAPCD Rule 4601, for non-flat coatings 150 g/l.

Construction Off-road Equipment Mitigation - Comply with SJVAPCD Rule 8021 : watering project site twice daily

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	300.00	420.00
tblConstructionPhase	PhaseEndDate	9/18/2020	6/25/2021
tblConstructionPhase	PhaseEndDate	7/24/2020	4/30/2021
tblConstructionPhase	PhaseEndDate	9/6/2019	9/20/2019
tblConstructionPhase	PhaseEndDate	8/21/2020	5/28/2021
tblConstructionPhase	PhaseStartDate	8/22/2020	5/29/2021
tblConstructionPhase	PhaseStartDate	9/7/2019	9/21/2019
tblConstructionPhase	PhaseStartDate	7/25/2020	5/1/2021
tblProjectCharacteristics	OperationalYear	2018	2022
tblVehicleTrips	ST_TR	10.71	0.00
tblVehicleTrips	SU_TR	10.71	0.00
tblVehicleTrips	WD_TR	10.71	0.00

2.0 Emissions Summary

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					
2019	4.8465	54.5781	34.0961	0.0637	18.2141	2.3913	20.6054	9.9699	2.2000	12.1699	0.0000	6,312.6755	6,312.6755	1.9478	0.0000	6,361.3711
2020	2.7778	24.3400	20.9257	0.0472	1.1254	1.1485	2.2738	0.3047	1.0802	1.3848	0.0000	4,627.9538	4,627.9538	0.7856	0.0000	4,647.5932
2021	34.4620	22.1186	20.2476	0.0467	1.1254	0.9757	2.1011	0.3047	0.9174	1.2221	0.0000	4,587.1031	4,587.1031	0.7714	0.0000	4,606.3889
Maximum	**34.4620**	**54.5781**	**34.0961**	**0.0637**	**18.2141**	**2.3913**	**20.6054**	**9.9699**	**2.2000**	**12.1699**	**0.0000**	**6,312.6755**	**6,312.6755**	**1.9478**	**0.0000**	**6,361.3711**

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					
2019	4.8465	54.5781	34.0961	0.0637	8.2777	2.3913	10.6690	4.5080	2.2000	6.7080	0.0000	6,312.6755	6,312.6755	1.9478	0.0000	6,361.3711
2020	2.7778	24.3400	20.9257	0.0472	1.1254	1.1485	2.2738	0.3047	1.0802	1.3848	0.0000	4,627.9538	4,627.9538	0.7856	0.0000	4,647.5932
2021	34.4620	22.1186	20.2476	0.0467	1.1254	0.9757	2.1011	0.3047	0.9174	1.2221	0.0000	4,587.1031	4,587.1031	0.7714	0.0000	4,606.3889
Maximum	**34.4620**	**54.5781**	**34.0961**	**0.0637**	**8.2777**	**2.3913**	**10.6690**	**4.5080**	**2.2000**	**6.7080**	**0.0000**	**6,312.6755**	**6,312.6755**	**1.9478**	**0.0000**	**6,361.3711**

	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**	**48.55**	**0.00**	**39.78**	**51.63**	**0.00**	**36.96**	**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	7/1/2019	7/26/2019	5	20	
2	Site Preparation	Site Preparation	7/27/2019	8/9/2019	5	10	
3	Grading	Grading	8/10/2019	9/20/2019	5	30	
4	Building Construction	Building Construction	9/21/2019	4/30/2021	5	420	
5	Paving	Paving	5/1/2021	5/28/2021	5	20	
6	Architectural Coating	Architectural Coating	5/29/2021	6/25/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 4.68

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 64,500; Non-Residential Outdoor: 21,500; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20

Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
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
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Scrapers	2	8.00	367	0.48

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	6	15.00	0.00	95.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	104.00	40.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	21.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

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					1.0277	0.0000	1.0277	0.1556	0.0000	0.1556			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**1.0277**	**1.7949**	**2.8226**	**0.1556**	**1.6697**	**1.8253**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

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	0.0405	1.3965	0.1807	3.8800e-003	0.0832	5.5100e-003	0.0887	0.0228	5.2800e-003	0.0281		407.1220	407.1220	0.0342		407.9770
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
Worker	0.0807	0.0434	0.5395	1.3000e-003	0.1232	7.9000e-004	0.1240	0.0327	7.3000e-004	0.0334		129.4920	129.4920	3.8900e-003		129.5893
Total	**0.1212**	**1.4399**	**0.7202**	**5.1800e-003**	**0.2064**	**6.3000e-003**	**0.2127**	**0.0555**	**6.0100e-003**	**0.0615**		**536.6140**	**536.6140**	**0.0381**		**537.5663**

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					0.4625	0.0000	0.4625	0.0700	0.0000	0.0700			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.4625**	**1.7949**	**2.2574**	**0.0700**	**1.6697**	**1.7397**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

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	0.0405	1.3965	0.1807	3.8800e-003	0.0832	5.5100e-003	0.0887	0.0228	5.2800e-003	0.0281		407.1220	407.1220	0.0342		407.9770
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
Worker	0.0807	0.0434	0.5395	1.3000e-003	0.1232	7.9000e-004	0.1240	0.0327	7.3000e-004	0.0334		129.4920	129.4920	3.8900e-003		129.5893
Total	**0.1212**	**1.4399**	**0.7202**	**5.1800e-003**	**0.2064**	**6.3000e-003**	**0.2127**	**0.0555**	**6.0100e-003**	**0.0615**		**536.6140**	**536.6140**	**0.0381**		**537.5663**

3.3 Site Preparation - 2019

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	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**		**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

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
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
Worker	0.0968	0.0521	0.6474	1.5600e-003	0.1479	9.5000e-004	0.1488	0.0392	8.8000e-004	0.0401		155.3904	155.3904	4.6700e-003		155.5072
Total	**0.0968**	**0.0521**	**0.6474**	**1.5600e-003**	**0.1479**	**9.5000e-004**	**0.1488**	**0.0392**	**8.8000e-004**	**0.0401**		**155.3904**	**155.3904**	**4.6700e-003**		**155.5072**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**8.1298**	**2.3904**	**10.5202**	**4.4688**	**2.1991**	**6.6679**	**0.0000**	**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

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
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
Worker	0.0968	0.0521	0.6474	1.5600e-003	0.1479	9.5000e-004	0.1488	0.0392	8.8000e-004	0.0401		155.3904	155.3904	4.6700e-003		155.5072
Total	**0.0968**	**0.0521**	**0.6474**	**1.5600e-003**	**0.1479**	**9.5000e-004**	**0.1488**	**0.0392**	**8.8000e-004**	**0.0401**		**155.3904**	**155.3904**	**4.6700e-003**		**155.5072**

3.4 Grading - 2019

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.6733**	**2.3827**	**11.0560**	**3.5965**	**2.1920**	**5.7885**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

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
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
Worker	0.1076	0.0579	0.7194	1.7400e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		172.6560	172.6560	5.1900e-003		172.7857
Total	**0.1076**	**0.0579**	**0.7194**	**1.7400e-003**	**0.1643**	**1.0600e-003**	**0.1654**	**0.0436**	**9.8000e-004**	**0.0446**		**172.6560**	**172.6560**	**5.1900e-003**		**172.7857**

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					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**3.9030**	**2.3827**	**6.2857**	**1.6184**	**2.1920**	**3.8105**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

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
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
Worker	0.1076	0.0579	0.7194	1.7400e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		172.6560	172.6560	5.1900e-003		172.7857
Total	**0.1076**	**0.0579**	**0.7194**	**1.7400e-003**	**0.1643**	**1.0600e-003**	**0.1654**	**0.0436**	**9.8000e-004**	**0.0446**		**172.6560**	**172.6560**	**5.1900e-003**		**172.7857**

3.5 Building Construction - 2019

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	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

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
Vendor	0.1816	5.3244	0.8579	0.0116	0.2710	0.0389	0.3100	0.0780	0.0372	0.1153		1,215.3046	1,215.3046	0.1445		1,218.9165
Worker	0.5593	0.3010	3.7406	9.0200e-003	0.8543	5.5100e-003	0.8598	0.2266	5.0700e-003	0.2317		897.8113	897.8113	0.0270		898.4858
Total	**0.7410**	**5.6254**	**4.5985**	**0.0206**	**1.1254**	**0.0444**	**1.1698**	**0.3046**	**0.0423**	**0.3470**		**2,113.1159**	**2,113.1159**	**0.1715**		**2,117.4022**

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	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

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
Vendor	0.1816	5.3244	0.8579	0.0116	0.2710	0.0389	0.3100	0.0780	0.0372	0.1153		1,215.3046	1,215.3046	0.1445		1,218.9165
Worker	0.5593	0.3010	3.7406	9.0200e-003	0.8543	5.5100e-003	0.8598	0.2266	5.0700e-003	0.2317		897.8113	897.8113	0.0270		898.4858
Total	**0.7410**	**5.6254**	**4.5985**	**0.0206**	**1.1254**	**0.0444**	**1.1698**	**0.3046**	**0.0423**	**0.3470**		**2,113.1159**	**2,113.1159**	**0.1715**		**2,117.4022**

3.5 Building Construction - 2020

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	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

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
Vendor	0.1472	4.8887	0.7327	0.0115	0.2710	0.0261	0.2971	0.0780	0.0249	0.1030		1,204.9379	1,204.9379	0.1392		1,208.4171
Worker	0.5108	0.2653	3.3445	8.7400e-003	0.8543	5.3500e-003	0.8597	0.2266	4.9200e-003	0.2315		869.9529	869.9529	0.0236		870.5417
Total	**0.6580**	**5.1540**	**4.0772**	**0.0202**	**1.1254**	**0.0314**	**1.1568**	**0.3047**	**0.0299**	**0.3345**		**2,074.8908**	**2,074.8908**	**0.1627**		**2,078.9587**

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	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

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
Vendor	0.1472	4.8887	0.7327	0.0115	0.2710	0.0261	0.2971	0.0780	0.0249	0.1030		1,204.9379	1,204.9379	0.1392		1,208.4171
Worker	0.5108	0.2653	3.3445	8.7400e-003	0.8543	5.3500e-003	0.8597	0.2266	4.9200e-003	0.2315		869.9529	869.9529	0.0236		870.5417
Total	**0.6580**	**5.1540**	**4.0772**	**0.0202**	**1.1254**	**0.0314**	**1.1568**	**0.3047**	**0.0299**	**0.3345**		**2,074.8908**	**2,074.8908**	**0.1627**		**2,078.9587**

3.5 Building Construction - 2021

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	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

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
Vendor	0.1187	4.4504	0.6318	0.0114	0.2710	0.0119	0.2829	0.0780	0.0114	0.0894		1,193.6158	1,193.6158	0.1345		1,196.9772
Worker	0.4716	0.2361	3.0406	8.4300e-003	0.8543	5.1800e-003	0.8595	0.2266	4.7700e-003	0.2314		840.1234	840.1234	0.0210		840.6475
Total	**0.5902**	**4.6865**	**3.6724**	**0.0198**	**1.1254**	**0.0171**	**1.1424**	**0.3047**	**0.0161**	**0.3208**		**2,033.7392**	**2,033.7392**	**0.1554**		**2,037.6246**

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	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

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
Vendor	0.1187	4.4504	0.6318	0.0114	0.2710	0.0119	0.2829	0.0780	0.0114	0.0894		1,193.6158	1,193.6158	0.1345		1,196.9772
Worker	0.4716	0.2361	3.0406	8.4300e-003	0.8543	5.1800e-003	0.8595	0.2266	4.7700e-003	0.2314		840.1234	840.1234	0.0210		840.6475
Total	**0.5902**	**4.6865**	**3.6724**	**0.0198**	**1.1254**	**0.0171**	**1.1424**	**0.3047**	**0.0161**	**0.3208**		**2,033.7392**	**2,033.7392**	**0.1554**		**2,037.6246**

3.6 Paving - 2021

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	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3184**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**		**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

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
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
Worker	0.0680	0.0341	0.4385	1.2200e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		121.1716	121.1716	3.0200e-003		121.2472
Total	**0.0680**	**0.0341**	**0.4385**	**1.2200e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**121.1716**	**121.1716**	**3.0200e-003**		**121.2472**

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	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3184**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**	**0.0000**	**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

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
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
Worker	0.0680	0.0341	0.4385	1.2200e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		121.1716	121.1716	3.0200e-003		121.2472
Total	**0.0680**	**0.0341**	**0.4385**	**1.2200e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**121.1716**	**121.1716**	**3.0200e-003**		**121.2472**

3.7 Architectural Coating - 2021

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	34.1479					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**34.3668**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

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
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
Worker	0.0952	0.0477	0.6140	1.7000e-003	0.1725	1.0500e-003	0.1736	0.0458	9.6000e-004	0.0467		169.6403	169.6403	4.2300e-003		169.7461
Total	**0.0952**	**0.0477**	**0.6140**	**1.7000e-003**	**0.1725**	**1.0500e-003**	**0.1736**	**0.0458**	**9.6000e-004**	**0.0467**		**169.6403**	**169.6403**	**4.2300e-003**		**169.7461**

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	34.1479					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**34.3668**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

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
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
Worker	0.0952	0.0477	0.6140	1.7000e-003	0.1725	1.0500e-003	0.1736	0.0458	9.6000e-004	0.0467		169.6403	169.6403	4.2300e-003		169.7461
Total	**0.0952**	**0.0477**	**0.6140**	**1.7000e-003**	**0.1725**	**1.0500e-003**	**0.1736**	**0.0458**	**9.6000e-004**	**0.0467**		**169.6403**	**169.6403**	**4.2300e-003**		**169.7461**

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CSU Fresno Stadium Modernization Project

Fresno County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	3.00	Acre	3.00	130,680.00	0
Parking Lot	0.48	Acre	0.48	20,908.80	0
Arena	43.00	1000sqft	13.82	43,000.00	0
Other Non-Asphalt Surfaces	1.20	Acre	1.20	52,272.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CSU Fresno Stadium Modernization Project. Fresno County.

Land Use - Modified Land Use Based on Project Description. Development of a 43,000 sf sideline tower building, new concourses in four corners of the stadium, construction of a cross-aisle, and construction of a new plaza at the north entrance.

Construction Phase - Building Construction Assumed to Begin in July 2019 and completed by June 2021.

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Off-road Equipment - Assume Default Construction Equipment

Trips and VMT -

On-road Fugitive Dust - Use Defaults

Demolition - Demolition of Maintenance Building Based off Google Earth.

Grading - Assumed graded material to be balanced onsite.

Architectural Coating - Compliance with SJVAPCD Rule 4601, for non-flat coatings 150 g/l.

Construction Off-road Equipment Mitigation - Comply with SJVAPCD Rule 8021 : watering project site twice daily

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	0
tblConstructionPhase	NumDays	300.00	420.00
tblConstructionPhase	PhaseEndDate	9/18/2020	6/25/2021
tblConstructionPhase	PhaseEndDate	7/24/2020	4/30/2021
tblConstructionPhase	PhaseEndDate	9/6/2019	9/20/2019
tblConstructionPhase	PhaseEndDate	8/21/2020	5/28/2021
tblConstructionPhase	PhaseStartDate	8/22/2020	5/29/2021
tblConstructionPhase	PhaseStartDate	9/7/2019	9/21/2019
tblConstructionPhase	PhaseStartDate	7/25/2020	5/1/2021
tblProjectCharacteristics	OperationalYear	2018	2022
tblVehicleTrips	ST_TR	10.71	0.00
tblVehicleTrips	SU_TR	10.71	0.00
tblVehicleTrips	WD_TR	10.71	0.00

2.0 Emissions Summary

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					
2019	4.8387	54.5883	33.9925	0.0635	18.2141	2.3913	20.6054	9.9699	2.2000	12.1699	0.0000	6,291.3465	6,291.3465	1.9472	0.0000	6,340.0272
2020	2.7474	24.4430	20.5679	0.0457	1.1254	1.1490	2.2744	0.3047	1.0807	1.3854	0.0000	4,482.7544	4,482.7544	0.8013	0.0000	4,502.7863
2021	34.4552	22.1976	19.9136	0.0453	1.1254	0.9762	2.1015	0.3047	0.9179	1.2225	0.0000	4,445.9096	4,445.9096	0.7871	0.0000	4,465.5867
Maximum	**34.4552**	**54.5883**	**33.9925**	**0.0635**	**18.2141**	**2.3913**	**20.6054**	**9.9699**	**2.2000**	**12.1699**	**0.0000**	**6,291.3465**	**6,291.3465**	**1.9472**	**0.0000**	**6,340.0272**

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					
2019	4.8387	54.5883	33.9925	0.0635	8.2777	2.3913	10.6690	4.5080	2.2000	6.7080	0.0000	6,291.3465	6,291.3465	1.9472	0.0000	6,340.0272
2020	2.7474	24.4430	20.5679	0.0457	1.1254	1.1490	2.2744	0.3047	1.0807	1.3854	0.0000	4,482.7544	4,482.7544	0.8013	0.0000	4,502.7863
2021	34.4552	22.1976	19.9136	0.0453	1.1254	0.9762	2.1015	0.3047	0.9179	1.2225	0.0000	4,445.9096	4,445.9096	0.7871	0.0000	4,465.5867
Maximum	**34.4552**	**54.5883**	**33.9925**	**0.0635**	**8.2777**	**2.3913**	**10.6690**	**4.5080**	**2.2000**	**6.7080**	**0.0000**	**6,291.3465**	**6,291.3465**	**1.9472**	**0.0000**	**6,340.0272**

	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**	**48.55**	**0.00**	**39.78**	**51.63**	**0.00**	**36.96**	**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	7/1/2019	7/26/2019	5	20	
2	Site Preparation	Site Preparation	7/27/2019	8/9/2019	5	10	
3	Grading	Grading	8/10/2019	9/20/2019	5	30	
4	Building Construction	Building Construction	9/21/2019	4/30/2021	5	420	
5	Paving	Paving	5/1/2021	5/28/2021	5	20	
6	Architectural Coating	Architectural Coating	5/29/2021	6/25/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 4.68

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 64,500; Non-Residential Outdoor: 21,500; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74

Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
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
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Scrapers	2	8.00	367	0.48

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	6	15.00	0.00	95.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	104.00	40.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	21.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

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					1.0277	0.0000	1.0277	0.1556	0.0000	0.1556			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**1.0277**	**1.7949**	**2.8226**	**0.1556**	**1.6697**	**1.8253**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

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	0.0419	1.4364	0.2053	3.8000e-003	0.0832	5.6300e-003	0.0888	0.0228	5.3900e-003	0.0282		398.4508	398.4508	0.0386		399.4146
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
Worker	0.0748	0.0511	0.4618	1.1400e-003	0.1232	7.9000e-004	0.1240	0.0327	7.3000e-004	0.0334		113.4953	113.4953	3.4400e-003		113.5814
Total	**0.1167**	**1.4875**	**0.6671**	**4.9400e-003**	**0.2064**	**6.4200e-003**	**0.2128**	**0.0555**	**6.1200e-003**	**0.0616**		**511.9460**	**511.9460**	**0.0420**		**512.9959**

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					0.4625	0.0000	0.4625	0.0700	0.0000	0.0700			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.4625**	**1.7949**	**2.2574**	**0.0700**	**1.6697**	**1.7397**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

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	0.0419	1.4364	0.2053	3.8000e-003	0.0832	5.6300e-003	0.0888	0.0228	5.3900e-003	0.0282		398.4508	398.4508	0.0386		399.4146
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
Worker	0.0748	0.0511	0.4618	1.1400e-003	0.1232	7.9000e-004	0.1240	0.0327	7.3000e-004	0.0334		113.4953	113.4953	3.4400e-003		113.5814
Total	**0.1167**	**1.4875**	**0.6671**	**4.9400e-003**	**0.2064**	**6.4200e-003**	**0.2128**	**0.0555**	**6.1200e-003**	**0.0616**		**511.9460**	**511.9460**	**0.0420**		**512.9959**

3.3 Site Preparation - 2019

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	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**		**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

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
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
Worker	0.0898	0.0613	0.5541	1.3700e-003	0.1479	9.5000e-004	0.1488	0.0392	8.8000e-004	0.0401		136.1943	136.1943	4.1300e-003		136.2976
Total	**0.0898**	**0.0613**	**0.5541**	**1.3700e-003**	**0.1479**	**9.5000e-004**	**0.1488**	**0.0392**	**8.8000e-004**	**0.0401**		**136.1943**	**136.1943**	**4.1300e-003**		**136.2976**

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**8.1298**	**2.3904**	**10.5202**	**4.4688**	**2.1991**	**6.6679**	**0.0000**	**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

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
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
Worker	0.0898	0.0613	0.5541	1.3700e-003	0.1479	9.5000e-004	0.1488	0.0392	8.8000e-004	0.0401		136.1943	136.1943	4.1300e-003		136.2976
Total	**0.0898**	**0.0613**	**0.5541**	**1.3700e-003**	**0.1479**	**9.5000e-004**	**0.1488**	**0.0392**	**8.8000e-004**	**0.0401**		**136.1943**	**136.1943**	**4.1300e-003**		**136.2976**

3.4 Grading - 2019

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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.6733**	**2.3827**	**11.0560**	**3.5965**	**2.1920**	**5.7885**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

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
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
Worker	0.0998	0.0681	0.6157	1.5200e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		151.3270	151.3270	4.5900e-003		151.4418
Total	**0.0998**	**0.0681**	**0.6157**	**1.5200e-003**	**0.1643**	**1.0600e-003**	**0.1654**	**0.0436**	**9.8000e-004**	**0.0446**		**151.3270**	**151.3270**	**4.5900e-003**		**151.4418**

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					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**3.9030**	**2.3827**	**6.2857**	**1.6184**	**2.1920**	**3.8105**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

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
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
Worker	0.0998	0.0681	0.6157	1.5200e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		151.3270	151.3270	4.5900e-003		151.4418
Total	**0.0998**	**0.0681**	**0.6157**	**1.5200e-003**	**0.1643**	**1.0600e-003**	**0.1654**	**0.0436**	**9.8000e-004**	**0.0446**		**151.3270**	**151.3270**	**4.5900e-003**		**151.4418**

3.5 Building Construction - 2019

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	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

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
Vendor	0.1890	5.3996	1.0107	0.0112	0.2710	0.0396	0.3107	0.0780	0.0379	0.1160		1,177.4736	1,177.4736	0.1633		1,181.5572
Worker	0.5189	0.3542	3.2017	7.9100e-003	0.8543	5.5100e-003	0.8598	0.2266	5.0700e-003	0.2317		786.9005	786.9005	0.0239		787.4974
Total	**0.7078**	**5.7538**	**4.2124**	**0.0192**	**1.1254**	**0.0452**	**1.1705**	**0.3046**	**0.0430**	**0.3476**		**1,964.3741**	**1,964.3741**	**0.1872**		**1,969.0546**

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	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

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
Vendor	0.1890	5.3996	1.0107	0.0112	0.2710	0.0396	0.3107	0.0780	0.0379	0.1160		1,177.4736	1,177.4736	0.1633		1,181.5572
Worker	0.5189	0.3542	3.2017	7.9100e-003	0.8543	5.5100e-003	0.8598	0.2266	5.0700e-003	0.2317		786.9005	786.9005	0.0239		787.4974
Total	**0.7078**	**5.7538**	**4.2124**	**0.0192**	**1.1254**	**0.0452**	**1.1705**	**0.3046**	**0.0430**	**0.3476**		**1,964.3741**	**1,964.3741**	**0.1872**		**1,969.0546**

3.5 Building Construction - 2020

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	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

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
Vendor	0.1538	4.9451	0.8709	0.0111	0.2710	0.0266	0.2977	0.0780	0.0255	0.1035		1,167.2618	1,167.2618	0.1577		1,171.2036
Worker	0.4738	0.3119	2.8485	7.6600e-003	0.8543	5.3500e-003	0.8597	0.2266	4.9200e-003	0.2315		762.4296	762.4296	0.0207		762.9482
Total	**0.6276**	**5.2570**	**3.7194**	**0.0188**	**1.1254**	**0.0320**	**1.1573**	**0.3047**	**0.0304**	**0.3350**		**1,929.6914**	**1,929.6914**	**0.1784**		**1,934.1518**

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	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

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
Vendor	0.1538	4.9451	0.8709	0.0111	0.2710	0.0266	0.2977	0.0780	0.0255	0.1035		1,167.2618	1,167.2618	0.1577		1,171.2036
Worker	0.4738	0.3119	2.8485	7.6600e-003	0.8543	5.3500e-003	0.8597	0.2266	4.9200e-003	0.2315		762.4296	762.4296	0.0207		762.9482
Total	**0.6276**	**5.2570**	**3.7194**	**0.0188**	**1.1254**	**0.0320**	**1.1573**	**0.3047**	**0.0304**	**0.3350**		**1,929.6914**	**1,929.6914**	**0.1784**		**1,934.1518**

3.5 Building Construction - 2021

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	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

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
Vendor	0.1248	4.4880	0.7589	0.0110	0.2710	0.0124	0.2834	0.0780	0.0118	0.0899		1,156.2362	1,156.2362	0.1526		1,160.0521
Worker	0.4378	0.2774	2.5795	7.3900e-003	0.8543	5.1800e-003	0.8595	0.2266	4.7700e-003	0.2314		736.3095	736.3095	0.0184		736.7703
Total	**0.5626**	**4.7655**	**3.3384**	**0.0184**	**1.1254**	**0.0175**	**1.1429**	**0.3047**	**0.0166**	**0.3212**		**1,892.5457**	**1,892.5457**	**0.1711**		**1,896.8225**

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	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

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
Vendor	0.1248	4.4880	0.7589	0.0110	0.2710	0.0124	0.2834	0.0780	0.0118	0.0899		1,156.2362	1,156.2362	0.1526		1,160.0521
Worker	0.4378	0.2774	2.5795	7.3900e-003	0.8543	5.1800e-003	0.8595	0.2266	4.7700e-003	0.2314		736.3095	736.3095	0.0184		736.7703
Total	**0.5626**	**4.7655**	**3.3384**	**0.0184**	**1.1254**	**0.0175**	**1.1429**	**0.3047**	**0.0166**	**0.3212**		**1,892.5457**	**1,892.5457**	**0.1711**		**1,896.8225**

3.6 Paving - 2021

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	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3184**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**		**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

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
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
Worker	0.0632	0.0400	0.3720	1.0700e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		106.1985	106.1985	2.6600e-003		106.2650
Total	**0.0632**	**0.0400**	**0.3720**	**1.0700e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**106.1985**	**106.1985**	**2.6600e-003**		**106.2650**

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	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.0629					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3184**	**12.9191**	**14.6532**	**0.0228**		**0.6777**	**0.6777**		**0.6235**	**0.6235**	**0.0000**	**2,207.2109**	**2,207.2109**	**0.7139**		**2,225.0573**

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
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
Worker	0.0632	0.0400	0.3720	1.0700e-003	0.1232	7.5000e-004	0.1240	0.0327	6.9000e-004	0.0334		106.1985	106.1985	2.6600e-003		106.2650
Total	**0.0632**	**0.0400**	**0.3720**	**1.0700e-003**	**0.1232**	**7.5000e-004**	**0.1240**	**0.0327**	**6.9000e-004**	**0.0334**		**106.1985**	**106.1985**	**2.6600e-003**		**106.2650**

3.7 Architectural Coating - 2021

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	34.1479					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**34.3668**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

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
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
Worker	0.0884	0.0560	0.5209	1.4900e-003	0.1725	1.0500e-003	0.1736	0.0458	9.6000e-004	0.0467		148.6779	148.6779	3.7200e-003		148.7709
Total	**0.0884**	**0.0560**	**0.5209**	**1.4900e-003**	**0.1725**	**1.0500e-003**	**0.1736**	**0.0458**	**9.6000e-004**	**0.0467**		**148.6779**	**148.6779**	**3.7200e-003**		**148.7709**

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	34.1479					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**34.3668**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

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
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
Worker	0.0884	0.0560	0.5209	1.4900e-003	0.1725	1.0500e-003	0.1736	0.0458	9.6000e-004	0.0467		148.6779	148.6779	3.7200e-003		148.7709
Total	**0.0884**	**0.0560**	**0.5209**	**1.4900e-003**	**0.1725**	**1.0500e-003**	**0.1736**	**0.0458**	**9.6000e-004**	**0.0467**		**148.6779**	**148.6779**	**3.7200e-003**		**148.7709**

APPENDIX C

Noise Study

DUDEK

1102 R STREET
SACRAMENTO, CALIFORNIA 95811
T 916.443.8335 F 916.443.5113

MEMORANDUM

To:	Sara Mitchell, Interim Director of Planning, Design and Construction
From:	Christopher Barnobi and Jonathan Leech, Dudek
Subject:	California State University Fresno, Bulldog Stadium Modernization Project Noise Analysis
Date:	November 2017
Cc:	Ann Sansevero, Dudek
Attachment(s):	A – Acoustic Definitions and Discussion; Sound and Vibration Background B – Summary of 1988 Acoustical Measurements C – Roadway Construction Noise Model Results

This memorandum presents the results of a noise assessment for the proposed California State University Fresno (Fresno State), Bulldog Stadium Modernization Project (Project). Project background information is in Section 1. Noise significance criteria are described in Section 2. Section 3 presents results from noise measurements conducted in the Project vicinity. Mechanical and operational noise from the Project is discussed in Section 4. Construction noise is addressed in Section 5. Mitigation measures are included in Section 6. Attachment A presents a discussion of the fundamentals of environmental noise and vibration for those who may not be familiar with the acoustical terminology or concepts referenced in this assessment. Attachment B includes a detailed summary of noise measurements conducted in 1988 from a previous noise analysis for the prior stadium modernization. Attachment C includes construction noise analysis details.

1 PROJECT BACKGROUND

1.1 Project Location

Bulldog Stadium is located to the west of campus and is bounded by East Barstow Avenue to the north, North Cedar Avenue to the east, East Bulldog Lane to the south, and North Millbrook Avenue to the west. Residential development surrounds the stadium to the north, west, and south.

1.2 Project Components

The Project would include remodeling the existing stadium to transform the identity of the stadium and to improve fan amenities throughout the stadium, spectator access to seating, and press and media facilities. Utility improvements, new lighting and landscaping, and a loading

dock would also be provided, but no vehicle access or parking improvements would be implemented. There would be approximately 38,155 seats when modifications are complete, which is a reduction in the existing seat count (approximately 41,193).

Modifications to the seating bowl include demolition to provide room for a new cross aisle. The new cross aisle will include platforms for new Americans with Disabilities Act–compliant seating and will be connected to all stadium quadrants for accessibility. Another major component of the Project is the construction of a new three-story building that will be situated at the top of the western sideline stands. The existing press box structure at the top of the western sideline seating will be demolished. The new structure will house a club lounge, private suites, and press facilities with concessions, amenities, and views to the playing field. The existing eastern sideline buildings will not be modified as part of the Project.

The primary entrances to the stadium behind the end zones would be modified to provide new branding and signage. The northern plaza between East Barstow Avenue and the stadium would be enlarged, regraded, and repaved to become a more inviting entrance with additional queuing for stadium visitors. The southern entrance plaza would not be modified as part of the Project. New concessions and restrooms would be constructed near these entrances.

Four new concourse plazas would be constructed as open plazas or sunken courtyards in each quadrant of the stadium. The plazas would be constructed by excavating into the middle of the existing berm and locating the plazas at heights that would be fully accessible to the new cross-aisle via a large tunnel on the south and voids in the seating bowl in the north. The concourse plazas would provide views of the playing field approximately 35 feet below and would be accessible to the new concessions and restrooms. Stairs and/or elevators would be provided in the plazas to ascend the berm.

The existing maintenance building located on the west side of the Project site and north of the practice fields would be removed and replaced with a TV truck compound and utility yard. The utility yard would contain a new central plant and facilities for TV trucks to park and access power and communication services.

The new central plant would supply cooling and heating water. Inside the new mechanical room there would be two condensing natural gas boilers, two variable volume chilled water circulating pumps, and two variable volume heating water circulating pumps. Air distribution systems would be provided by a Variable Air Volume system for the club level. Hot water would be provided by high-efficiency (condensing) gas-fired domestic boilers. Condensation from air conditioning mechanical equipment would also be collected and connect to rainwater harvest system to further assist with irrigation supply needs. The Project would continue to be served by

the existing 12-kilovolt overhead distribution line located west of the Project site. A 500-kilowatt diesel emergency generator would also be installed in the utility yard by the central plant.

The Project includes replacement lighting and other utility upgrades to provide connection to existing water and wastewater services, but does not require any modifications to the existing parking or access routes into and out of the stadium.

1.3 Project Operations

The stadium is currently used for football practice, starting in summer and through the football season, and for football games during the pre-season, regular season, and playoffs, which run from September through November. The regular season consists of approximately six to eight games. The majority of games are held on Saturdays, depending on television contracts scheduling requirements. The Project would not change the use of the stadium for football practice and games, or the scheduling of games.

As indicated above, the Project would reduce the overall capacity of the stadium from 41,193 to 38,155, a reduction of 3,038 seats. This reduction in capacity with the Project is not expected to reduce game-day attendance given that the 5-year game average attendance is only 22,233, or about half of the existing capacity. Attendance at games varies substantially depending on how well the Bulldogs are performing in a given season, what team they are playing, and other factors such as the weather. While the Project would improve fan amenities and access, it is still expected that the factors stated above about team performance would continue to drive attendance to football games. The stadium would continue to be used for other campus sports events (e.g., soccer). The Project would not change the frequency or size of these events. The frequency and size of private events may increase somewhat with the Project. From approximately 5 events a year with 25 to 80 people per event, to approximately 12 events a year with a maximum of approximately 2,000 people per event. These events are small in comparison to game-day attendance.

The Project could result in the need for up to two new full-time staff to manage private events. To serve visitors in new areas of the stadium (tower building and new concourses) up to 25 new part-time employees/vendor staff would be required to serve new vendor locations, and provide security and ushering in new locations during games.

1.4 Project Construction

Demolition activities and then construction of the Project is anticipated to commence in 2019/2020 and last for approximately 18 to 24 months. Temporary construction parking could also occur in the parking lot to the south of the stadium. Construction workers would access the

construction site primarily via East Bulldog Lane. Construction hours would be from 7:00 a.m. to 5:00 p.m., Monday through Friday.

1.5 Sensitive Receptors

The nearest receivers are located north of the stadium across East Barstow Avenue and approximately 300 feet from the stadium. These, along with other residential developments to the west and south of the stadium, are mostly composed of students. Single-family homes exist northwest of the stadium and are considered more noise sensitive than the student population that will likely be active participants during stadium events.

2 NOISE SIGNIFICANCE CRITERIA

The significance criteria used to evaluate the impacts of the Project related to noise are based on Appendix G of the CEQA Guidelines; applicable agency plans, policies, and/or guidelines; and agency and professional standards. Based on the above, a significant impact related to noise would occur if the Project would result in:

1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

With regards to significance criteria #1 above, the City of Fresno does not have jurisdictional or approval authority over the Project. Therefore, the City's General Plan and Noise Ordinance and associated standards do not apply to the Project. Additionally, Fresno State and the CSU System do not have applicable standards to compare the noise levels of the Project to. Therefore, significance criteria #1 is not further discussed in the analysis.

3 EXISTING CONDITIONS

Both long- and short-term noise measurements were taken during the preparation of this noise analysis to characterize existing noise conditions.

3.1 Long-Term Noise Measurements

The Noise Report for the *Master Plan Revision and Football Stadium Expansion Environmental Impact Report* (Fresno State 1989, Appendix B) analyzed the previous stadium expansion project. Continuous noise measurements were taken at a location at the end of East Portals Avenue between 5:40 p.m. and 9:00 a.m. in September 1988. During the measurements, there was a football game that started at 7:00 p.m. and ended at approximately 10:30 p.m.

Attachment B includes a summary of the results from those measurements, which include the L_{eq}, or energy average sound level for each hour at the long-term location, and the L_{01}, L_{10}, L_{50}, and L_{90} percentile noise levels. These are the levels that exceeded 1%, 10%, 50%, and 90% of the time, respectively. The previous noise report specified L_{90} as representative of the typical background noise level in the area, and L_{01} as representative of the recurring instantaneous maximum noise levels (Fresno State 1989).

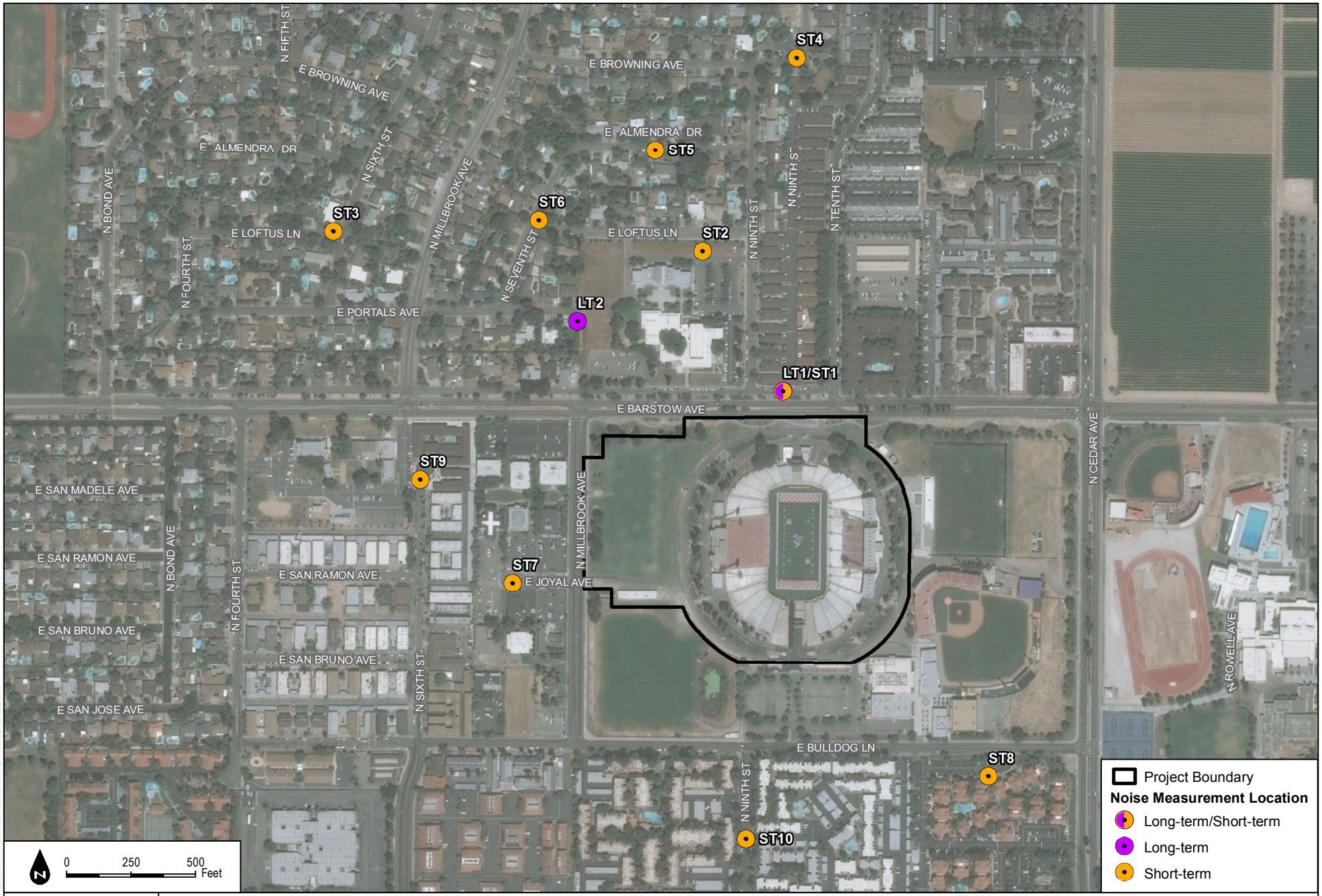
Dudek visited the Project site on May 24, 2017, to measure ambient sound levels in the vicinity. Christopher Barnobi (Dudek) conducted the sound level measurements. For the long-term measurements, two SoftDB Model Piccolo integrating sound level meters were used. The Piccolo sound level meters meet the American National Standards Institute standard for a Type 2 general purpose sound level meter.

The measurements were conducted during a spring academic session on a day when no events were occurring at the stadium. The atmospheric conditions during the measurements were as follows: it was overcast with a light wind of 9 miles per hour to the northwest, and the temperature was 88 degrees Fahrenheit (°F) with a dew point of 53°.

On Figure 1, long term (LT#) and short term (ST#) measurement location are shown in the Project vicinity. Figure 2 shows a comparison of the long-term measurements from 1988 compared to the measurements conducted recently to assess the existing ambient sound levels using a bar graph. LT2 was positioned in the same location as the 1988 measurements.

The thicker green bar at 5:40 p.m. on Figure 2 indicates that this 1988 measurement was only 20 minutes long. The 2017 measurements were a full hour long starting at approximately 5:00 p.m. The hourly comparisons between LT2 and the 1988 measurements show that a game night has higher levels from the afternoon to approximately 1:00 a.m. LT1 has consistently higher levels than LT2 due to the close proximity to East Barstow Avenue. Between 5:40 p.m. and midnight, the 1988 measurements were consistently 5 to 10 dB greater than the 2017 measurements at the same location (LT2).

The calculated Community Noise Equivalent Levels (CNELs) based on the 2017 long-term measurements are shown in Table 2.



DUDEK

SOURCE: Fresno County GIS, 2017; Bing Maps 2017

FIGURE 1

Noise Measurement Locations

Fresno State Bulldog Stadium Modernization Project IS/MND

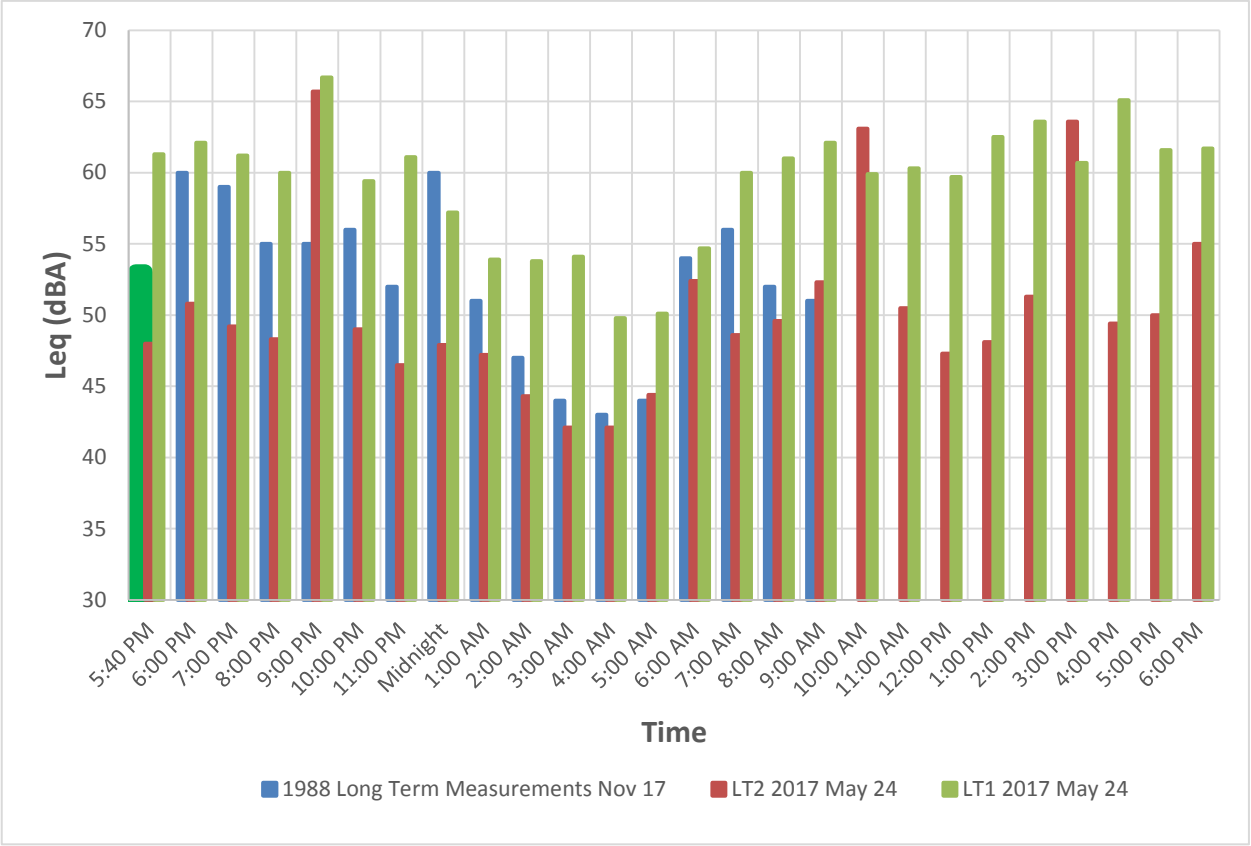


Figure 2. Comparison of Long-Term Noise Measurements

Table 2
Long-Term Measurement Results

Location	CNEL (dBA)	L_{dn} (dBA)
LT1	66	65
LT2	60	58

Notes: CNEL = Community Noise Equivalent Level; dBA = A-weighted decibel (adjusted for human frequencies); L_{dn} = day-night average sound level

The long-term measurement near the residences closest to the stadium (LT1) shows existing ambient levels in the acceptable and conditionally acceptable range based on the limits outlined in the *Fresno General Plan*. The long-term measurements farther from the stadium are lower and in the acceptable range.

3.1 Short-term Measurements

The recent short-term noise measurements were conducted at 10 locations in the Project vicinity during the site visit on May 24, 2017. The measurements were completed using a calibrated Rion NL-62 sound level meter. This meter meets the American National Standards Institute standard for a Type 1 precision sound level meter.

L_{eq} results range from 49 to 71 dBA. At most of the locations, the dominate noise source was traffic on nearby roads. Other common noise sources for urban areas were observed. Those sources include: aircraft; birds; people talking; heating, ventilation, and air conditioning equipment; leaves rustling in the wind; dogs barking; and lawn work. Table 3 presents the results of the short-term noise measurements.

The highest noise levels were measured near the busiest road in the Project vicinity, East Barstow Avenue. Other measurements were located in residential areas farther away from this road. These measurements show L_{eq} that range from the high 40s to the low 60s dBA. Traffic and residential sources were the common sources of the measured levels.

Table 3
Measured Ambient Levels (dBA)

Measure Number	Location Description	Time hh:mm	L_{eq}	L_{eq}					Noise Sources
				L_{max}	L_{min}	L_{10}	L_{50}	L_{90}	
1	East Barstow Avenue, 7 feet from the edge of the pavement	3:59 p.m.	71	81	47	75	67	56	Traffic, birds, distant traffic
2	North 9th Street, 8 feet from the edge of pavement	4:31 p.m.	50	66	41	52	45	43	Birds, aircraft, distant conversation, distant traffic
3	East Loftus and North 6th Street, 3 feet from the edge of pavement	4:53 p.m.	47	63	40	48	43	42	Birds, aircraft, distant conversation, distant kids playing, rustling leaves
4	West Browning, 2 feet from the edge of pavement	5:22 p.m.	57	80	44	57	48	46	Residences in yard, dogs barking, birds, aircraft, distant conversation, distant kids playing, rustling leaves
5	East Almedra Drive	5:39 p.m.	49	57	44	52	48	45	Residences, birds, distant aircraft, distant conversation, distant kids playing, distant traffic, rustling leaves
6	Loftus Lane and 7th Street, 1.5 feet from the edge of pavement	5:52 p.m.	61	85	40	51	43	41	Birds, distant aircraft, distant conversation, dog barking, distant landscaping, distant kids playing, distant traffic, rustling leaves

Table 3
Measured Ambient Levels (dBA)

Measure Number	Location Description	Time hh:mm	L_{eq}	L_{eq} L_{max}	L_{min}	L_{10}	L_{50}	L_{90}	Noise Sources
7	East Joyal Court	6:09 p.m.	55	72	45	58	50	47	Birds, distant aircraft, distant conversation, distant kids playing, distant traffic, rustling leaves
8	Bulldog Village	6:27 p.m.	61	74	45	65	53	48	Birds, distant traffic, distant landscaping, distant kids playing, distant traffic, rustling leaves
9	North 6th Street	6:47 p.m.	53	64	48	56	51	49	Birds, distant aircraft, distant conversation, distant kids playing, distant traffic, rustling leaves
10	North 9th Street	7:04 p.m.	56	70	46	58	50	48	Birds, distant aircraft, distant conversation, distant kids playing, rustling leaves

Notes: dBA = A-weighted decibel (adjusted for human hearing frequencies) L_{10} = 10th percentile noise level; L_{50} = 50th percentile noise level; L_{90} = 90th percentile noise level; L_{eq} = equivalent sound level over a given sample; L_{max} = Maximum measured sound level during a sample; L_{min} = Minimum measured sound level during a sample

4 OPERATIONAL NOISE

4.1 Mechanical Equipment Noise

Operational noise sources for the Project include water pumps, boilers, a generator and air handling units (collectively described as "mechanical equipment"). The air handling units, boilers and pumps will be located in a mechanical well in the new tower building, based on information provided by Fresno State and their design consultant AECOM, the plan set, and the existing stadium layout. A pair of domestic water pumps and a generator will also be located outside the southwestern section of the stadium in a new utility yard. Exact specifications for the equipment are not yet available. This analysis is based on the best assumptions available from the mechanical engineer prior to final design (Herman AECOM, pers. comm. 2017).

Standard acoustic distance calculations[1] were performed to determine the attenuated noise level at the nearest student residences across North Millbrook Avenue and at the nearest single-family home residential property line location to the northwest (the closest noise sensitive receiver) for the mechanical noise sources.

[1] Noise decreases at a rate of approximately 6 dBA per doubling of distance from the source.

Utility Yard Equipment

The utility yard will include two air-cooled chillers and a generator. The chillers are expected to have a capacity of approximately 110 tons each. They are expected to be located approximately 410 feet from the closest residential receiver (student residences) across North Millbrook Avenue. We assumed the chillers would not be screw or scroll types because they are known to have high noise levels with a tonal nature. Based on a simplified analysis of the chiller noise, Dudek expects the chiller to produce noise levels of approximately 56 dBA L_{eq} at the closest student housing residence. The closest single-family home (across East Barstow Avenue) is located approximately 940 feet from the chillers. At the single-family home, the expected noise level from the chiller includes 5 dB of shielding expected from other structures that would likely block the line of sight. The resulting expected noise level from the chiller is 44 dBA L_{eq}.

Based on the site plans, the generator is 500 KW with a sound attenuating enclosure. Based on a simplified analysis of the generator noise, Dudek expects the generator to produce noise levels of approximate 57 dBA L_{eq} at the closest student housing residence. The closest single-family home (across East Barstow Avenue) has expected noise levels from the generator of approximately 48 dBA L_{eq}. The generator is not expected to be running continuously. Typically, generators are run about once a month for testing.

Across the existing access road from the utility yard and closer to the stadium, some water pumps will be added. A multiplex booster pump system with three pumps is expected at this location. The pumps are expected to be approximately 550 feet from the nearest student housing residence and about 1,040 feet from the nearest single-family home. This equipment is planned to be located in a domestic water entry room. Since the equipment will be enclosed, the noise from these pumps is not expected to be substantial at the adjacent residential locations.

Mechanical Well Equipment

Three air handling units and six pumps are planned to be located on top of a mechanical well. This equipment would be located approximately 615 feet from the nearest student housing residence and about 840 feet from the nearest single-family home. Each air handling unit is expected to have a capacity of about 30,000 cubic feet per minute. The pumps are assumed to operate at 1800 revolutions per minute with a horsepower of 50 or less.

The noise levels (L_{eq}) from the equipment and the combined noise levels of all of the equipment, are provided in Table 4. Since the generator is not expected to run during typical operations, it is not included in the total noise level calculated from all mechanical equipment.

Table 4
Mechanical Equipment Noise at Nearest Residence

Mechanical Noise Source	Noise Level At Nearest Student Residences (dBA)	Noise Level At Approximate Nearest Single-Family Home Residences, LT2 (dBA)
Chillers	56	44
Well pumps	51	48
Well air handling units	45	42
Total	**60**	**52**

Notes: dBA = A-weighted decibel (adjusted for human frequencies)

Daytime measured sound levels near the closest residential receptor are approximately 60 dBA, with nighttime levels around 54 dBA during the nighttime (midnight to approximately 3:00 a.m.) and 50 dBA during the late night (3:00–4:00 a.m.) hours. Based on the recent measurements in the site vicinity, the mechanical equipment is not likely to increase the ambient noise levels at the single-family homes northwest of the stadium. Therefore, Project mechanical noise would be less than perceptible and would not result in a substantial permanent increase in ambient noise levels in the Project vicinity.

While mitigation measures are not required to reduce a significant impact, design best management practices (BMPs) in Section 6 indicate that screw or scroll chillers should be avoided due to the tonal nature of the noise they produce.

4.2 Stadium Sound System Noise

The Bulldog Stadium is currently equipped with a public address sound system (PA system). Installation of an updated sound system is part of the Project. General assumptions were used to analyze the PA system sound levels outside of the stadium. Figure 3 shows sound system noise level details.

Based on the sound system noise level details in Figure 3, the proposed PA system is designed to provide approximately 90 dBA of signal to the majority of the stadium. Some seats at the perimeter of the stadium have levels that drop to 85 dBA. Dudek estimates that the distance from the nearest PA speaker to those seats is approximately 185 feet. The distance from that speaker location to the nearest student residences across East Barstow Avenue is approximately 482 feet. Based on the added distance from the source, the PA system level could be approximately 77 dBA at the closest residences. This estimate is based the sound system noise level details in Figure 3, which focus on sounds from the PA system only when it is operating. This sound level is not comparable to existing sound levels presented in Figure 2, as this information was based on hourly measurements, which include long periods of silence between PA announcements.

At the closest residences, it is likely that announcements and music from the PA system will be clearly audible during games. Based on a discussion with a single-family home resident on East Browning, the PA system can be heard during football games, but it is not always clearly intelligible.

This updated sound system is expected to improve the quality of the announcements with speaker directivity focused on the stadium seats. As such, it is expected that the sound system would produce noise levels that are approximately the same or less than the existing PA system at noise sensitive locations outside of the stadium. It is expected that announcements during games would continue to be occasionally audible in the single-family residences to the northwest, as under existing conditions. Therefore, noise associated with the new PA system would not result in a substantial permanent increase in ambient noise levels in the Project vicinity.

While mitigation measures are not required to reduce a significant impact, design BMPs in Section 6 indicate that the sound system designer should use state-of-the-art design techniques to reduce noise levels outside the stadium.

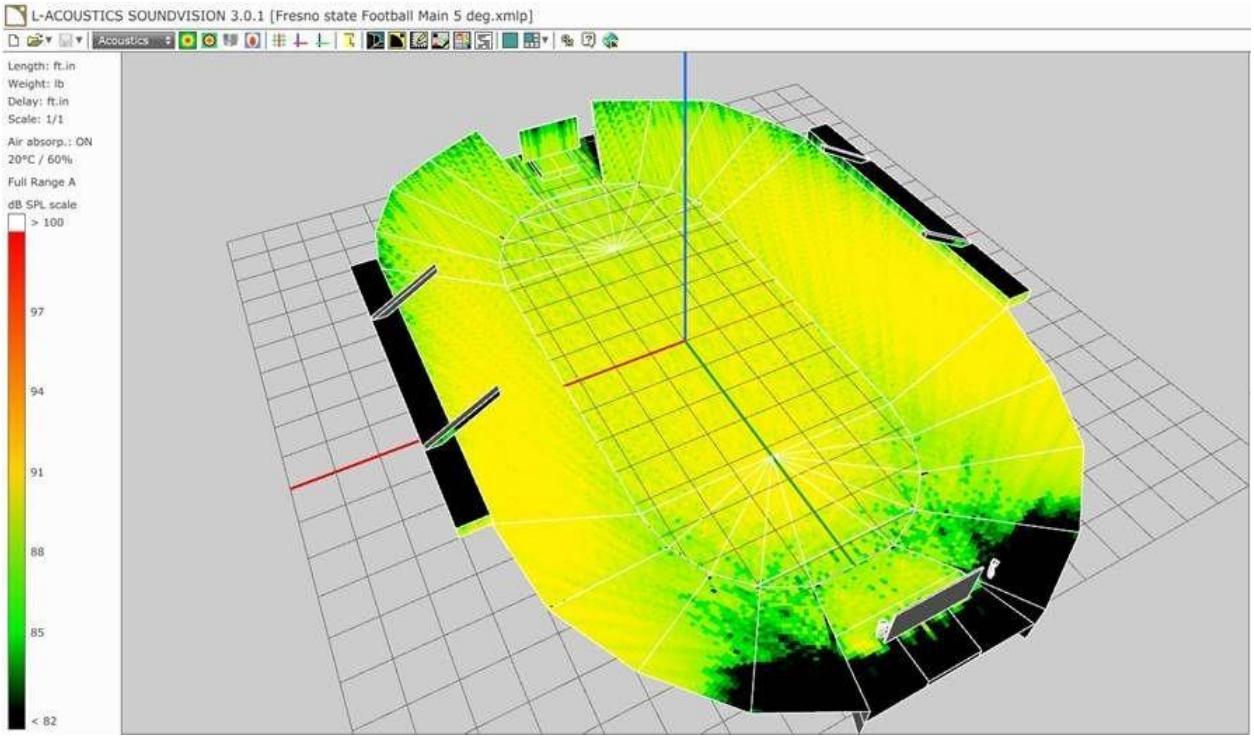


Figure 3. Sound System Noise Level Details (Source: MSPSLive)

4.3 Other Game-Related Noise

As indicated in Section 1, the Project would reduce the overall capacity of the stadium from 41,193 to 38,155, a reduction of 3,038 seats. This reduction in capacity with the Project is not expected to reduce game-day attendance given that the 5-year game average attendance is only 22,233, or about half of the existing capacity. Attendance at games varies substantially depending on how well the Bulldogs are performing in a given season, what team they are playing, and other factors such as the weather. While the Project would improve fan amenities and access, it is still expected that the factors stated above about team performance would continue to drive attendance to football games. The Project would not change the frequency or size of these soccer events at the stadium.

No significant change in football or soccer game operations has been proposed as part of the Project. Thus, football and soccer game noise is expected to continue to be part of the ambient noise levels in the area during events without a significant increase in noise level due to attendance.

4.4 Vehicle-Related Noise

As indicated above, the Project would not change the frequency or substantially change the size of football and soccer games held at the stadium. Additionally, the Project would not result in increases or modifications to the existing parking or access routes into and out of the stadium that could increase vehicle trips. Therefore, vehicle-related noise along area roadways would not be expected to increase on game days, as compared to existing conditions.

The frequency and size of private events may increase somewhat with the Project. From approximately 5 events a year with 25 to 80 people per event, to approximately 12 events a year with a maximum of approximately 2,000 people per event. These events are small in comparison to game-day attendance and associated vehicle-related noise. Therefore, vehicle-related noise along area roadways would not be expected to increase due to private events, as compared to existing conditions.

5 CONSTRUCTION NOISE ASSESSMENT

This section discusses the noise levels from demolition and construction of the Project at nearby sensitive receptors using assumed details for the construction. Construction of the Project would generate noise that could expose nearby receptors to elevated noise levels that may disrupt communication or routine activities. Noise generated by Project-related construction activities would be a function of the following:

- The noise levels generated by individual pieces of construction equipment

- The type and amount of equipment operating at any given time and the timing and duration of construction activities
- The proximity of nearby noise sensitive land uses
- The presence or lack of shielding at these sensitive land uses

Construction noise levels would vary on a day-to-day basis during each phase of construction, depending on the specific task being completed. Each construction phase would require a different combination of construction equipment necessary to complete the task and differing usage factors for such equipment. Construction noise would primarily result from demolition, operation of heavy construction equipment, and the arrival and departure of heavy-duty trucks. Construction equipment with substantially high noise generation characteristics (such as pile drivers, rock drills, and blasting equipment) would not be necessary for development of the Project.

Construction noise is difficult to quantify because of the many variables involved, including the specific equipment types, size of equipment used, percentage of time, condition of each piece of equipment, and number of pieces of equipment that would actually operate on the site.

Table 5 summarizes noise levels for typical construction equipment that might be used for this Project. The noise values represent maximum noise generation, or full-power operation of the equipment.

Table 5
Typical Construction Equipment Noise Emission Levels and Usage Factors

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec 721.560 L_{max} @ 50 Feet (dBA, Slow)	Actual Measured L_{max} @ 50 Feet (dBA, Slow) Samples Averaged[1]	Number of Actual Data Samples (Count)
All other equipment > 5 horsepower	No	50	85	N/A	0
Backhoe	No	40	80	78	372
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Dump truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flatbed truck	No	40	84	74	4
Front-end loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25 Kilo Volt Amps)	No	50	70	73	74

Table 5
Typical Construction Equipment Noise Emission Levels and Usage Factors

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec 721.560 L_{max} @ 50 Feet (dBA, Slow)	Actual Measured L_{max} @ 50 Feet (dBA, Slow) Samples Averaged[1]	Number of Actual Data Samples (Count)
Grader	No	40	85	N/A	0
Man lift	No	20	85	75	23
Mounted impact hammer (hoe ram)	Yes	20	90	90	212
Paver	No	50	85	77	9
Pickup truck	No	40	55	75	1
Pneumatic tools	No	50	85	85	90
Pumps	No	50	77	81	17
Roller	No	20	85	80	16
Scraper	No	40	85	84	12
Tractor	No	40	84	N/A	0
Welder/torch	No	40	73	74	5

Source: FHWA 2006.
Notes: dBA = A-weighted decibel (adjusted for human frequencies); L_{max} = Maximum measured sound level during a sample; N/A = not applicable

Noise levels generated by construction equipment (or by any point source outdoors) decrease at a rate of approximately 6 dBA per doubling of distance from the source. Therefore, if a particular construction activity generated average noise levels of 88 dBA at 50 feet, the L_{eq} would be 82 dBA at 100 feet, 76 dBA at 200 feet, 70 dBA at 400 feet, and so on. Intervening structures that block the line of sight, such as buildings, would further decrease the resultant noise level by a minimum of 5 dBA.

The distance to sensitive receptors used in the analysis of construction noise levels is 200 feet for the student residences. This is a worst-case separation distance between construction activities and the nearest residential receptor. This is the distance from the outer edge of the stadium to the residence located north across East Barstow Avenue. The nearest single-family home is approximately 700 feet from the stadium. The single-family homes are considered more noise sensitive than the student residences.

A noise analysis was performed using a model developed under the Federal Highway Administration (FHWA) called the Roadway Construction Noise Model (RCNM; FHWA 2008). This construction noise model includes representative sound levels (like those shown in Table 5) for the most common types of construction equipment and the approximate usage factors of such equipment that were developed based on an extensive database of information. The usage factors represent the percentage of time that the equipment would be operating at full power. Vehicles and

equipment anticipated during construction were input into the RCNM to calculate noise levels at the nearest sensitive receptors to the construction activities during each phase of construction (FHWA 2006). The various construction equipment types were used for this analysis. The RCNM includes default duty cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty cycle values were used for this analysis. Table 6 presents the summary results of the construction noise analysis.

Table 6
Daytime Construction Noise at Receivers

Construction Phase	Calculated Noise Level L_{eq} (dBA) at 200 Feet	Calculated Noise Level L_{eq} at Single-Family Home (700 feet)
Demolition	74	64
Site preparation	74	63
Grading	75	64
Building construction	70	59
Paving	74	63
Architectural coatings	62	51

Notes: dBA = A-weighted decibel (adjusted for human frequencies); L_{eq} = equivalent sound level over a given period

Attachment C includes details of the RCNM analysis. Temporary noise from construction may be clearly audible at the nearby sensitive receptors and at times could represent a temporary increase. The construction noise levels would not be anticipated to be greater than 75 dBA $L_{eq(8hr)}$ during the daytime and evening for the closest residences, which are student housing. For the single-family homes, the highest construction L_{eq} is 64 dBA during the demolition and grading phases.

Maximum noise levels for construction activities along the site boundaries near the noise sensitive receivers were also assessed. Based on these calculations, construction noise levels may intermittently reach levels as high as 78 dBA at the closest noise sensitive receivers. For the single-family homes, L_{max} is expected to be approximately 67 dBA during demolition.

As Project construction noise would be temporary over the 18 to 24 month construction schedule, would be intermittent depending on construction activities and would avoid nighttime construction activities, as described in Section 1, the Project would not result a substantial temporary or periodic increase in ambient noise levels in the project vicinity. The construction noise impact would be less than significant. Additionally, while the City of Fresno does not have jurisdictional or approval authority over the Project, the City of Fresno Noise Ordinance exempts daytime construction activities.

While mitigation measures are not required to reduce a significant impact, Section 6 provides construction BMPs for control of construction noise that should be implemented to reduce noise levels during construction.

6 RECOMMENDED MEASURES

The Project would not result in significant operational or construction noise impacts. The following recommended BMPs should be implemented to reduce project and operational noise to the extent feasible.

Design BMPs

BMP NOI-1 Mechanical Equipment: Screw or scroll chillers should be avoided or treated with proper noise mitigation treatments due to the tonal nature of the noise they produce.

BMP NOI-2 Sound System: To the extent feasible, the sound system designer should use state-of-the-art design techniques to reduce noise levels outside the stadium.

Short-Term Construction BMPs

To reduce the potential for annoyance for the local residences the following measures are recommended to address construction noise.

BMP NOI-3 Construction hours, allowable workdays, and the phone number of the job superintendent should be clearly posted at all construction entrances to allow surrounding property owners/users to contact the job superintendent if necessary. In the event the City receives a complaint, appropriate corrective actions should be implemented and a report of the action provided to the reporting party.

BMP NOI-4 The project contractor should, to the extent feasible, schedule construction activities to avoid the simultaneous operation of construction equipment so as to minimize noise levels resulting from operating several pieces of high noise level emitting equipment.

BMP NOI-5 All construction equipment, fixed or mobile, should be equipped with properly operating and maintained mufflers.

BMP NOI-6 Construction noise reduction methods such as shutting off idling equipment, maximizing the distance between construction equipment

staging areas and residences. Use of electric air compressors and similar power tools, rather than diesel equipment, should be used where feasible.

BMP NOI-7 During construction, stationary construction equipment should be placed such that emitted noise is directed away from or shielded from sensitive receptors, including student residences.

BMP NOI-8 During construction, stockpiling and vehicle staging areas should be located as far as practical from noise sensitive receptors, including student residences.

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ATTACHMENT A

Acoustical Terms and Definitions,
Sound and Vibration Background

ATTACHMENT A
Acoustical Terms and Definitions, Sound and Vibration Background

ACOUSTIC TERMINOLOGY AND DEFINITIONS

Term	Definition
Ambient Noise Level	The normal or existing sounds pressure level of environmental noise at a given location. The composite of noise from all sources near and far.
Decibel	dB is the unit for measuring sound pressure level, equal to 10 times the logarithm to the base 10 of the ratio of the measured sound pressure squared to a reference pressure, which is 20 micro-Pascal.
A-Weighted Sound Level	dBA is the sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Community Noise Equivalent Level	CNEL is the A-weighted equivalent continuous sound exposure (CNEL) level for a 24-hour period with a ten dB adjustment added to sound levels occurring during nighttime hours (10 pm to 7 am) and a five dB adjustment added to the sound levels occurring during the evening hours (7 pm to 10 pm).
Day / Night Noise Equivalent Level	L_{DN} (or DNL) is the A-weighted equivalent continuous sound exposure level for a 24-hour period with a ten dB adjustment added to sound levels occurring during nighttime hours (10 pm to 7 am).
Equivalent Sound Level	L_{EQ} is the sound level corresponding to a steady state sound level and containing the same total energy as a time varying signal over a given sample period.
Acoustic Center	For a source, the position where the propagating waves can be traced back to a single point of origin.

SOUND AND VIBRATION BACKGROUND

Vibrations, traveling as waves through air from a source, exert pressure perceived by the human ear as sound. Sound pressure level (referred to as sound level) is measured on a logarithmic scale in decibels (dB) that represent the fluctuation of air pressure above and below atmospheric pressure. Frequency, or pitch, is a physical characteristic of sound and is expressed in units of cycles per second or hertz (Hz). The normal frequency range of hearing for most people extends from about 20 to 20,000 Hz. The human ear is more sensitive to middle and high frequencies (about 1,000 to 4,000 Hz), especially when background noise levels are lower. As noise levels get louder, the human ear starts to hear the frequency spectrum more evenly. To accommodate for this phenomenon, a weighting system to evaluate how loud a noise level is to a human was developed. The frequency weighting called "A" weighting is typically used for quieter noise levels which de-emphasizes the low frequency components of the sound in a manner similar to the response of a human ear. A-weighted sound level is referenced with units of dBA.

Since sound is measured on a logarithmic scale, a doubling of sound energy results in a 3 dBA increase in the noise level. Changes in a community noise level of less than 3 dBA are not typically noticed by the human ear (Caltrans 1980). Changes from 3 to 5 dBA may be noticed by some individuals who are extremely sensitive to changes in noise. A 5 dBA increase is readily noticeable. The human ear perceives a 10 dBA increase in sound level as a doubling of the sound level (i.e., 65 dBA sounds twice as loud as 55 dBA to a human ear).

An individual's noise exposure occurs over a period of time; however, instantaneous noise level is a measure of noise at a given instant in time. The equivalent noise level L_{eq}, also referred to as the average sound level, is a single-number representing the fluctuating sound level in decibels (dB) over a specified period of time. It is a sound-energy average of the fluctuating level and is equal to a constant unchanging sound of that dB level. Community noise sources vary. Often a relatively stable background or ambient noise environment can still be assessed based on long-term measurements.

Noise levels are generally higher during the daytime and early evening when traffic (including airplanes), commercial, and industrial activity is the greatest. However, noise sources experienced during nighttime hours when background levels are generally lower can be potentially more conspicuous and irritating to the receiver. In order to evaluate noise in a way that considers periodic fluctuations experienced throughout the day and night, a concept termed "community noise equivalent level" (CNEL) was developed, The CNEL scale represents a time-weighted 24-hour average noise level based on the A-weighted sound level. CNEL accounts for the increased noise sensitivity during the evening hours (7 p.m. to 10 p.m.) and nighttime hours (10 p.m. to 7 a.m.) by adding five dB to the average sound levels occurring during the evening hours and 10 dB to the sound levels occurring during nighttime hours.

ATTACHMENT B

Summary of 1988
Acoustical Measurements

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Summary of 1988 Acoustical Measurements

1988 Football Game Sound Level Results (dBA)					
Hour	L_{eq}	L_{01}	L_{10}	L_{50}	L_{90}
9/17/88 5:40 pm	53	65	54	50	48
6:00 pm	60	71	62	55	51
7:00 pm	59	69	62	55	50
8:00 pm	55	63	58	53	50
9:00 pm	55	61	58	53	51
10:00 pm	56	65	58	53	52
11:00 pm	52	57	53	51	49
9/18/88 Midnight	60	74	53	50	47
1:00 am	51	60	52	49	46
2:00 am	47	54	49	45	43
3:00 am	44	51	46	43	41
4:00 am	43	50	45	42	41
5:00 am	44	50	45	43	41
6:00 am	54	68	53	46	43
7:00 am	56	70	52	47	46
8:00 am	52	66	53	47	44
9:00 am	51	62	50	46	44

Notes: dBA = A-weighted decibel (adjusted for human hearing frequencies) L_{10} = 10th percentile noise level; L_{50} = 50th percentile noise level; L_{90} = 90th percentile noise level; L_{eq} = equivalent sound level over a given sample; L_{max} = Maximum measured sound level during a sample ; L_{min} = Minimum measured sound level during a sample.

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ATTACHMENT C

Roadway Construction Noise Model Results

Report date:	**Case Description:**	**Demolition**		*Calculated Lmax is the Loudest value.				
Description: Demolition	Land Use:Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Concrete Saw	1	No	20	-	89.6	200	77.5	70.5
Excavator	1	No	40	-	80.7	200	68.7	64.7
Excavator	1	No	40	-	80.7	200	68.7	64.7
Excavator	1	No	40	-	80.7	200	68.7	64.7
Dozer	1	No	40	-	81.7	200	69.6	65.6
Dozer	1	No	40	-	81.7	200	69.6	65.6
						Total	77.5	74.4
Report date:	**Case Description:**	**Site Preparation**		*Calculated Lmax is the Loudest value.				
Description: Building Construction	Land Use: Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Dozer	1	No	40		81.7	200	69.6	65.6
Dozer	1	No	40		81.7	200	69.6	65.6
Dozer	1	No	40		81.7	200	69.6	65.6
Backhoe	1	No	40		77.6	200	65.5	61.5
Backhoe	1	No	40		77.6	200	65.5	61.5
Tractor	1	No	40	84		200	72	68
Tractor	1	No	40	84		200	72	68
						Total	72	74.2
Report date:	**Case Description:**	**Grading**		*Calculated Lmax is the Loudest value.				
Description: Building Construction	Land Use: Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Excavator	1	No	40		80.7	200	68.7	64.7
Grader	1	No	40	85		200	73	69
Dozer	1	No	40		81.7	200	69.6	65.6
Backhoe	1	No	40		77.6	200	65.5	61.5
Tractor	1	No	40	84		200	72	68
Tractor	1	No	40	84		200	72	68
						Total	73	74.5
Report date:	**Case Description:**	**Building Construction**		*Calculated Lmax is the Loudest value.				
Description: Building Construction	Land Use: Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Crane	1	No	16	-	80.6	200	68.5	60.6
Man Lift	1	No	20	-	74.7	200	62.7	55.7
Man Lift	1	No	20	-	74.7	200	62.7	55.7
Man Lift	1	No	20	-	74.7	200	62.7	55.7
Generator	1	No	50	-	80.6	200	68.6	65.6
Backhoe	1	No	40	-	77.6	200	65.5	61.5
Backhoe	1	No	40	-	77.6	200	65.5	61.5
Backhoe	1	No	40	-	77.6	200	65.5	61.5
Welder / Torch	1	No	40	-	74	200	62	58
						Total	**68.6**	**70.3**
Report date:	**Case Description:**	**Paving**		*Calculated Lmax is the Loudest value.				
Description: Demolition	Land Use:Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Paver	1	No	50		77.2	200	65.2	62.2
Paver	1	No	50		77.2	200	65.2	62.2
All Other Equipment > 5 HP	1	No	50	85		200	73	69.9
All Other Equipment > 5 HP	1	No	50	85		200	73	69.9
Roller	1	No	20		80	200	68	61
Roller	1	No	20		80	200	68	61
						Total	**73**	**74.1**
Report date:	**Case Description:**			*Calculated Lmax is the Loudest value.				
Description: Architectural Coatings	Land Use: Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Compressor (air)	1	No	40	-	77.7	200	65.6	61.6
						Total	**65.6**	**61.6**

Report date:	**Case Description:**	**Demolition**		*Calculated Lmax is the Loudest value.				
Description: Demolition	Land Use:Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Concrete Saw	1	No	20	-	89.6	700	66.7	59.7
Excavator	1	No	40	-	80.7	700	57.8	53.8
Excavator	1	No	40	-	80.7	700	57.8	53.8
Excavator	1	No	40	-	80.7	700	57.8	53.8
Dozer	1	No	40	-	81.7	700	58.7	54.8
Dozer	1	No	40	-	81.7	700	58.7	54.8
						Total	**66.7**	**63.5**
Report date:	**Case Description:**	**Site Preparation**		*Calculated Lmax is the Loudest value.				
Description: Building Construction	Land Use: Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Dozer	1	No	40		81.7	700	58.7	54.8
Dozer	1	No	40		81.7	700	58.7	54.8
Dozer	1	No	40		81.7	700	58.7	54.8
Backhoe	1	No	40		77.6	700	54.6	50.7
Backhoe	1	No	40		77.6	700	54.6	50.7
Tractor	1	No	40	84		700	61.1	57.1
Tractor	1	No	40	84		700	61.1	57.1
						Total	**61.1**	**63.3**
Report date:	**Case Description:**	**Grading**		*Calculated Lmax is the Loudest value.				
Description: Building Construction	Land Use: Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Excavator	1	No	40		80.7	700	57.8	53.8
Grader	1	No	40	85		700	62.1	58.1
Dozer	1	No	40		81.7	700	58.7	54.8
Backhoe	1	No	40		77.6	700	54.6	50.7
Tractor	1	No	40	84		700	61.1	57.1
Tractor	1	No	40	84		700	61.1	57.1
						Total	**62.1**	**63.7**
Report date:	**Case Description:**	**Building Construction**		*Calculated Lmax is the Loudest value.				
Description: Building Construction	Land Use: Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Crane	1	No	16	-	80.6	700	57.6	49.7
Man Lift	1	No	20	-	74.7	700	51.8	44.8
Man Lift	1	No	20	-	74.7	700	51.8	44.8
Man Lift	1	No	20	-	74.7	700	51.8	44.8
Generator	1	No	50	-	80.6	700	57.7	54.7
Backhoe	1	No	40	-	77.6	700	54.6	50.7
Backhoe	1	No	40	-	77.6	700	54.6	50.7
Backhoe	1	No	40	-	77.6	700	54.6	50.7
Welder / Torch	1	No	40	-	74	700	51.1	47.1
						Total	**57.7**	**59.4**
Report date:	**Case Description:**	**Paving**		*Calculated Lmax is the Loudest value.				
Description: Demolition	Land Use:Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Paver	1	No	50		77.2	700	54.3	51.3
Paver	1	No	50		77.2	700	54.3	51.3
All Other Equipment > 5 HP	1	No	50	85		700	62.1	59.1
All Other Equipment > 5 HP	1	No	50	85		700	62.1	59.1
Roller	1	No	20		80	700	57.1	50.1
Roller	1	No	20		80	700	57.1	50.1
						Total	**62.1**	**63.2**
Report date:	**Case Description:**			*Calculated Lmax is the Loudest value.				
Description: Architectural Coatings	Land Use: Residential		Daytime Baseline (dBA): 60	Evening Baseline (dBA): 60	Night Baseline (dBA): 60			
Description	# of Devices	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA) at 50 feet	Receptor Distance (feet)	Calculated Lmax* (dBA)	Calculated Leq (dBA)
Compressor (air)	1	No	40	-	77.7	700	54.7	50.8
						Total	**54.7**	**50.8**