*Cuesta College – San Luis Obispo County Community College District*

# Cuesta College SLO Campus Instructional Building Project

## *Final* Initial Study – Mitigated Negative Declaration

**September 2015**

Environmental Scientists Planners Engineers

# Cuesta College SLO Campus Instructional Building Project

# Initial Study – Mitigated Negative Declaration

*Prepared by:*

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*September 2015*

*This report prepared on 50% recycled paper with 50% post-consumer content.*

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## Appendices

# INITIAL STUDY

## 1. Project Title

Cuesta College SLO Campus Instructional Building Project

## 2. Lead Agency Name and Local Representative

San Luis Obispo County Community College District
Cuesta College, PO Box 8106, Attn: Facilities
San Luis Obispo, CA 93403-8106

*Locally represented by:*

Terry Reece, Facilities Director
(805) 546-3283

## 3. Description of Project

The proposed Cuesta College SLO Campus Instructional Building Project would involve the construction of a two-story (40-foot tall), approximately 32,500 gross square foot (GSF), instructional building on the Cuesta College SLO campus in the County of San Luis Obispo. The proposed project would not affect the enrollment of Cuesta College. Five existing modular classroom structures located on the project site would be demolished to accommodate the new instructional building. Refer to Figures 3 and 4 for regular and enlarged site plans which show the project area and proposed replacement of existing modular classrooms with the new instructional building.

The area of building to be demolished totals approximately 5,940 SF, such that the project would result in a net increase in total built square footage of approximately 23,500 SF. The maximum disturbed area would be up to 1.3 acres. Demolition would include all buildings, steps, railings, ramps, decks, and hardscape in the project area. All site furnishings, donor plaques, and signage would be salvaged where possible. Within the project area, planting and trees would be protected where possible, restoration would occur for affected landscaping, and on-existing storage containers would be removed and relocated (refer to Figure 5 for demolition plans). The project site is generally flat and this analysis assumes that cut and fill soil would be balanced on the project site during site preparation and grading. The proposed instructional building would connect to existing utilities at the site.

Construction is anticipated to begin in late 2015. Funding for the project would be provided by the Measure L Bond Program which provides phased development on both Cuesta College campuses, in North County as well as in San Luis Obispo.

**4. Project Location**

The project site is located entirely within the Cuesta College SLO campus, northwest of the boundary of the City of San Luis Obispo, within San Luis Obispo County, California (refer to Figure 1). The Cuesta College SLO campus is under the jurisdiction of the San Luis Obispo County Community College District (SLOCCCD). The campus is located south of Cabrillo Highway (Highway 1) on the northwestern boundary of the City (refer to Figure 2). The project site is located adjacent to the existing Faculty Office Building and the Children's Center Building.

**5. Surrounding Land Uses and Setting**

The project site is located entirely within the Cuesta College SLO campus. The on-campus uses that immediately surround the campus are classrooms to the north, south, east, and west, and a child care center to the southwest.

**6. Other Public Agencies Whose Approval is Required**

The Trustees of the California State University Approvals

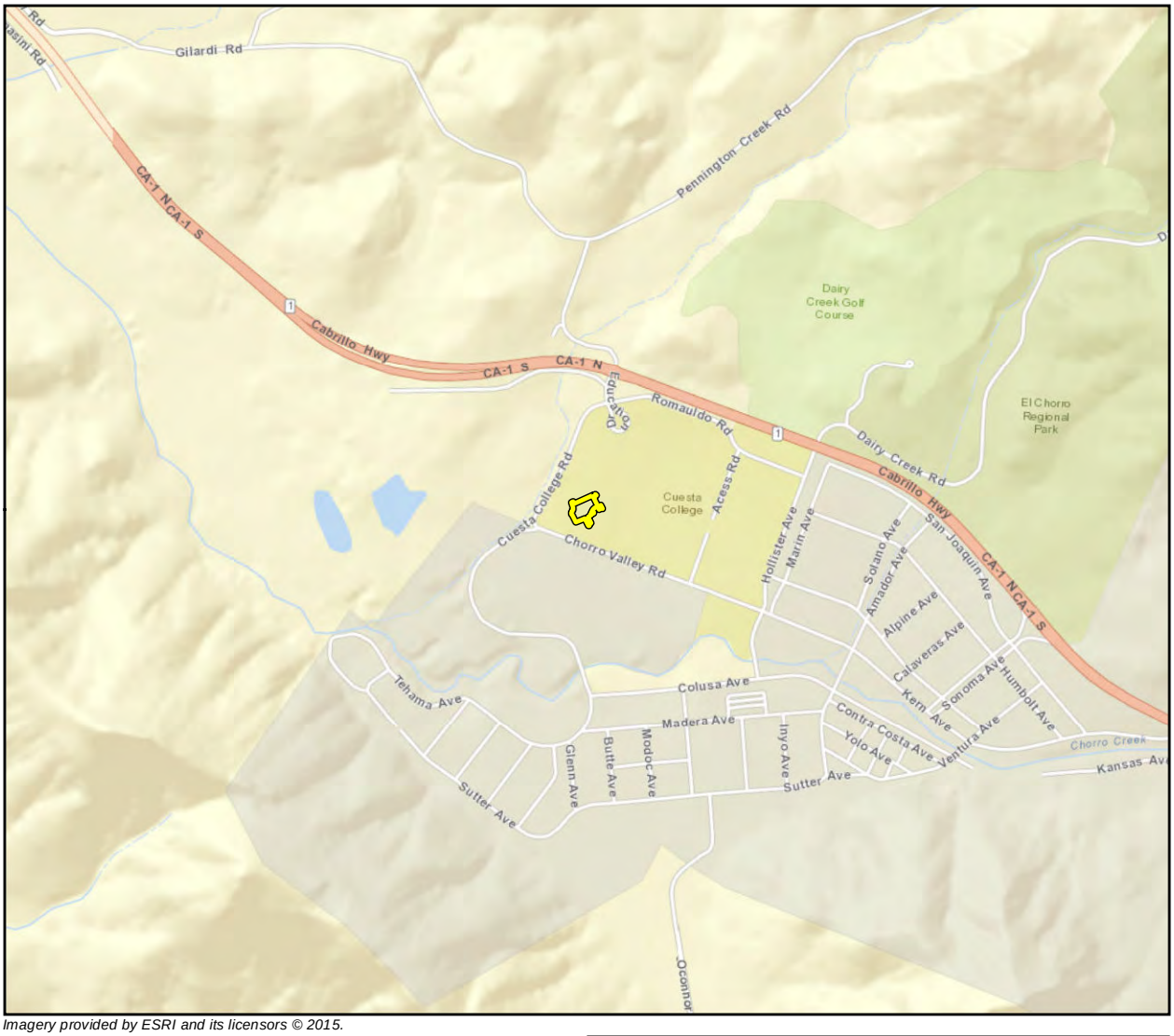
- *Schematic Plan Approval*

Division of the State Architect

- *Schematic Plan Approval*

Regional Water Quality Control Board (Region 3)

- *National Pollutant Discharge Elimination System (NPDES) permit*




*Imagery provided by ESRI and its licensors © 2015.*

Project Boundary

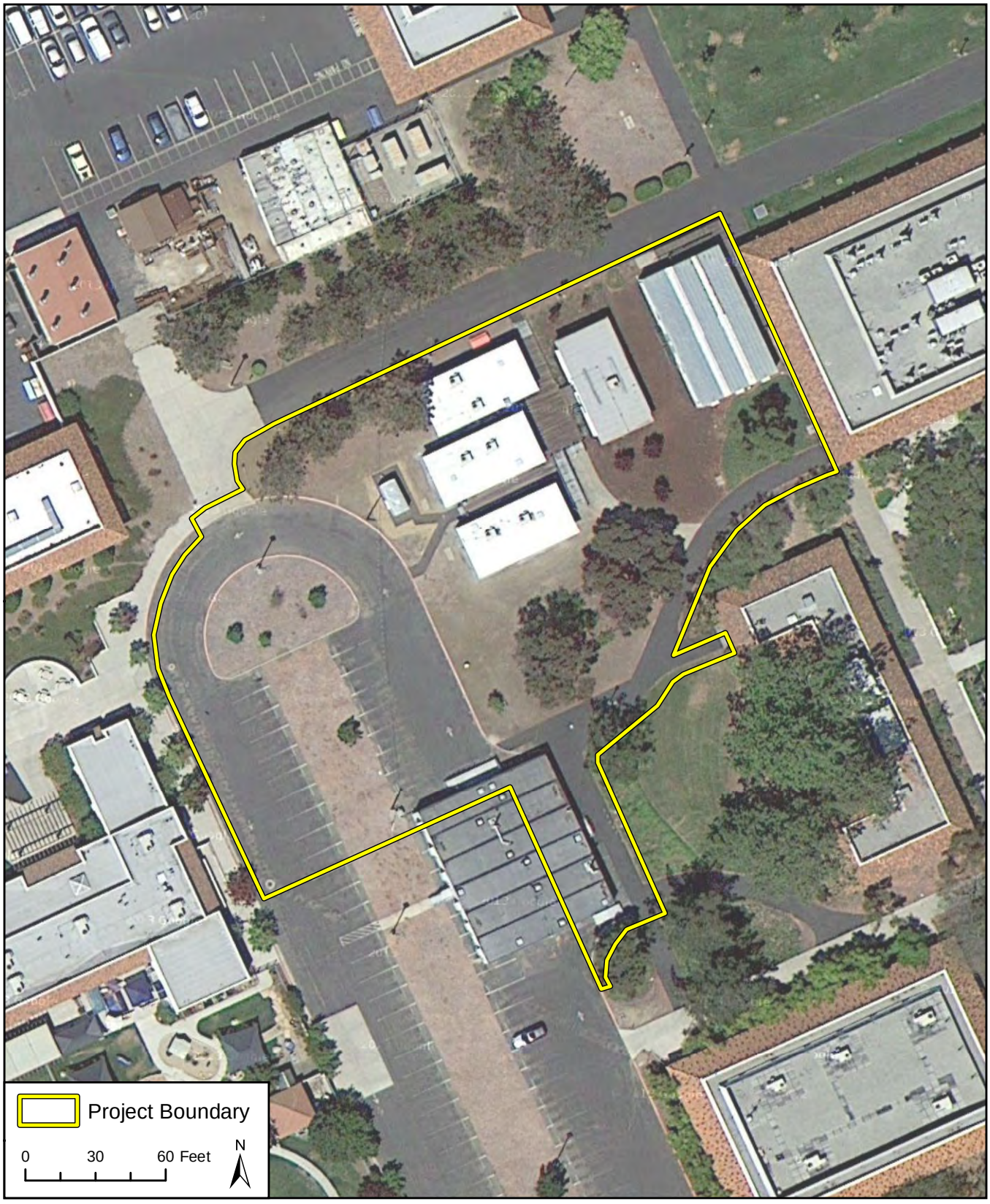
N

0 1,000 2,000

Feet


Regional Location

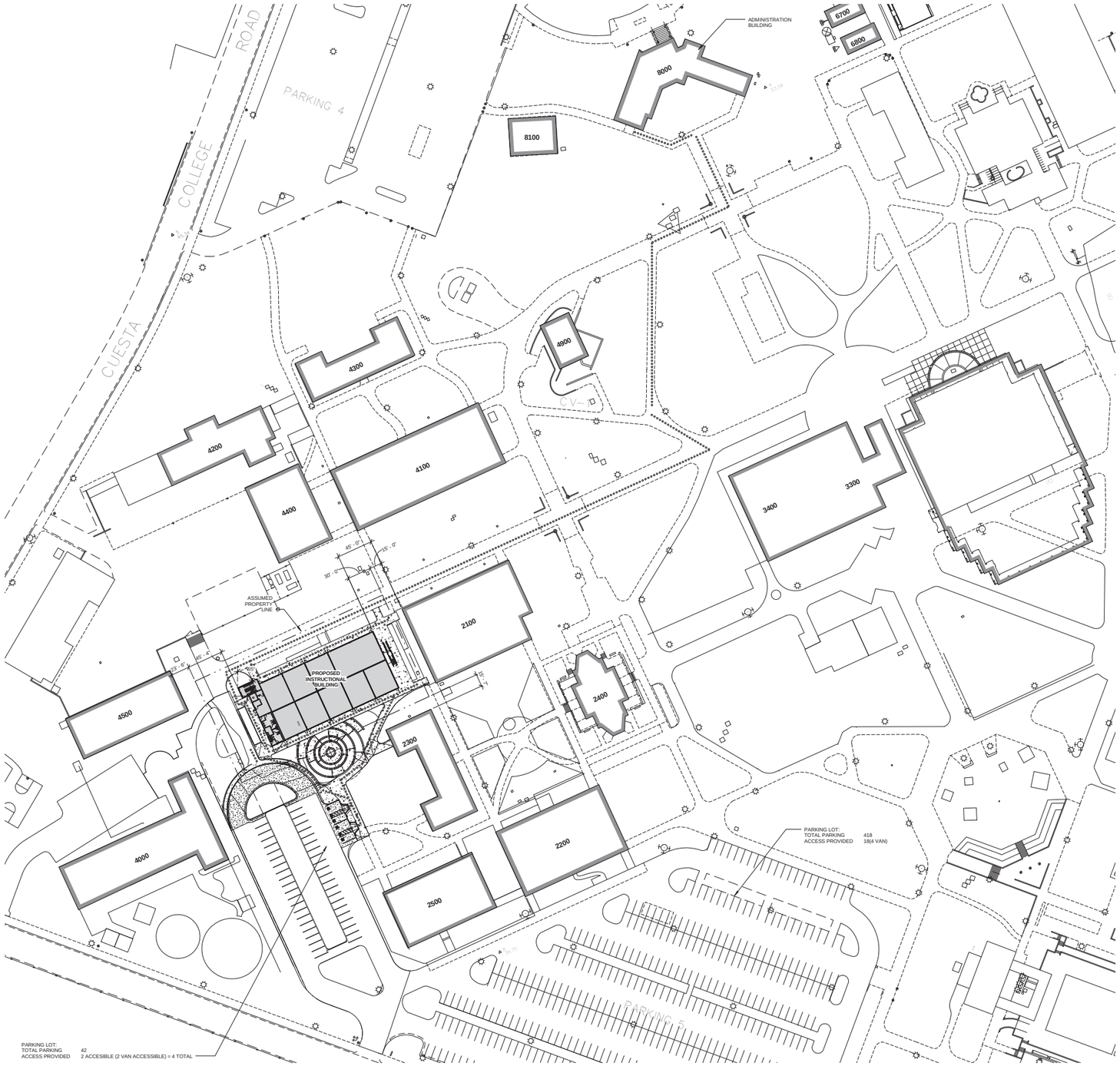
Figure 1






Project Site Location

Figure 2




ASSUMED PROPERTY LINE

PROJECT BUILDING

(N) CONCRETE PAVING

(N) ASPHALT CONCRETE PAVING

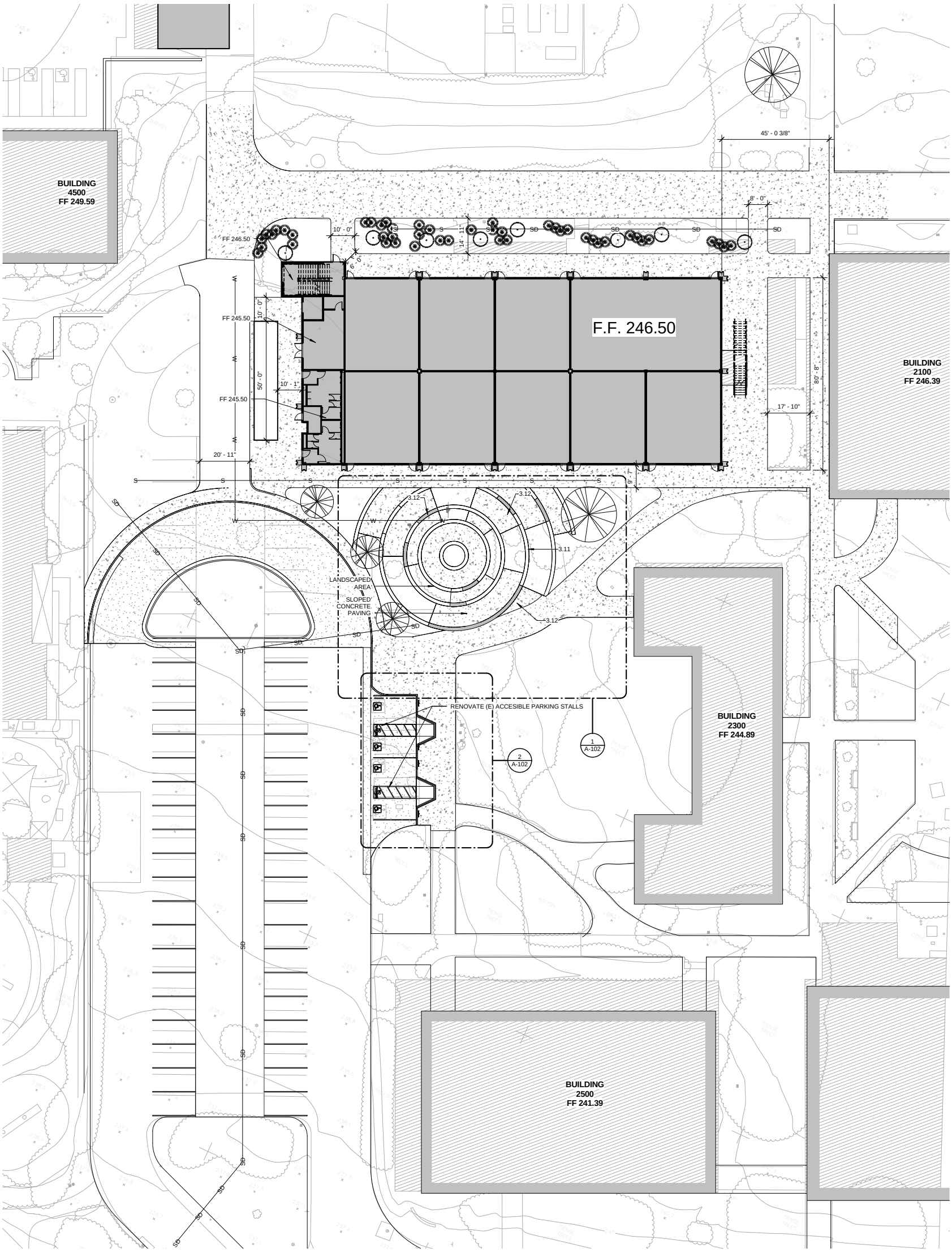
(E) BUILDING

PATH OF TRAVEL (P.O.T.) AS INDICATED, IS A COMMON BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL AND IS AT LEAST 48" WIDE. THE PATH SURFACE IS SLIP RESISTANT, STABLE, FIRM, AND SMOOTH. PASSING SPACES (11B-403.2) AT LEAST 60"x60" ARE LOCATED NOT MORE THAN 200' APART. PARTS OF P.O.T. WITH CONTINUOUS GRADIENTS HAVE 60" LEVEL AREAS (11B-403.7) NOT MORE THAN 400' APART. THE CROSS-SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED. (POT) SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80" (11B-307). ARCHITECT SHALL VERIFY PATH OF TRAVEL CONFORMS WITH THE ABOVE.

Site Plan

Figure 3

*Source: PMSM Architects, 2015.*



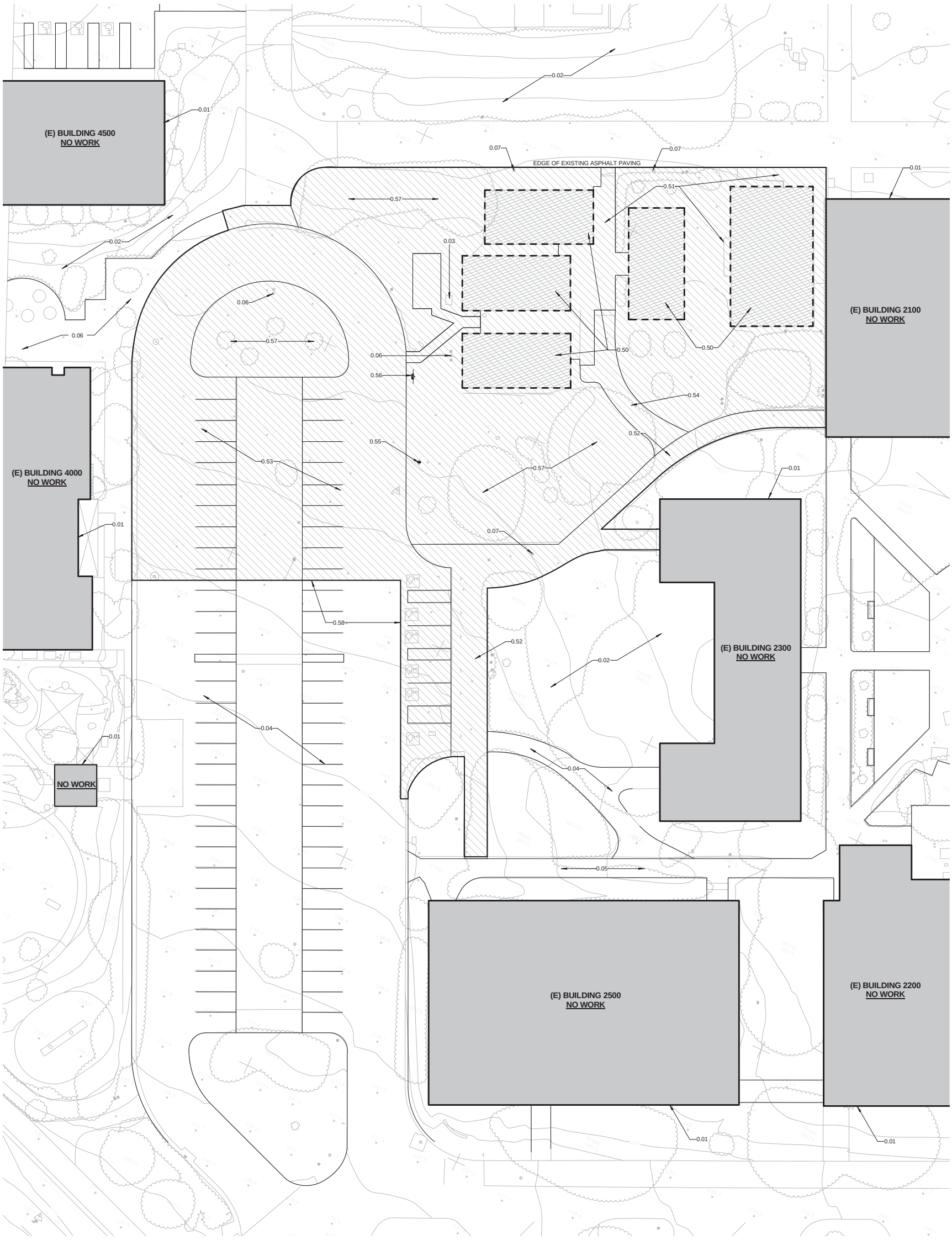

SITE PLAN LEGEND

- PROJECT BUILDING
- (N) CONCRETE PAVING
- (N) ASPHALT CONCRETE PAVING
- (E) BUILDING

Enlarged Site Plan

Figure 4

*Source: PMSM Architects, 2015.*




| | |
|---|---|
| 0.01 | (E) TO REMAIN |
| 0.02 | (E) TO REMAIN, PROTECT IN PLACE, & RESTORE AFFECTED |
| 0.03 | (E) SALVAGED FURNISHINGS, DONOR PLAQUES, & SIGNAGE AS PER DISTRICT |
| 0.04 | (E) ASPHALT TO REMAIN |
| 0.05 | (E) CONCRETE TO REMAIN |
| 0.06 | (E) WATER METER TO BE RELOCATED |
| 0.07 | (E) LIGHT POLE TO BE REMOVED |
| 0.50 | DEMOLISH (E) MODULAR BUILDINGS |
| 0.51 | DEMOLISH (E) DECKS, RAMPS, & STAIRS |
| 0.52 | DEMOLISH (E) ASPHALT WALKWAY |
| 0.53 | DEMOLISH (E) ASPHALT PARKING LOT |
| 0.54 | DEMOLISH (E) CONCRETE WALKWAY |
| 0.55 | REMOVE & RELOCATE (E) FIRE HYDRANT |
| 0.56 | REMOVE & RELOCATE (E) INDICATOR VALVE |
| 0.57 | REMOVE (E) PLANTING & TREES AS PER LANDSCAPE |
| 0.58 | SAWCUT & REMOVE (E) ASPHALT PAVING AS SHOWN & PREPARE FOR NEW WORK |

(E) BUILDINGS (NO WORK TO BE DONE)

EXTENT OF DEMO WORK (DEMOLISH ALL HARDSCAPE AND SALVAGE ALL SITE FURNISHINGS AND SIGNAGE AS POSSIBLE) SEE PLAN FOR FURTHER INFORMATION

(E) BUILDING TO BE DEMOLISHED

Demolition Plan

Figure 5

*Source: PMSM Architects, 2015.*

# ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "Potentially Significant" or "Potentially Significant Unless Mitigation Incorporated" as indicated by the checklist on the following pages. A discussion, including an environmental impact analysis and a requirement for mitigation measures, is included after each issue area.

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

## DETERMINATION

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 MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

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

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

Signature _____ 7/7/2015
Date

# ENVIRONMENTAL CHECKLIST

| | | Potentially Significant Impact | Potentially Significant Unless 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? | ☐ | ☐ | ■ | ☐ |

The Cuesta College SLO campus, on which the project would occur, is located adjacent to a State Scenic Highway (Highway 1) and All American Road as designated on the California Department of Transportation (Caltrans) State Scenic Highway Mapping System (Caltrans, 2011). The California Department of Transportation (Caltrans) provides guidelines for visual review regarding proposed projects occurring on to the State Highway System (SHS). Whether sponsored by the Department or a local agency, all proposed projects on the SHS must meet the requirements of CEQA.

The San Luis Obispo County Community College District (SLOCCCD) Educational Facilities Master Plan 2001 provides the most recent description of architectural character on the Cuesta College SLO campus. The architecture generally uses a modified mission style which incorporates modern detailing and building techniques together with traditional colonial Spanish colonnades and building materials. Many of the buildings utilize an open perimeter colonnade sheltered by a tile Mansard roof concealing flat roofs and air conditioning equipment above while some exhibit a variety of architectural forms and entrances. Most classrooms have been designed to open onto open-air colonnades.

Rincon staff conducted a site visit at the project site on May 11, 2015. Figures 6a and 6b depict a variety of views through the project site that show the general visual character of the existing development on and adjacent to the site.

**Photo 1:** Taken from immediately west of the northwestern site boundary, adjacent to the existing parking area, facing east.

**Photo 2:** Taken from immediately northwest of the northwestern site boundary, adjacent to the existing parking area, facing southeast.

Project Site Photographs Figure 6a


**Photo 1:** Taken from immediately north of the northeastern site boundary, facing southwest.

**Photo 2:** Taken from immediately south of the southern site boundary, facing north.

Project Site Photographs Figure 6b

**Impact Discussion**

a) Photographs of the project site shown on Figure 6a depict views through the project site from the west. Photographs of the project site shown on Figure 6b depict views through the project site from the northeast and south. Development of the proposed project would occur entirely within Cuesta College SLO campus. The proposed project would be located approximately 1,500 feet from Highway 1 and approximately 3,000 feet from the entrance to El Chorro Regional Park. The proposed instructional building would be approximately 40 feet tall at its highest point, which is generally consistent with the heights of other existing structures on Cuesta College SLO campus. The project site is screened from these nearby viewpoints by existing vegetation, landscaping, and other existing on-campus structures. There are no scenic vistas that would be blocked or interrupted by the project.

***NO IMPACT***

b) The proposed project would be located approximately 1,500 feet from Highway 1, an All American Road as designated on the California Department of Transportation (Caltrans) State Scenic Highway Mapping System (Caltrans, 2011). The proposed instructional building would be approximately 40 feet tall at its highest point, which is generally consistent with the heights of other existing structures on Cuesta College SLO campus. The project site is screened from these nearby viewpoints by existing vegetation, landscaping, and other existing on-campus structures. The project site is developed with existing educational uses, and does not contain scenic resources such as rocks or outcroppings that would be damaged by the project. Project construction would require the removal of up to 10-15 existing landscaping trees on the project site; however, existing trees would be retained where possible, and the project would replant new trees on-site as part of the proposed landscaping. Furthermore, there are no historic buildings on or adjacent to the project site (National Parks Service [NPS], 2015).

***LESS THAN SIGNIFICANT IMPACT***

c) The project site currently contains modular classrooms that would be removed to accommodate development of the proposed project. The proposed instructional building would be designed to be consistent with the scale, height, and landscaping of existing adjacent facilities on Cuesta College SLO campus. Project construction would require the removal of up to 10-15 existing landscaping trees on the project site; however, existing trees would be retained where possible, and the project would replant new trees on-site as part of the proposed landscaping. Therefore, the proposed project would represent a long-term improvement in the existing visual character and quality of the campus. During construction activities, views of staging and construction areas would be affected by equipment, construction materials, and debris. The project would demolish five existing structures on the site and the adjacent parking lot. However, views of construction activities would be limited because the project site is internal to the campus and views of the site are generally blocked by existing structures and vegetation from most viewpoints. Due to the relatively low visual quality of the structures that would be demolished, and the temporary duration of project construction, adverse aesthetic effects during the construction period would less than significant.

***LESS THAN SIGNIFICANT IMPACT***

d) The project site is adjacent to facilities that already have night lighting appropriate to a college campus, and would replace existing facilities, which already include night lighting. The proposed project would include similar night lighting; therefore, no substantial change in lighting would occur as a result of the project compared to existing conditions. The proposed project would result in new sources of glare that may affect daytime visibility for offsite land uses. However, although reflective materials are anticipated to be used in the construction of the proposed facility, the new structure would be internal to the campus, and levels of glare would be similar to existing conditions.

*LESS THAN SIGNIFICANT IMPACT*

| | Potentially Significant Impact | Potentially Significant Unless 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 Dept. 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, 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? | ☐ | ☐ | ☐ | ■ |

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **II. AGRICULTURE AND FORESTRY RESOURCES** | | | | |
| 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? | ☐ | ☐ | ☐ | ■ |

The soil type on the project site is Cropley Clay (2-9 percent slopes), based on the Natural Resources Conservation Service's Web Soil Survey (U.S. Department of Agriculture [USDA] 2015). Cropley series soils occur on alluvial fans, floodplains and in small basins. This series consists of very deep, moderately-well- and well-drained soils that formed from mixed rock sources in alluvium. Permeability is slow, with medium to very high runoff. The ability to transmit water is moderately low to moderately high for this soil type. The Cropley Clay soil type that underlies the project site is classified as Prime Farmland, contingent upon being irrigated.

**Impact Discussion**

a-e) The project site is located in the County of San Luis Obispo, adjacent to the boundary of the City of San Luis Obispo, and is currently used for educational classrooms. There is no Williamson Act Contract on the project site, and the project does not involve any development that would convert agricultural land to a non-agricultural use, conflict with the existing zoning of forest land or timberland, result in the loss or conversion of forest land to non-forest uses, or interrupt ongoing agricultural activity. Therefore, the proposed project would not adversely affect agricultural, forest land, or timberland resources.

***NO IMPACT***

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **III. AIR QUALITY** | | | | |
| -- 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? | ☐ | ☐ | ■ | ☐ |

The Cuesta College SLO campus is within the South Central Coast Air Basin (SCCAB), which includes all of San Luis Obispo, Santa Barbara, and Ventura counties. The climate of the San Luis Obispo County area and all of the SCCAB is strongly influenced by its proximity to the Pacific Ocean and the location of the semi-permanent high pressure cell in the northeastern Pacific. The Mediterranean climate of the region produces moderate average temperatures, although extreme temperatures can be reached in the winter and summer. Local climate conditions are shown in Table 1.

**Table 1**
**San Luis Obispo Climate Conditions**

| | |
|---|---|
| Average annual rainfall | 22.4 inches |
| Average maximum temperature (Annual) | 69.8°F |
| Average minimum temperature (Annual) | 46.7°F |
| Warmest Month(s) | August |
| Coolest Month(s) | January |
| Annual mean temperature | 58.3°F |
| Average wind speed | 3.2 m/s |

*Source: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7851 and CalEEMod (2015).*

Criteria Pollutant Regulation. The federal and state governments have been empowered by the federal and state Clean Air Acts to regulate the emission of airborne pollutants and have established ambient air quality standards for the protection of public health. The United States Environmental Protection Agency (U.S. EPA) is the federal agency designated to administer air

quality regulation, while the California Air Resources Board (ARB) is the state equivalent under the California Environmental Protection Agency (CalEPA). Local control in air quality management is provided by ARB through multi-county and county-level Air Pollution Control Districts (APCDs). ARB establishes statewide air quality standards and is responsible for the control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. The ARB has established 15 air basins statewide. The project site is located in the San Luis Obispo County portion of the SCCAB and is under jurisdiction of the San Luis Obispo Air Pollution Control District (SLOAPCD, 2012).

Federal and state standards have been established for six criteria pollutants, including ozone ($O_3$), carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), particulates less than 10 and 2.5 microns in diameter ($PM_{10}$ and $PM_{2.5}$), and lead (Pb) (refer to Table 2). California air quality standards are identical to or stricter than federal standards for all criteria pollutants. Table 2 illustrates the current Federal and State Ambient Air Quality Standards.

**Table 2**
**Current Federal and State Ambient Air Quality Standards**

| Pollutant | Federal Standard | California Standard |
|---|---|---|
| Ozone | 0.075 ppm (8-hr avg) | 0.09 ppm (1-hr avg)<br>0.070 ppm (8-hr avg) |
| Carbon Monoxide | 9.0 ppm (8-hr avg)<br>35.0 ppm (1-hr avg) | 9.0 ppm (8-hr avg)<br>20.0 ppm (1-hr avg) |
| Nitrogen Dioxide | 0.053 ppm (annual avg) | 0.18 ppm (1-hr avg)<br>0.03 ppm (annual avg) |
| Sulfur Dioxide | 0.03 ppm (annual avg)<br>0.14 ppm (24-hr avg)<br>0.5 ppm (3-hr avg) | 0.04 ppm (24-hr avg)<br>0.25 ppm (1-hr avg) |
| Lead | 1.5 $\mu g/m^3$ (calendar quarter) | 1.5 $\mu g/m^3$ (30-day avg) |
| Particulate Matter ($PM_{10}$) | 150 $\mu g/m^3$ (24-hr avg) | 20 $\mu g/m^3$ (annual avg)<br>50 $\mu g/m^3$ (24-hr avg) |
| Particulate Matter ($PM_{2.5}$) | 15 $\mu g/m^3$ (annual avg)<br>35 $\mu g/m^3$ (24-hr avg) | 12 $\mu g/m^3$ (annual avg) |

*ppm= parts per million*
*$\mu g/m^3$ = micrograms per cubic meter*
*Source: California Air Resources Board, 2013.*

Current Ambient Air Quality. SLOAPCD monitors air pollutant levels to assure that air quality standards are met, and if they are not met, to also develop strategies to meet the standards. Depending on whether or not the standards are met or exceeded, the air basin is classified as being in "attainment" or as "non-attainment."

Table 3 summarizes the annual air quality data for the local airshed. The ARB maintains over 60 air quality monitoring stations throughout California, including ~~ten~~ 11 stations in San Luis Obispo County. Of the 11 stations in San Luis Obispo County, nine are managed by the APCD and two are managed by ARB. The nearest monitoring station to the project site is located in the City of San Luis Obispo and is currently ~~owned and operated~~ managed by ARB. The station is located at 3220 South Higuera Street, Suite 330 and approximately 8.5 miles southeast of the project site. Air quality parameters monitored at this station include: ozone ($O_3$), particulates less than 10 and 2.5 microns in diameter ($PM_{10}$ and $PM_{2.5}$), wind speed, wind direction, and

ambient temperature (ATM). The data collected at this station is considered to be generally representative of the baseline air quality experienced at the project site.

The primary pollutants of concern in San Luis Obispo County are ozone ($O_3$) and particulate matter ($PM_{10}$). Table 3 provides the number of days of State or Federal exceedance in a given year, that the standard would have been exceeded had sampling occurred every day of the year. The major local sources for $PM_{10}$ are agricultural operations, vehicle dust, grading, and dust produced by high winds. Ozone is a secondary pollutant that is not produced directly by a source, but rather is formed by a reaction between nitrogen oxides ($NO_X$) and reactive organic gases (ROG) in the presence of sunlight. Reductions in ozone concentrations are dependent on reducing the amount of these precursors. In San Luis Obispo County, the major sources of ROG are motor vehicles, organic solvents, the petroleum industry, and pesticides; and the major sources of $NO_X$ are motor vehicles, public utility power generation, and fuel combustion by various industrial sources (San Luis Obispo County Clean Air Plan, 2001). According to the 2013 APCD Air Quality Report, the eastern part of the County is in non-attainment for the Federal 8-hour ozone standard. The County, as a whole, is also in non-attainment for the State ozone and $PM_{10}$ standards.

**Table 3**
**Ambient Air Quality Data at the San Luis Obispo – 3220 South Higuera Street Station**

| Pollutant | 2011 | 2012 | 2013 |
|---|---|---|---|
| **Ozone, ppm –**Hourly Maximum | 0.078 | 0.070 | 0.067 |
| Number of days of State exceedances (>0.09 ppm) | 0 | 0 | 0 |
| Number of days of Federal exceedances (>0.12 ppm) | 0 | 0 | 0 |
| **Ozone, ppm –** Eight Hour (State) | 0.066 | 0.057 | 0.061 |
| Number of days of State exceedances (>0.070 ppm) | 0 | 0 | 0 |
| Number of days of Nation exceedances (>0.075 ppm) | 0 | 0 | 0 |
| **Particulate Matter <10 microns, $\mu g/m^3$** Worst 24 Hours | 91.7 | 51.3 | 75.6 |
| Number of samples of State exceedances (>50 $\mu g/m^3$ ) | 2 | 1 | 3 |
| Number of samples of Federal exceedances (>150 $\mu g/m^3$ ) | 0 | 0* | 0 |

** There was insufficient (or no) data available to determine the value.*
*Source: CARB, Top 4 Summaries, 2011-2013, 2013 APCD Air Quality Report*
*San Luis Obispo - 3220 South Higuera Street Monitoring Station*

Sensitive Receptors. Certain population groups are considered more sensitive to air pollution than others. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases. The majority of sensitive receptor locations are therefore residences, schools, and hospitals. The project site is located on a school campus, which is itself a sensitive receptor. Additional specific sensitive receptors located on the Cuesta College SLO campus include an existing children's center (preschool) adjacent to the western boundary of the project site.

**Impact Discussion**

a) Under state law, the SLOAPCD is required to prepare an overall plan for air quality improvement for the SCCAB, known as the Clean Air Plan (CAP). The most recent CAP was prepared in 2001. The 2001 CAP prepared by SLOAPCD addresses the attainment and

maintenance of state and federal ambient air quality standards within the SCCAB. The consistency of a proposed project with the CAP is based on the following criteria:

1. *Are population projections used in the plan or project equal to or less than those used in the most recent CAP for the same area?*
2. *Is the rate of increase in vehicle trips and miles traveled less than or equal to the rate of population growth for the same area?*
3. *Have all applicable land use and transportation control measures and strategies from the CAP been included in the plan or project to the maximum extent feasible?*

The project would replace existing modular classrooms with a new instructional building, and would not increase enrollment at Cuesta College, or generate new operational vehicle trips. The project has also been designed in accordance with local control measures and strategies and would not change existing land use or transportation. Therefore, the project would be consistent with the 2001 CAP.

***LESS THAN SIGNIFICANT IMPACT***

b-d) An evaluation of both short-term and long-term air pollutant emissions is provided in the paragraphs below.

Construction Emissions. The use of construction vehicles and equipment during project construction would generate temporary increases in air pollutant emissions. These impacts would primarily be associated with diesel equipment emissions and dust generated by on-site excavating and drilling. The project would not import or export material. Construction emissions (including demolition) were estimated using the California Emissions Estimator Model (CalEEMod) version 2013.2.2 based on an assumed maximum area of disturbance of 1.3 acres. Maximum quarterly emissions are shown in Table 4 (see Appendix A for complete CalEEMod results), and compared to the applicable SLOAPCD construction emissions thresholds, which are based on guidance in the SLOAPCD's *CEQA Air Quality Handbook* (April 2012).

**Table 4**
**Construction Emissions**

| Pollutant of Concern | Criteria | | |
|---|---|---|---|
| | Emissions[1] | Threshold | Threshold Exceeded? |
| ROG and $NO_X$ (combined) | 0.55 tons/quarter | 2.5 tons/quarter (Tier 1) | No |
| Fugitive $PM_{10}$ (dust) | <.01 tons/quarter | 2.5 tons/quarter (Tier 1) | No |
| DPM[2] | 0.03 tons/quarter | 0.13 tons/quarter (Tier 1) | No |

*1. Quarterly emissions were calculated by dividing maximum annual construction emissions by 4, since construction activities would extend for a duration exceeding 90 days, as recommended by SLOAPCD.*
*2. The DPM estimations were derived from the "$PM_{10}$ Exhaust" output from CalEEMod as recommended by SLOAPCD. This estimation represents a worst case scenario because it includes other $PM_{10}$ exhaust other than DPM.*
*See Appendix A for CalEEMod software program output.*

As shown in Table 4, construction emissions would be below quarterly thresholds set by SLOAPCD.

SLOAPCD requires that projects with grading areas that are greater than 4-acres or that are within 1,000 feet of any sensitive receptor implement dust control measures to minimize nuisance impacts and to reduce fugitive dust emissions. Project construction would require grading and excavation within a sensitive receptor area. The project must also implement SLOAPCD's construction phase idling limitations if diesel powered construction activity will occur in close proximity to sensitive receptors. Construction would be staged on the Cuesta College SLO campus, which is within an existing school receptor. However, the project staging area would be predominantly used for vehicle storage when not in use (such as overnight), and equipment idling would be prohibited in the staging area. To the maximum extent practicable, no diesel equipment would be used in the staging areas. In addition, SLOAPCD requires that projects which involve demolition of buildings where asbestos containing materials (ACM) could be encountered implement measures for proper handling, demolition, and disposal. Therefore, with implementation of applicable SLOACPD dust control measures, including prohibition of developmental burning, idling limitations, and measures for demolition of buildings containing ACM, the project would have a less than significant impact to air quality and sensitive receptors from project construction.

Operational Emissions. The project would not increase enrollment at Cuesta College, and would not result in an increase in vehicle trips that would generate new criteria pollutant emissions. Operation of the project would result in ongoing emissions associated with natural gas use and area sources, such as landscaping, consumption of consumer products, and off gassing from architectural coatings. Daily and annual operational emissions associated with the proposed instructional building are shown in Table 5 (see Appendix A for complete CalEEMod results), and compared to the applicable SLOAPCD operational emissions thresholds, which are based on guidance in the SLOAPCD's *CEQA Air Quality Handbook* (April 2012). In addition, the project would eliminate the emissions associated with operation of the existing modular classrooms, which would reduce net operational emissions further below the estimated levels

shown in Table 5. Therefore, the project's operational emissions would not exceed the applicable SLOAPCD operational emissions thresholds.

*LESS THAN SIGNIFICANT IMPACT*

**Table 5**
**Operational Emissions Comparison**

| Emission Source | Maximum Daily Emissions | | | |
|---|---|---|---|---|
| | **Ozone Precursors (ROG + $NO_X$)[1]** | **CO** | **Fugitive Particulate Matter ($PM_{10}$), Dust** | **Diesel Particulate Matter (DPM)1** |
| Daily Operational Emissions | 1.1 lbs/day | 0.2 lbs/day | <0.1 lbs/day | <0.1 lbs/day |
| *SLOAPCD Threshold (lbs/day)* | *25 lbs/day* | *550 lbs/day* | *25 lbs/day* | *1.25 lbs/day* |
| ***Threshold Exceeded?*** | ***NO*** | ***NO*** | ***NO*** | ***NO*** |
| Annual Operational Emissions | 0.2 tons/year | 0.1 tons/year | <0.1 tons/year | <0.1 tons/year |
| *Annual SLOAPCD Threshold (tons/year)* | *25 tons/year* | *n/a* | *25 tons/year* | *n/a* |
| ***Threshold Exceeded?*** | ***NO*** | ***n/a*** | ***NO*** | ***n/a*** |

*Daily and annual emission thresholds are based on the California Health & Safety Code Division 26, Part 3, Chapter 10, Section 40918 and the CARB Carl Moyer Guidelines for DPM.*
*1. CalEEMod – use winter operational emission data to compare to operational thresholds.*

e) The SLOAPCD CEQA *Air Quality Handbook* identifies multiple odor-causing sources including but not limited to; wastewater treatment plants, landfills, composting facilities, petroleum refineries and chemical manufacturing. Although the project may generate short-term minor odors during demolition and construction, the proposed project would not involve uses that could generate substantial objectionable odors that could affect a substantial number of people.

*LESS THAN SIGNIFICANT IMPACT*

| | **Potentially Significant Impact** | **Potentially Significant Unless 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 Wildlife or U.S. Fish and Wildlife | ☐ | ☐ | ☐ | ■ |

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **IV. BIOLOGICAL RESOURCES** | | | | |
| -- Would the project: | | | | |
| Service? | | | | |
| b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife 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? | ☐ | ☐ | ■ | ☐ |
| 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? | ☐ | ☐ | ☐ | ■ |

The project site is located west of the urban boundary of the City of San Luis Obispo on the Cuesta College SLO campus, which is surrounded primarily by agricultural cultivation, non-native grassland, and existing rural development. The campus, and the area surrounding the project site on all sides, is developed with existing land uses and structures associated with operation of Cuesta College.

Regulatory Setting. The following is a summary of the regulatory context under which biological resources are managed at the federal, state, and local level. Agencies with responsibility for protection of biological resources within the Study Area include:

- *U.S. Fish and Wildlife Service and National Marine Fisheries Service (federally listed species, candidate and proposed species for federal listing, and migratory birds)*

- *California Department Fish and Game* (*state listed and fully-protected species, and other special status plants, wildlife and habitats, including streams, rivers, lakes and riparian vegetation*)
- *Central Coast Regional Water Quality Control Board (waters of the State)*
- *U.S. Army Corps of Engineers (waters of the United States, including wetlands)*
- *County of San Luis Obispo (special status plants, wildlife, and habitats)*

A number of Federal and State statutes provide a regulatory structure that guides the protection of biological resources.

*California Department of Fish and Game Code Chapter 6*. This code governs State-designated wetlands (including riparian habitat) and dictates mitigation is required to replace wetlands extent and value lost to development. A Section 1603 (Fish and Game Code) Agreement is required for any alteration to a stream or lake or their banks for purposes of development in California.

*Clean Water Act*. Regulatory protection for water resources throughout the United States is under the jurisdiction of the Army Corps of Engineers. Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the United States without a permit from the Corps. Delineation of wetlands and other waters of the United States is required to determine acreage affected by dredge spoil or fill disposal. Impacts to biological resources are assessed as part of the permit process by the United States Fish and Wildlife Service. Policies concerning loss of wetlands generally stress the need to compensate for wetlands lost by creating wetlands from non-wetland habitat on at least an acre-for-acre basis.

**Impact Discussion**

a-c) The project would be located on the Cuesta College SLO campus. The project site lies entirely within the campus in an area that has already been disturbed from its natural state and the proposed project would not significantly affect biological resources. A review of the Biogeographic Information and Observation System (BIOS - http://www.dfg.ca.gov/biogeodata/bios/) and the U.S. Fish and Wildlife Service (USFWS) Critical Habitat Portal (http://criticalhabitat.fws.gov) indicates that the project site is within the critical habitat range for California red-legged frog (*Rana draytonii*). California red-legged frog requires permanent or semi-permanent water at least two feet deep, bordered by emergent or riparian vegetation, and upland grassland, forest or scrub habitats for refuge and dispersal. Highly aquatic species, such as the California red-legged frog, were determined to not occur on-site due to the lack of suitable breeding habitat on or in the immediate vicinity of the project site. The project site is not within the critical habitat range for any other identified plant or wildlife species. No riparian or other sensitive resource habitat is present within the Cuesta College SLO campus. The project site is located approximately 3,000 feet west of Dairy Creek, and approximately 500 feet east of Pennington Creek, which are tributary creeks to Chorro Creek, which is locate approximately 1,700 feet to the south (Earth Systems Pacific, 2015). A site investigation and review of the USFWS National Wetlands Inventory indicates that no federally protected wetlands are present on the Cuesta College SLO campus or on the project site.

***NO IMPACT***

d) The project site is surrounded on all sides by existing development, and is not located within any wildlife movement corridors or native wildlife nursery sites. Therefore, implementation of the proposed project would not result in any impacts to wildlife movement. However, the project may indirectly impact nesting birds and their habitat within existing trees on or adjacent to the proposed project site. Project construction would require the removal of up to 10-15 existing landscaping trees on the project site. Existing trees would be retained where possible, and the project would replant new trees on-site as part of the proposed landscaping. However, removal of existing trees has the potential to impact nesting birds protected under the Migratory Bird Treaty Act. Because project construction would require the removal of existing trees, the project has the potential to impact migratory birds, and would require mitigation.

*POTENTIALLY SIGNIFICANT UNLESS MITIGATION INCORPORATED*

**Mitigation Measures**

**BIO-1** **Native/Breeding Bird Protection**. To avoid impacts to nesting birds, including birds protected under the Migratory Bird Treaty Act, all initial ground disturbing activities including tree removal should be limited to the time period between August 16 and January 31 (i.e., outside the nesting season) if feasible. If initial site disturbance, grading, and vegetation removal cannot be conducted during this time period, a pre-construction survey for active nests within the project site shall be conducted by a qualified biologist at the site no more than two weeks prior to any construction activities. If an active bird nest is located, the nest site shall be fenced at a distance commensurate with the particular species and in consultation with the California Department of Fish and Wildlife (CDFW) until juveniles have fledged and when there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing. Construction personnel shall be instructed on the sensitivity of the area. The project proponent shall record the results of the recommended protective measures described above to document compliance with applicable state and federal laws pertaining to protection of native birds.

**BIO-2** **Tree Protection and Replacement.** Existing trees on and adjacent to the project site shall be avoided through setbacks and installation of protective fencing to the extent feasible during demolition and construction. Trees that cannot be avoided and must be removed due to the proposed project shall be replaced at a rate of one native tree planted for every one mature tree removed. Replacement trees shall be installed on-site or at an approved off-site location under the direction of a certified arborist. A restoration and monitoring program shall be developed and implemented for a minimum of seven years or until stasis has been determined by certified arborist

Implementation of Mitigation Measure BIO-1 and BIO-2 would reduce impacts to native bird habitat provided by specific trees to a less than significant level.

e) Development of the proposed project would require the removal and restoration of on-site landscaping, including trees and shrubs. Site plans include preserving existing landscaped areas where possible as well as planting new trees and shrubs to replace those that would be removed to accommodate the proposed project. As described above, mitigation is required for impacts related to tree removal. However, SLOCCCD does not have an adopted tree protection and replacement ordinance or policy. Therefore, the project would not conflict with any locally adopted policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

***LESS THAN SIGNIFICANT IMPACT***

f) The project site is not within an area covered by an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

***NO IMPACT***

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **V. 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 as defined in §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? | ☐ | ☐ | ■ | ☐ |

A cultural resource may be designated as significant by National, State, or local authorities. State historic preservation regulations include the statutes and guidelines contained in CEQA (Public Resources Code Sections 20183.2 and 21084.1 and Section 15064.5 of the CEQA Guidelines).

The National Register of Historic Places (NRHP) is an official list of buildings, structures, objects, sites, and districts worthy of preservation because of their significance in American history, architecture, archeology, engineering, and culture. The NRHP recognizes resources of local, state and national significance which have been documented and evaluated according to uniform standards and criteria. A database search of the National Register of Historic Places did not contain any historical resource listings within or in close proximity to the project site (National Parks Service [NPS], 2015).

Rincon Cultural Resource Specialists reviewed a search of the California Historical Resources Information System (CHRIS) conducted by the Central Coast Information Center (CCIC) at the University of California, Santa Barbara. The search was conducted to identify all previously conducted cultural resources work within the project site and a 0.5-mile radius around it, as well as to identify previously recorded cultural resources within or near the project site. The CHRIS records search found that 23 previous studies had been performed within a 0.5-mile radius of the project site, but that none of these studies included the project site. The studies performed around the site identified 11 cultural resources within a 0.5-mile radius of the site.

The disposition of human remains is governed by Section 7050.5 of the California HSC and Sections 5097.94 and 5097.98 of the Public Resources Code, and falls within the jurisdiction of the Native American Heritage Commission (NAHC).

**Impact Discussion**

a) According to the NRHP list, there are no recognized historic buildings, objects, sites, or districts on the project site (National Park Service, 2015).

*NO IMPACT*

b-d) The project site is currently developed with modular classrooms, and associated campus infrastructure, including paved parking, walkways, and landscaping, and the project site is located within an area that has already undergone substantial ground disturbance during construction of previously existing facilities. Therefore, the likelihood of encountering cultural or archeological resources, unique paleontological or geologic features, or human remains on the project site is minimal. Proposed construction activities would include limited areas and depths of new site disturbances. However, the potential for encountering such resources during project construction would remain. Therefore, mitigation during the construction phase is required to reduce the project's impacts to a less than significant level.

*POTENTIALLY SIGNIFICANT UNLESS MITIGATION INCORPORATED*

**Mitigation Measures**

In order to reduce the potential for impacts to cultural resources to a less than significant level, the SLOCCCD shall implement the following measures.

**CR-1** **Construction Monitoring.** A qualified archaeologist and paleontologist shall monitor all groundbreaking activities within the project site. In the event that archaeological and historic artifacts are encountered during project construction, all work in

the vicinity of the find will be halted until such time as the find is evaluated by a qualified archaeologist and appropriate mitigation (e.g., curation, preservation in place, etc.), if necessary, is implemented. After the find has been appropriately mitigated consistent with Mitigation Measure CR-2 or Mitigation Measure CR-3, as appropriate, work in the area may resume.

**CR-2** **Procedure for Treatment of Uncovered Cultural Resources.** If buried cultural resources are uncovered during construction, all work will be halted in the vicinity of the archaeological discovery until a qualified archaeologist can visit the site of discovery and assess the significance of the cultural resource. In the event that any artifact or an unusual amount of bone, or shell is encountered during construction, work will be immediately stopped and relocated to another area. The lead agency will stop construction within 100 feet of the exposed resource until a qualified archaeologist/paleontologist can evaluate the find (see 36 CFR 800.11.1 and CCR, Title 14, Section 15064.5[f]). Examples of such cultural materials might include: ground stone tools such as mortars, bowls, pestles, and manos; chipped stone tools such as projectile points or choppers; flakes of stone not consistent with the immediate geology such as obsidian or fused shale; historic trash pits containing bottles and/or ceramics; or structural remains. If the resources are found to be significant, they will be avoided or will be mitigated consistent with State Historic Preservation Office (SHPO) Guidelines.

**CR-3** **Procedure for Accidental Discovery of Human Remains.** In the event of an accidental discovery of any human remains, the steps and procedures specified in Health and Safety Code Section 7050.5, California Environmental Quality Act (CEQA) Section 15064.5(e), and Public Resources Code Section 5097.98 will be implemented. No further excavation or disturbance of the area where the remains are discovered and a nearby area reasonably suspected to overlie adjacent remains is allowed until the coroner is contacted and the appropriate steps taken pursuant to Health and Safety Code §7050.5 and Public Resource Code §5097.98. If the coroner determines the remains to be Native American, the coroner will contact the Native American Heritage Commission (NAHC) within 24 hours. If Native American human remains are discovered during project construction, it will be necessary to comply with state laws relating to the disposition of Native American burials that are under the jurisdiction of the NAHC (Pub. Res. Code Section 5097). For remains of Native American origin, no further excavation or disturbance will take place in the area where the remains are discovered and a nearby area reasonably suspected to overlie adjacent remains until the most

likely descendant of the deceased Native American(s) has made a recommendation to the landowner or the person responsible for the excavation work regarding means of treating or disposing of the human remains and any associated grave goods, with appropriate dignity, as provided in the Pub. Res. Code Section 5097.98; or the NAHC is unable to identify a most likely descendant or the descendant fails to make a recommendation within 48 hours after being notified. In consultation with the most likely descendant, the project archaeologist and the lead agency will determine a course of action regarding preservation or excavation of Native American human remains, and this recommendation will be implemented expeditiously. If a most likely descendent cannot be located or does not make a recommendation, the project archaeologist and the lead agency will determine a course of action regarding preservation or excavation of Native American human remains, which will be submitted to the NAHC for review prior to implementation.

Mitigation would require monitoring during construction, and ensure that any previous undiscovered cultural resources identified during construction activity would be mitigated in order to ensure that impacts to currently unknown cultural resources would remain less than significant.

| | Potentially Significant Impact | Potentially Significant Unless 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? | ☐ | ☐ | ☐ | ■ |
| 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? | ☐ | ☐ | ■ | ☐ |

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **VI. GEOLOGY AND SOILS** | | | | |
| -- Would the project: | | | | |
| c) Be located on a geologic unit or soil that is 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, creating substantial risks to life or property? | ☐ | ☐ | ☐ | ■ |
| e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? | ☐ | ☐ | ☐ | ■ |

Topography: Nearly level (approximately 245-250 above mean sea level [msl])
Landslide Risk Potential: Low (SLO County General Plan Safety Element, December 1999)
Liquefaction Potential: None (Earth Systems Pacific, 2015)
Nearby potentially active faults?: No (SLO County General Plan Safety Element, December 1999)
Area known to contain serpentine or ultramafic rock or soils?: No (Earth Systems Pacific, 2015)
Shrink/Swell potential of soil: Low (Earth Systems Pacific, 2015)
Other notable geologic features: None

The Cuesta College SLO campus is located on the eastern end of the Chorro Valley, which is bounded to the north by the northwest-trending Santa Lucia Mountain range and to the south by the northwest-trending line of dacite and rhyodacite volcanic plugs known as the Seven Sisters. The closest volcanic plug to the site is Cerro Romauldo, approximately one mile southeast of the campus. The campus is located between Dairy Creek, 3,000 feet to the east, and Pennington Creek, 500 feet to the west, which are tributary creeks to Chorro Creek, which is located approximately 1,700 feet to the south (Earth Systems Pacific, 2015).

On-site soils consist of Cropley Clay (2- 9 percent slopes) based on the Natural Resources Conservation Service's (NRCS) Web Soil Survey (USDA 2015). This soil type is described in Section II, Agricultural Resources, above. The project site is also mapped within the APCD's naturally occurring asbestos (NOA) zone (APCD CEQA Handbook, 2012). However, there are no naturally-occurring asbestos-bearing formations (serpentine or ultramafic rock) on the site (Earth Systems Pacific, 2015). The site is underlain predominantly by sandstone bedrock, which is not an asbestos-bearing geologic unit (Earth Systems Pacific, 2015).

Regulatory Policies. California's 2010 Building Code provides guidance for new development in areas with soil or geologic challenges. The Building Code includes goals, policies, and standards to minimize the potential for loss of life and property resulting from geologic and seismic hazards.

**Impact Discussion**

a. i) The project site is located within an earthquake fault zone for surface fault rupture, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map (California Geological Survey, 2010). However, no active faults are located on the Cuesta College SLO campus.

***NO IMPACT***

a. ii) The project site is in a region that experiences strong seismic ground shaking from earthquakes. The closest active fault to the site is the Irish Hills segment of the Los Osos Fault, located approximately 3 miles to the south of the project site (Earth Systems Pacific, 2015). However, the site is generally flat and is not in a State of California Earthquake Fault Zone (Bryant & Hart 1997 rev. 2007) or in a 2013 CBC Site Class E or F category, which pose a risk to people or structures. The project would be required to comply with the requirements of the California Building Code (CBC 2010) as adopted by the California Building Standards Commission, which requires that new building be designed to withstand ground shaking. In addition the project would replace existing modular classrooms with a new instructional building, and would not result in any increase in enrollment at Cuesta College. Therefore, no people or structures involved in the project would be subject to potential exposure to adverse effects from seismic ground shaking, including the risk of loss, injury, or death with adherence to the requirements of the CBC.

***LESS THAN SIGNIFICANT IMPACT***

a. iii) The project site is in a region identified as having a high potential for liquefaction (County of San Luis Obispo Landslide Hazard Map, revised September 2013; San Luis Obispo General Plan Safety Element, December 1999). Seismically induced settlement of sufficient magnitude to cause structural damage is normally associated with poorly consolidated, predominantly sandy soils, or variable consolidation characteristics within a building area. However, due to the shallow depth to the sandstone bedrock as documented in the Geotechnical Engineering and Geologic Hazards Report prepared for the project (refer to Appendix B), the potential for liquefaction to occur on the specific project site is nil (Earth Systems Pacific, 2015).

***LESS THAN SIGNIFICANT IMPACT***

a. iv) The project site is generally flat with no significant slopes on or immediately adjacent to the site (Earth Systems Pacific, 2015). The proposed project would not create slopes or other topographic features that would increase the risk of landslides. Therefore, no people or structures involved in the project would be subject to potential exposure to adverse effects from landslides, including the risk of loss, injury, or death.

***LESS THAN SIGNIFICANT IMPACT***

b) The project site is generally flat, and this analysis assumes that cut and fill soil would be balanced during site preparation and grading for project construction. Because future development may disturb more than one acre, the SLOCCCD would be required to comply with the National Pollutant Discharge Elimination System (NPDES) permit program. Loss of topsoil or soil erosion may occur during project grading. However, because the project site is flat, and is already developed with existing uses, construction would not require substantial grading.

According to the Geotechnical Engineering and Geologic Hazards Report prepared for the project (refer to Appendix B), there are no naturally occurring asbestos-bearing rock formations (serpentinite or ultramafic rock) on the site. Therefore, there is no potential for naturally-occurring asbestos to occur on the site (Earth Systems Pacific, 2015).

***LESS THAN SIGNIFICANT IMPACT***

c) The project site is generally flat, and the proposed project would not create slopes or other topographic features that would increase the risk of landslides. The project site does not contain any geologic units or soil that will be unstable as a result of the replacement of the existing modular classrooms with a new building (Web Soil Survey, USDA 2015).

***NO IMPACT***

d) The project would occur in an area where educational development is already established and would replace existing temporary structures with an instructional building. The project would be required to comply with the requirements of the CBC. The current project site is not located on expansive soil (Earth Systems Pacific, 2015).

***NO IMPACT***

e) The project does not propose to utilize septic tanks, septic systems, or other alternative wastewater disposal systems. The project is located where sewers are available and would be supported by existing systems.

***NO IMPACT***

| | Potentially Significant Impact | Potentially Significant Unless 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? | ☐ | ☐ | ■ | ☐ |
| b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? | ☐ | ☐ | ■ | ☐ |

Project implementation would generate greenhouse gas (GHG) emissions through the burning of fossil fuels or other emissions of GHGs, thereby contributing to cumulative impacts associated with climate change. The following summarizes the regulatory framework related to climate change.

In response to an increase in man-made GHG concentrations over the past 150 years, California has implemented AB 32, the "California Global Warming Solutions Act of 2006." AB 32 codifies the Statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15% reduction below 2005 emission levels), and requires ARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires ARB to adopt regulations to require reporting and verification of statewide GHG emissions.

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

Pursuant to the requirements of SB 97, the Resources Agency adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions in March 2010. These guidelines are used in evaluating the cumulative significance of GHG emissions from the proposed project.

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of

past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15355).

The significance of project GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with a regional GHG reduction plan (such as a Climate Action Plan) (SLOAPCD, 2012). Because SLOCCCD has not adopted a Climate Action Plan or other qualified GHG reduction plan, SLOAPCD's adopted GHG CEQA thresholds have been used to evaluate the significance of potential emissions. Calculations of $CO_2$, $CH_4$, and $N_2O$ emissions are provided to identify the magnitude of potential project effects. The analysis focuses on $CO_2$, $CH_4$, and $N_2O$ because these comprise 98.9% of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and $SF_6$, were also considered for the analysis. However, because the project is an educational development, the quantity of fluorinated gases would not be significant since fluorinated gases are primarily associated with industrial processes. Emissions of all GHGs are converted into their equivalent weight in $CO_2$ ($CO_2e$). Minimal amounts of other main GHGs (such as chlorofluorocarbons [CFCs]) would be emitted, but these other GHG emissions would not substantially add to the calculated $CO_2e$ amounts. Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper (January 2008) and include the use of the California Climate Action Registry (CCAR) General Reporting Protocol (January 2009).

**Impact Discussion**

a) GHG emissions associated with project construction and operations are discussed below.

*Construction Emissions*. Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches adequately addresses impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008).

Construction of the proposed project would generate temporary GHG emissions primarily due to the operation of construction equipment and truck trips. Construction activity is assumed to occur over a period of approximately one year based on the CalEEMod default construction period lengths and the extent of proposed construction. For the proposed project, site grading would not involve any export or import of material. Emissions associated with the construction period were estimated using CalEEMod, based on the CalEEMod default projections for the amount of equipment that would be used onsite at one time. Complete results from CalEEMod and assumptions can be viewed in Appendix A. SLOAPCD recommends quantifying and amortizing construction-related GHG emissions over the lifetime of the project, and adding the amortized emissions to the project's operational GHG emissions. For most projects, a 50-year project lifetime is recommended. Estimated construction emissions (total, and amortized over the 50-year lifetime of the project) are shown in Table 6.

*On-Site Operational Emissions*. Operational emissions from energy use (electricity and natural gas use) for the proposed project were estimated using CalEEMod (see Appendix A for calculations). The default values on which CalEEMod are based include the California Energy

Commission (CEC) sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies. CalEEMod provides operational emissions of $CO_2$, $N_2O$, and $CH_4$. Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating, were calculated in CalEEMod based on standard emission rates from the California Air Resources Board (ARB), U.S. EPA, and emission factor values provided by SBCAPCD (CalEEMod User's Guide, 2013). Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod User's Guide, 2013). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle). Emissions from water and wastewater usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California. Total on-site operational emissions would be approximately 149 metric tons $CO_2e$/year.

*Direct Emissions from Mobile Combustion*. The project would not result in an increase in student enrollment, or otherwise result in an increase in operational vehicle trips. Therefore, the project would not result in operational mobile emissions.

*Combined Annual Construction and Operational GHG Emissions*. Table 6 shows the combined construction and operational GHG emissions associated with the proposed project. In addition, the project would eliminate the emissions associated with operation of the existing modular classrooms, which would reduce net operational emissions further below the estimated levels shown in Table 6.

**Table 6**
**Combined Annual Emissions of Greenhouse Gases**

| Emission Source | Annual Emissions ($CO_2e$) |
|---|---|
| **Construction (total)** | 150 metric tons $CO_2e$ |
| **Construction (amortized over 50 years)** | 3 metric tons $CO_2e$ |
| **Operational** | |
| Area | <0.1 metric tons $CO_2e$ |
| Energy | 129 metric tons $CO_2e$ |
| Mobile | 0 metric tons $CO_2e$ |
| Solid Waste | 19 metric tons $CO_2e$ |
| Water | 7 metric tons $CO_2e$ |
| **Total (amortized)** | **158 metric tons $CO_2E$** |

*Sources: See Appendix A for CalEEMod results.*

As shown in Table 6, the combined annual emissions would total approximately 158 metric tons per year of $CO_2e$. These emissions do not exceed the adopted SLOAPCD threshold of 1,150 metric tons per year. Therefore, impacts resulting from GHG emissions would be less than significant.

***LESS THAN SIGNIFICANT IMPACT***

b) CalEPA's Climate Action Team (CAT) published the 2006 CAT Report which includes GHG emissions reduction strategies intended for projects emitting less than 10,000 tons $CO_2e$/year. In addition, the California Attorney General's Office has developed Global Warming Measures (2008) and OPR's CEQA and Climate Change (CAPCOA, 2008) document includes greenhouse gas reduction measures intended to reduce GHG emissions in order to achieve statewide emissions reduction goals. All of these measures aim to curb the GHG emissions through suggestions pertaining to land use, transportation, renewable energy, and energy efficiency. Several of these actions are already required by California regulations, such as:

- AB 1493 (Pavley) requires the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks.
- In 2004, ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling.
- The Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989) established a 50% waste diversion mandate for California.
- Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).
- California's Renewable Portfolio Standard (RPS), established in 2002, requires that all load serving entities achieve a goal of 33 percent of retail electricity sales from renewable energy sources by 2020, within certain cost constraints.
- Green Building Executive Order, S-20-04 (CA 2004), sets a goal of reducing energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels.

The proposed project would not conflict with state and local regulations intended to reduce GHG emissions from new development. The project would also be required to conform to Title 24 California Code of Regulations, California Plumbing Code 2013, and California's CALGREEN Code. Consistency with these state regulations and goals illustrates that the project would not conflict with the state's greenhouse gas-related legislation and would not contribute to the inability to meet reduction goals.

***LESS THAN SIGNIFICANT IMPACT***

| | Potentially Significant Impact | Potentially Significant Unless 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? | ☐ | ☐ | ■ | ☐ |

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **VIII.HAZARDS AND HAZARDOUS MATERIALS** | | | | |
| -- Would the project: | | | | |
| 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 ¼ mile of an existing or proposed school? | ☐ | ☐ | ■ | ☐ |
| d) Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | ☐ | ☐ | ■ | ☐ |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? | ☐ | ☐ | ☐ | ■ |
| f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? | ☐ | ☐ | ☐ | ■ |
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | ☐ | ☐ | ☐ | ■ |
| h) Expose people or structures to 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? | ☐ | ☐ | ■ | ☐ |

The California Department of Toxic Substance Control (DTSC), EnviroStor database provides existing information on permits and corrective action at hazardous waste facilities, as well as site cleanup projects. EnviroStor also provides information on completed facility inspection and enforcement actions, in addition to site investigation, site cleanup, permitting, and planned, current or completed corrective actions under DTSC's oversight. A portion of the Cuesta

College SLO campus is designated as a Military Evaluation Cleanup Site; however, the status of the campus site is listed as 'inactive-needs evaluation.' The 'inactive-needs evaluation' cleanup status defines non-active sites where DTSC has determined a Preliminary Endangerment Assessment (PEA) or other evaluation is required (DTSC, 2005).

The project is not located within the County's Airport Review combining designation area (AR) where allowable uses are limited to those designated as "compatible" or "conditionally approvable" by the San Luis Obispo County Airport Land Use Plan, as applicable, in compliance with the land use permit requirements of Section 22.06.030 (SLO County, Land Use Ordinance, 2014).

The project is within a 'State Responsibility Area' (SRA), which indicates that fire protection responsibilities fall under the jurisdiction of the California Department of Forestry and Fire Protection (Cal Fire). Within San Luis Obispo County, Cal Fire is responsible for wildland fire protection of almost 1.5 million acres. The County has contracted with Cal Fire to provide protection of structures within the rural unincorporated areas. Recent state legislation (AB X1-29) has also established a property owner fee to help offset the costs of protecting structures within the wildland areas.

The Cal Fire fire response time map indicates that the response time to the campus is within ten minutes for a call regarding fire or life safety (SLO County, 2011). For further discussion on fire protection services, refer to Section XIV, *Public Services*.

**Impact Discussion**

a,c) The project would not involve the transport, use, or disposal of substantial quantities of hazardous materials. The proposed facility may involve the use of small amounts of hazardous materials such as solvents and reagents, used for cleaning purposes. However, proper handling, transportation, and disposal in accordance with federal, state, and local laws and regulations would avoid significant exposure and hazards to people and the environment from potential hazardous materials contamination.

***LESS THAN SIGNIFICANT IMPACT***

b) Operational use of the project would not emit or handle substantial quantities of hazardous materials in its final constructed site. Activities at the proposed instructional building may involve the use of small amounts of hazardous materials such as solvents and reagents, and could generate small amounts of hazardous waste. However, proper handling, transportation, and disposal in accordance with federal, state, and local laws and regulations would avoid significant exposure and hazards to people and the environment from potential hazardous materials contamination.

Prior to project development, existing emergency response plans would be reviewed for adequacy and application to this project. Construction activities would also be subject to standard requirements for the handling of hazardous materials.

***NO IMPACT***

d) DTSC's Envirostor database provides information on permits and corrective action at hazardous waste facilities, as well as site cleanup projects. The project is not located on a site which has been included on a list of hazardous material sites. The project site boundary is located approximately 1,000 feet from a Military Evaluation Cleanup site. However, because of the distance between the identified cleanup site and the project site, the cleanup site would not be anticipated to result in contamination of groundwater at the project site.

*LESS THAN SIGNIFICANT IMPACT*

e-f) The project site is not located within an airport land use plan, within two miles of a public airport or public use airport or within the vicinity of a private airstrip.

*NO IMPACT*

g) The proposed project would not interfere with any emergency response plan or evacuation route. No change to off-site circulation would occur.

*NO IMPACT*

h) Fire protection services at the Cuesta College SLO campus are provided by Cal Fire. The Cuesta College SLO campus is in a suburban area in the County of San Luis Obispo, just outside the boundary of the City of San Luis Obispo, and the response time to the campus is within ten minutes. Emergency access throughout the campus is facilitated by the campus design, incorporation of fire lanes, and access to fire hydrants. The project would not result in a change in land use or any new habitable structures. Construction activities would have the potential to increase fire hazards due to the use of equipment and fuels in proximity to vegetation and other flammable matter and the potential for accidental ignition. However, the site is already used for classrooms and would be redeveloped to replace modular classrooms with a new instructional building. Therefore, there would be no change in land use from existing conditions, no change in enrollment, and no habitable structures which could expose people or structures to a new significant risk. There is existing development on and around the project site, and the project would not result in any change to fire response or performance objectives. Therefore, the project is not subject to wildland fire hazards.

*LESS THAN SIGNIFICANT IMPACT*

| | Potentially Significant Impact | Potentially Significant Unless 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? | ☐ | ☐ | ■ | ☐ |

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **IX. HYDROLOGY AND WATER QUALITY** | | | | |
| -- Would the project: | | | | |
| 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 or 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 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? | ☐ | ☐ | ☐ | ■ |

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **IX. HYDROLOGY AND WATER QUALITY** | | | | |
| -- Would the project: | | | | |
| 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) Result in inundation by seiche, tsunami, or mudflow? | ☐ | ☐ | ☐ | ■ |

Within the 100-year Flood Hazard designation? No
Closest creek? Pennington Creek; approximately 500 feet to the west
Soil drainage characteristics: Moderately well drained

The topography of the project is generally flat with moderately-well- to well-drained soils. The on-site soils have high runoff potential and occur on 2 to 9 percent slopes. Water quality standards and requirements for the project are maintained by the Regional Water Quality Control Board.

**Impact Discussion**

a,f) The project would replace existing modular classrooms with a new instructional building, and would not result in any new use that would violate water quality standards or waste discharge requirements. The project would be subject to the requirements of the Regional Water Quality Control Board, further reducing potential impacts to water quality. Because future development may disturb more than one acre, SLOCCCD would be required to comply with the NPDES permit program. The NPDES program controls water pollution by regulating point sources that discharge pollutants into waters of the United States, including construction activity. Compliance with existing requirements related to water quality would ensure that impacts would remain less than significant.

*LESS THAN SIGNIFICANT IMPACT*

b) The project would replace existing educational structures; therefore, the project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering or the local groundwater table.

*LESS THAN SIGNIFICANT IMPACT*

c-e) The project site is generally flat, and the project would not result in a substantial change to the drainage pattern or area of impervious surface that currently exists on the site. The project involves the replacement of existing modular classrooms with a new instructional building. The

proposed facilities would significantly increase water use, erosion or siltation, or the rate or amount of surface runoff in a manner which would result in flooding. Existing requirements and standards of the Regional Water Quality Control Board, associated with runoff, would be maintained for the project. As described above, because future development may disturb more than one acre, the SLOCCCD would be required to comply with the NPDES permit program. The NPDES program controls water pollution by regulating point sources that discharge pollutants into waters of the United States, including construction activity. Compliance with existing requirements related to water quality would ensure that impacts would remain less than significant.

*LESS THAN SIGNIFICANT IMPACT*

g-h) The proposed project would not 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, nor would it impede or redirect water flows that will cause a flood hazard to surrounding areas.

*NO IMPACT*

i-j) The Cuesta College SLO campus is not located within a dam inundation area and is not subject to flooding risks from dam failure. The project site is located inland from the coast and is not subject to tsunami hazards. The project site is not located near any impounded bodies of water that could present hazards from seiches.

*NO IMPACT*

| | Potentially Significant Impact | Potentially Significant Unless 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 an applicable habitat conservation plan or natural community conservation plan? | ☐ | ☐ | ☐ | ■ |

The project site is part of the Cuesta College SLO campus, which is under the jurisdiction of SLOCCCD. The campus is designated for Public Facilities by the County of San Luis Obispo General Plan. The campus is zoned Public Facilities under the San Luis Obispo County Municipal Code. There are no existing habitat conservation plans or natural community conservations on the site.

**Impact Discussion**

a-c) The proposed instructional building would be internal to the Cuesta College SLO campus, and is a replacement of development that has already been established and planned for within the surrounding area land use designations. The proposed facility is intended to accommodate the student population, and therefore would not generate additional on-campus growth that would have the potential to affect adjacent land uses. Therefore, the project would not generate additional on-campus growth that would have the potential to affect adjacent City land uses. The project would not physically divide an established community, nor would it conflict with any land use plans or policies or any habitat conservation plans.

***NO IMPACT***

| | Potentially Significant Impact | Potentially Significant Unless 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? | ☐ | ☐ | ☐ | ■ |

The project site does not contain any valuable mineral resources or delineated mineral resource recovery sites. According to the San Luis Obispo County General Plan, the EX (Energy or Extractive Resource Area) and EX1 (Extractive Resource Area) combining designations (zoning overlays) described in the Land Use Element have been identified as containing or likely to contain significant mineral resources. There are no EX or EX1 Resource Areas identified on or in close proximity to the project site (San Luis Obispo County, General Plan, 2010).

**Impact Discussion**

a-b) There are no known mineral resources that would be of value to the region and the residents of the state within the project site (DOC, 2012). The project site does not contain any known important mineral resource recovery sites that have been previously delineated on a local general plan, specific plan, or other land use plan.

***NO IMPACT***

| | Potentially Significant Impact | Potentially Significant Unless 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 above levels existing without the project? | ☐ | ☐ | ■ | ☐ |
| d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? | ☐ | ■ | ☐ | ☐ |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? | ☐ | ☐ | ☐ | ■ |
| f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise? | ☐ | ☐ | ☐ | ■ |

Community noise levels are typically measured in terms of A-weighted decibel (dBA). A-weighting is a frequency correction that correlates overall sound pressure levels with the frequency response of the human ear. Equivalent noise level (Leq) is the average noise level on an energy basis for a specific time period. The duration of noise and the time of day at which it occurs are important factors in determining the impact of noise on communities. The Community Noise Equivalent Level (CNEL) and Day-Night Average Level (Ldn) account for the time of day and duration of noise generation. These indices are time-weighted average values equal to the amount of acoustic energy equivalent to a time-varying sound over a 24-hour period.

The project would occur near sensitive receptors, which include classroom buildings as well as a Children's Center. The closest sensitive receptors are adjacent to the project boundary.

Regulatory Setting. The SLOCCCD has not adopted any policies and standards identifying acceptable noise levels at campus receptors. The State Office of Planning and Research's General Plan Guidelines ([OPR], 2003) include "normally acceptable," "conditionally acceptable," "normally unacceptable," and "clearly unacceptable" noise standards for schools. These thresholds, shown in Table 7, have been used for CEQA analysis broadly throughout California.

**Table 7**
**Land Use Compatibility Matrix**

| Land Use Category | Normally Acceptable ($L_{dn}$ or CNEL, dBA) | Conditionally Acceptable ($L_{dn}$ or CNEL, dBA) | Normally Unacceptable ($L_{dn}$ or CNEL, dBA) | Clearly Unacceptable ($L_{dn}$ or CNEL, dBA) |
|---|---|---|---|---|
| Residential – Low Density, Single-Family, Duplex, Mobile Homes | 50 – 60 | 55 – 70 | 70 – 75 | 75 – 85 |
| Residential – Multi-Family | 50 – 65 | 60 – 70 | 70 – 75 | 70 – 85 |
| Transient Lodging – Motels, Hotels | 50 – 65 | 60 – 70 | 70 – 80 | 80 – 85 |
| Schools, Libraries, Churches, Hospitals, Nursing Homes | 50 – 70 | 60 – 70 | 70 – 80 | 80 – 85 |
| Auditoriums, Concert Halls, Amphitheaters | NA | 50 – 70 | NA | 65- 86 |
| Sports Arenas, Outdoor Spectator Sports | NA | 50 – 75 | NA | 70 – 85 |
| Playgrounds, Neighborhood Parks | 50 – 70 | NA | 67.5 – 75 | 72.5 – 85 |
| Golf Courses, Riding Stables, Water Recreation, Cemeteries | 50 – 70 | NA | 70 – 80 | 80 – 85 |
| Office Buildings, Business Commercial and Professional | 50 – 70 | 67.5 – 77.5 | 75 – 85 | NA |
| Industrial, Manufacturing, Utilities, Agriculture | 50 – 75 | 70 – 80 | 75 – 85 | NA |

***NA:*** *Not Applicable*

***Source:*** *Office of Planning and Research, California, General Plan Guidelines, October 2003.*

*Normally Acceptable – Satisfactory, with no special noise limitation requirements.*

*Conditionally Acceptable – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.*

*Normally Unacceptable – New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulations features included in the design.*

*Clearly Unacceptable – New construction or development should generally not be undertaken.*

**Impact Discussion**

a,c) The project would replace existing modular classrooms with a new instructional building. Operation of the new building would not generate any significant long-term, or permanent, noise levels beyond existing levels. The project would not increase enrollment levels, or associated vehicle traffic in the project area. Therefore, the project will not result in a substantial permanent increase in ambient noise levels above levels existing without the project.

*LESS THAN SIGNIFICANT IMPACT*

b) No drilling or pile driving activities would occur as part of the project. Therefore, construction activities would not expose people or structures to excessive levels of groundborne vibration commonly associated with these specific construction activities. In addition, groundborne vibration would result from movement of haul trucks throughout the site but would be relatively minor, and temporary, only occurring during the construction phase of the project. Therefore, the proposed project would not expose people or structures to excessive levels of groundborne vibration.

*LESS THAN SIGNIFICANT IMPACT*

d) Construction of the project would require the use of heavy construction equipment for the removal of the existing on-site structures, site preparation and grading, installation of new utilities, paving, and building construction for the proposed development. Development activities would also involve the use of smaller power tools, generators, and other sources of noise. During each stage of development, a different mix of equipment would be operating and noise levels would vary based on the number of pieces of equipment in operation and the location of the activity. Noise levels as a result of project construction activities could impact noise-sensitive classroom receptors located adjacent to the project site. These receptors may experience a temporary increase in noise during construction activities on the project site.

Table 8 shows typical peak noise levels associated with various types of heavy construction equipment, based on the FHWA Highway Construction Noise Handbook. As shown therein, noise levels associated with the use of individual pieces of heavy equipment can range from about 70 to 89 dBA at 50 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction (FHWA, 2006).

**Table 8**
**Typical Noise Levels Generated by Construction Equipment**

| Equipment | Type | Typical Lmax (dBA) 50 Feet from the Source |
|---|---|---|
| Air Compressor | Stationary | 81 |
| Backhoe | Mobile | 80 |
| Compactor (ground) | Mobile | 83 |
| Concrete Mixer | Stationary | 85 |
| Dozer | Mobile | 82 |
| Dump Truck | Mobile | 76 |
| Excavator | Mobile | 81 |
| Flat Bed Truck | Mobile | 74 |
| Front End Loader | Mobile | 79 |
| Generator | Stationary | 81 |
| Grader | Mobile | 83 |
| Paver | Mobile | 89 |
| Pickup Truck | Mobile | 75 |
| Pneumatic Tools | Stationary | 85 |
| Roller | Mobile | 80 |
| Saw | Stationary | 70 |
| Warning Horn | Stationary | 83 |
| Welder/Torch | Stationary | 74 |

*Source: FHWA, 2006.*

Table 9 shows noise levels at various distances from construction activity, based on a standard noise attenuation rate of 6 dBA per doubling of distance from the highest-volume individual pieces of equipment shown in Table 8.

**Table 9**
**Construction Noise Levels at Various Distances from Project Construction**

| Distance from Construction | Peak Noise Level from Mobile Construction Equipment at Receptor (dBA) | Peak Noise Level from Stationary Construction Equipment at Receptor (dBA) |
|---|---|---|
| 50 feet | 89 | 85 |
| 100 feet | 83 | 79 |
| 150 feet | 80 | 76 |
| 200 feet | 77 | 73 |
| 250 feet | 75 | 71 |
| 600 feet | 68 | 65 |
| 700 feet | 66 | 62 |
| 1,000 feet | 63 | 59 |

As shown in Table 9, peak construction noise levels from the highest-volume individual pieces of equipment could be up to 89 dBA at 50 feet from the source, 80 dBA at 150 feet from the source, and 75 dBA at 250 feet from the source. These anticipated noise levels from construction activity exceed the "normally acceptable" noise levels of 50-70 dBA CNEL for schools shown in Table 7, above. For all receptors within 250 feet of project construction, the peak noise levels from mobile and stationary construction equipment also exceed "normally acceptable" noise levels shown in Table 7. Though construction noise is generally temporary and sporadic, and that the applicable CNEL standard is based on a 24-hour average, noise levels may exceed the applicable dBA CNEL threshold and measures to reduce noise exposure are required.

*POTENTIALLY SIGNIFICANT UNLESS MITIGATION INCORPORATED*

**Mitigation Measures**

Temporary construction impacts would be further reduced through implementation of the following noise reduction measures:

**N-1** **Construction Noise Reduction:** The following requirements shall be implemented during construction of the project:

- To ensure that noise emissions from construction vehicles and other equipment are limited to the minimum feasible levels, equip all noise-producing equipment and vehicles using internal combustion engines with mufflers, and air-inlet silencers where appropriate, that meet or exceed original factory specification. Equip mobile or fixed "package" equipment (e.g., arc-welders, air compressors) with shrouds and noise-control features that are readily available for that type of equipment.
- Install a sound barrier around the project site or adjacent classrooms or other noise-sensitive receptors within 250 feet of construction activity during operation of heavy construction equipment when adjacent classes are in session or facilities are in use. Temporary noise barriers should be made of noise-resistant material sufficient to achieve a Sound Transmission Class (STC) rating of STC 30 or greater, based on sound transmission loss data taken according to ASTM Test Method E90. Such a barrier may provide as much as a 10 dB insertion loss, provided it is positioned as close as possible to the noise source or to the receptors. To be effective, the barrier must be long and tall enough to completely block the line-of-sight between the noise source and the receptors. The gaps between adjacent panels must be filled-in to avoid having noise penetrate directly through the barrier.

Project construction would represent a temporary source of noise at the project site. Mitigation Measure N-1 requires implementation of noise reduction devices and techniques during construction, and would reduce the noise levels associated with construction of the project to the maximum extent feasible. Because construction noise would be intermittent and temporary,

and would incorporate feasible noise reduction measures, construction noise impacts would be less than significant with mitigation incorporated.

e-f) The project is not located within an airport land use plan, within two miles of a public airport or public use airport or within the vicinity of a private airstrip and does not involve the development of new noise-sensitive uses.

*NO IMPACT*

| | Potentially Significant Impact | Potentially Significant Unless 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? | ☐ | ☐ | ☐ | ■ |

There are no housing units or residential uses within the Cuesta College SLO campus.

**Impact Discussion**

a) The replacement of the existing modular classrooms with a new instructional building would not increase the enrollment capacity at Cuesta College. Therefore, the project would not induce population growth, or otherwise exceed limits already established for the college.

*NO IMPACT*

b-c) The project site does not contain any existing housing, and the project does not propose any new residential uses. The project would not displace people because there is no existing housing on the project site.

*NO IMPACT*

| | Potentially Significant Impact | Potentially Significant Unless 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, or the 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: | | | | |
| i) Fire protection? | ☐ | ☐ | ■ | ☐ |
| ii) Police protection? | ☐ | ☐ | ☐ | ■ |
| iii) Schools? | ☐ | ☐ | ☐ | ■ |
| iv) Parks? | ☐ | ☐ | ☐ | ■ |
| v) Other public facilities? | ☐ | ☐ | ☐ | ■ |

The project area is served by the following public services/facilities:

Police: Cuesta College Police Department Location: Cuesta College, Building 6600
Fire: CAL Fire
School District: San Luis Obispo County Community College District

Emergency services include ambulance and hospital service. Private companies based throughout the County provide ambulance service. Hospital services are provided by French and Sierra-Vista hospitals in the City of San Luis Obispo.

**Impact Discussion**

a. i) Fire protection services at the Cuesta College SLO campus are provided by Cal Fire. The response time to the campus is within ten minutes. Emergency access throughout the campus is facilitated by the campus design, incorporation of fire lanes, and access to fire hydrants. There is existing development on and around the project site, and the project would not result in any change to fire response or performance objectives. Future structures would be required to comply with applicable building and fire codes and therefore could be served by existing fire protection services in the event of an emergency. In addition, the project would not result in an

increase in enrollment at Cuesta College or otherwise result in an increase in the anticipated need for fire services.

*LESS THAN SIGNIFICANT IMPACT*

a. ii) The project site would not expand campus enrollment, and would not lower police service ratios or increase response times.

*NO IMPACT*

a. iii-v) The proposed construction of the new instructional building on the Cuesta College SLO campus is intended to serve the existing student population. The proposed project would not result in an increase in enrollment at Cuesta College, or otherwise increase the need for additional schools, parks, or other public facilities.

*NO IMPACT*

| | Potentially Significant Impact | Potentially Significant Unless 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? | ☐ | ☐ | ☐ | ■ |

Trails, neighborhood and regional parks and other recreational facilities in the project vicinity are developed and maintained by the County of San Luis Obispo. Recreational facilities on the Cuesta College SLO campus are developed and maintained by the SLOCCCD.

**Impact Discussion**

a-b) The project would not increase the enrollment for Cuesta College, or otherwise increase the use of existing neighborhood and regional parks or other facilities that would cause substantial physical deterioration to occur or be accelerated. The project would not include new recreational facilities or require the construction or expansion of recreational facilities.

*NO IMPACT*

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **XVI. TRANSPORTATION/TRAFFIC** | | | | |
| -- Would the project: | | | | |
| a) Conflict with an applicable plan, ordinance or policy establishing a measure 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 use (e.g., farm equipment)? | ☐ | ☐ | ☐ | ■ |
| e) Result in inadequate emergency access? | ☐ | ☐ | ☐ | ■ |
| f) Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities? | ☐ | ☐ | ☐ | ■ |

The existing circulation plan on the Cuesta College SLO campus indicates that the campus circulation system is currently operating at acceptable levels. According to the SLOCCCD Facilities Master Plan for 2011-2012, there is one regional bus stop on the campus (Facilities Master Plan, 2011-2021). Service to the bus stop is provided by the San Luis Obispo Regional Transit Authority (RTA), Route 12 (2015).

**Impact Discussion**

a-b) The project would not increase enrollment or associated vehicle trips or vehicle miles traveled; therefore, the project would not affect the performance of the existing circulation

system. Any project generated vehicle trips would replace trips associated with the existing modular classrooms

Temporary impacts to the circulation system may occur as a result of worker and truck trips during project construction. However, off-site construction trips typically occur during off-peak traffic periods, when intersections and roadways operate well within acceptable levels of service.

***LESS THAN SIGNIFICANT IMPACT***

c-f) The project would not result in any change to daily, AM peak hour, and PM peak hour traffic volumes. The proposed project would not generate any air traffic, create any traffic hazards, conflict with emergency access patterns, or conflict with any adopted transportation plans or policies. The project would be designed in accordance with existing performance and safety standards established by Cuesta College and the County of San Luis Obispo and would not conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities. The project would not result in any change to existing public transit, bikeways, or pedestrian facilities. The project would not alter site ingress or egress, sight distance, or other applicable design features.

***NO IMPACT***

| | Potentially Significant Impact | Potentially Significant Unless 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? | ☐ | ☐ | ■ | ☐ |

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **XVII. UTILITIES AND SERVICE SYSTEMS** | | | | |
| -- Would the project: | | | | |
| 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? | ☐ | ☐ | ■ | ☐ |

Through agreements with the State of California, water and sewer services for the Cuesta College SLO campus are purchased by the SLOCCCD, according to the Facilities Master Plan for 2011-2012. Water is provided to the campus by the State Water Project at a capped quantity of 200 acre feet annually, with allocation subject to annual reservoir levels. Local water conservation measures have been created due to the large fluctuation within the system.

The SLOCCCD and the California Department of Corrections have an established agreement for the handing of sewer processing by California Men's Colony Waste Water Treatment Plant (CMC WWTP [San Luis Obispo County, 2008]). This facility has been upgraded and is adequate to handle the SLOCCCD's facility needs (SLOCCCD, 2011-2021).

San Luis Obispo County currently has three permitted public landfill facilities that accept a variety of municipal solid waste: Cold Canyon, Chicago Grade and Paso Robles. These facilities accept waste for disposal and provide recycling opportunities for the users. Waste from the project region is served by Cold Canyon Landfill, which is located approximately 6 miles south of the City of San Luis Obispo on Highway 227. This landfill is under the jurisdiction of CalRecycle.

**Impact Discussion**

a) The project would not increase enrollment at Cuesta College, or otherwise result in an increase in wastewater from the project site. Therefore, the project would not exceed wastewater treatment requirements of the Regional Water Quality Control Board. Existing wastewater treatment requirements would remain effective throughout and following the project.

*LESS THAN SIGNIFICANT IMPACT*

b) The project would not increase enrollment at the college, or otherwise result in the need for new or expanded water or wastewater treatment facilities which could cause significant environmental impacts. Existing facilities would remain effective for provision of water and wastewater conveyance.

***NO IMPACT***

c) The project site is currently developed with existing modular classrooms which would be replaced with a new instructional building. The project would not result in a substantial net increase in on-site development or on-site impervious surfaces; therefore, the project would not result in an increase in stormwater runoff or a substantial change in stormwater flow. Existing stormwater drainage facilities would be used and no expansion of existing facilities would be necessary. Upon completion of the project there would be no significant change to the drainage patterns on the project site. Therefore, this impact would be less than significant.

***LESS THAN SIGNIFICANT IMPACT***

d) The project would not result in the need for water entitlement or resources in addition to what currently exists on the project site. The project would not increase the enrollment capacity, and existing water entitlements and resources would be sufficient to support the project.

***LESS THAN SIGNIFICANT IMPACT***

e) The project would not increase the enrollment capacity at Cuesta College. Therefore, the current wastewater treatment provider would have adequate capacity to serve the project as well as existing commitments.

***LESS THAN SIGNIFICANT IMPACT***

f-g) The project's solid waste would be transported to Cold Canyon Landfill, which has a permitted throughput of 1,200 tons per day (CalRecycle, 2015). The landfill has adequate capacity to serve the project as it is currently being expanded to provide service through the year 2040 (San Luis Obispo County, 2012). Demolition waste from the five existing modular classrooms would be transported to the landfill. Long-term disposal needs on the project site would be maintained at existing levels. Project plans include salvaging of all site furnishings and signage where possible, reducing the production of waste. In addition, the project would be required to comply with applicable federal, state and local regulations regarding solid waste. Therefore, the proposed project would not be anticipated to generate additional solid waste beyond the capacity of the landfill.

***LESS THAN SIGNIFICANT IMPACT***

| | Potentially Significant Impact | Potentially Significant Unless Mitigation Incorporated | Less than Significant Impact | No Impact |
|---|---|---|---|---|
| **XVIII. MANDATORY FINDINGS OF SIGNIFICANCE** | | | | |
| a) Does the project have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self- sustaining levels, 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? | ☐ | ■ | ☐ | ☐ |

**Impact Discussion**

a) The project is located in an existing developed area that does not contain known historic resources or wildlife habitat. With incorporation of the mitigation measures in this report, the project would not impact fish or wildlife populations, eliminate or reduce the number or restrict the range of a plant or animal community, or eliminate examples of major periods of California history or prehistory. Mitigation Measures BIO-1 and BIO-2 are required to reduce potential impacts to the native birds and their habitat provided by specific trees to a less than significant level.

*POTENTIALLY SIGNIFICANT UNLESS MITIGATION INCORPORATED*

b) The project would not create any significant impacts that cannot be mitigated. The project would not generate additional off-site vehicle trips that could impact the City's circulation system, existing level of service standards, regional operation air contaminant emissions or greenhouse gas emissions standards, or noise standards, on a cumulative basis. Implementation

of Mitigation Measures CR-1 and N-1 would ensure that the project would not have significant cumulatively considerable impacts.
***POTENTIALLY SIGNIFICANT UNLESS MITIGATION INCORPORATED***

c) The proposed project could result in potentially significant direct or indirect impacts to humans. Refer to Section XII, *Noise*, in the above analysis. However, as described in this section, all impacts would be mitigated to a less than significant level. Mitigation Measure N-1 is required to reduce project construction noise impacts on adjacent receptors to a less than significant level.

***POTENTIALLY SIGNIFICANT UNLESS MITIGATION INCORPORATED***

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# Appendix A

*California Emissions Estimator Model (CalEEMod) Output*

# Cuesta College Campus Instructional Building Project

**San Luis Obispo County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Junior College (2Yr) | 32.50 | 1000sqft | 0.75 | 32,500.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 3.2 | **Precipitation Freq (Days)** | 44 |
| **Climate Zone** | 4 | | | **Operational Year** | 2016 |
| **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 -

Land Use - Actual lot acreage = 1.3 acres based on project site plan.

Construction Phase - Default CalEEMod construction schedule doubled to account for anticipated duration of construction activity.

Off-road Equipment - Default CalEEMod equipment lists for each phase of construction used.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Demolition - Demo size estimated based on project site plans showing existing portables on site.

Grading - Grading area based on project site plans.

Vehicle Trips - Project would replace existing classrooms and would not increase campus enrollment; therefore no new vehicle trips.

Area Coating -

Operational Off-Road Equipment - no text

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 5.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 200.00 |
| tblConstructionPhase | NumDays | 10.00 | 20.00 |
| tblConstructionPhase | NumDays | 2.00 | 4.00 |
| tblConstructionPhase | NumDays | 5.00 | 10.00 |
| tblConstructionPhase | NumDays | 1.00 | 2.00 |
| tblGrading | AcresOfGrading | 0.00 | 1.30 |
| tblGrading | AcresOfGrading | 1.00 | 1.30 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2016 |
| tblVehicleTrips | ST_TR | 11.23 | 0.00 |
| tblVehicleTrips | SU_TR | 1.21 | 0.00 |
| tblVehicleTrips | WD_TR | 27.49 | 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 | | | | | |
| 2016 | 0.5536 | 1.6413 | 1.1593 | 1.6300e-003 | 0.0241 | 0.1095 | 0.1336 | 6.3000e-003 | 0.1012 | 0.1075 | 0.0000 | 148.9834 | 148.9834 | 0.0375 | 0.0000 | 149.7706 |
| **Total** | **0.5536** | **1.6413** | **1.1593** | **1.6300e-003** | **0.0241** | **0.1095** | **0.1336** | **6.3000e-003** | **0.1012** | **0.1075** | **0.0000** | **148.9834** | **148.9834** | **0.0375** | **0.0000** | **149.7706** |

### 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 | | | | | |
| 2016 | 0.5536 | 1.6413 | 1.1593 | 1.6300e-003 | 0.0241 | 0.1095 | 0.1336 | 6.3000e-003 | 0.1012 | 0.1075 | 0.0000 | 148.9833 | 148.9833 | 0.0375 | 0.0000 | 149.7705 |
| **Total** | **0.5536** | **1.6413** | **1.1593** | **1.6300e-003** | **0.0241** | **0.1095** | **0.1336** | **6.3000e-003** | **0.1012** | **0.1075** | **0.0000** | **148.9833** | **148.9833** | **0.0375** | **0.0000** | **149.7705** |

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

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.1646 | 1.0000e-005 | 5.6000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0600e-003 | 1.0600e-003 | 0.0000 | 0.0000 | 1.1300e-003 |
| Energy | 4.4200e-003 | 0.0402 | 0.0338 | 2.4000e-004 | | 3.0500e-003 | 3.0500e-003 | | 3.0500e-003 | 3.0500e-003 | 0.0000 | 128.3585 | 128.3585 | 4.6600e-003 | 1.5900e-003 | 128.9505 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 8.5764 | 0.0000 | 8.5764 | 0.5069 | 0.0000 | 19.2202 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.5057 | 5.0480 | 5.5537 | 0.0522 | 1.2700e-003 | 7.0442 |
| **Total** | **0.1691** | **0.0402** | **0.0343** | **2.4000e-004** | **0.0000** | **3.0500e-003** | **3.0500e-003** | **0.0000** | **3.0500e-003** | **3.0500e-003** | **9.0821** | **133.4076** | **142.4897** | **0.5637** | **2.8600e-003** | **155.2160** |

## 2.2 Overall Operational

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.1646 | 1.0000e-005 | 5.6000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0600e-003 | 1.0600e-003 | 0.0000 | 0.0000 | 1.1300e-003 |
| Energy | 4.4200e-003 | 0.0402 | 0.0338 | 2.4000e-004 | | 3.0500e-003 | 3.0500e-003 | | 3.0500e-003 | 3.0500e-003 | 0.0000 | 128.3585 | 128.3585 | 4.6600e-003 | 1.5900e-003 | 128.9505 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 8.5764 | 0.0000 | 8.5764 | 0.5069 | 0.0000 | 19.2202 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.5057 | 5.0480 | 5.5537 | 0.0522 | 1.2700e-003 | 7.0434 |
| **Total** | **0.1691** | **0.0402** | **0.0343** | **2.4000e-004** | **0.0000** | **3.0500e-003** | **3.0500e-003** | **0.0000** | **3.0500e-003** | **3.0500e-003** | **9.0821** | **133.4076** | **142.4897** | **0.5637** | **2.8600e-003** | **155.2152** |

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

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 1/1/2016 | 1/28/2016 | 5 | 20 | |
| 2 | Site Preparation | Site Preparation | 1/29/2016 | 2/1/2016 | 5 | 2 | |
| 3 | Grading | Grading | 2/2/2016 | 2/5/2016 | 5 | 4 | |
| 4 | Building Construction | Building Construction | 2/6/2016 | 11/11/2016 | 5 | 200 | |
| 5 | Paving | Paving | 11/12/2016 | 11/25/2016 | 5 | 10 | |
| 6 | Architectural Coating | Architectural Coating | 11/26/2016 | 12/9/2016 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 1.3**

**Acres of Grading (Grading Phase): 1.3**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 48,750; Non-Residential Outdoor: 16,250 (Architectural Coating – sqft)**

**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 | Rubber Tired Dozers | 1 | 1.00 | 255 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 6.00 | 97 | 0.37 |
| Site Preparation | Graders | 1 | 8.00 | 174 | 0.41 |
| Grading | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Grading | Rubber Tired Dozers | 1 | 1.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 2 | 6.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 4.00 | 226 | 0.29 |
| Building Construction | Forklifts | 2 | 6.00 | 89 | 0.20 |
| Building Construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 4 | 6.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 7.00 | 125 | 0.42 |
| Paving | Rollers | 1 | 7.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 1 | 7.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 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 | 4 | 10.00 | 0.00 | 27.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 2 | 5.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 4 | 10.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 5 | 14.00 | 5.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 7 | 18.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 3.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2016

### 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 | | | | | 3.0200e-003 | 0.0000 | 3.0200e-003 | 4.6000e-004 | 0.0000 | 4.6000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0131 | 0.1124 | 0.0871 | 1.2000e-004 | | 8.0400e-003 | 8.0400e-003 | | 7.6700e-003 | 7.6700e-003 | 0.0000 | 10.8283 | 10.8283 | 2.1600e-003 | 0.0000 | 10.8737 |
| **Total** | **0.0131** | **0.1124** | **0.0871** | **1.2000e-004** | **3.0200e-003** | **8.0400e-003** | **0.0111** | **4.6000e-004** | **7.6700e-003** | **8.1300e-003** | **0.0000** | **10.8283** | **10.8283** | **2.1600e-003** | **0.0000** | **10.8737** |

### 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 | 3.5000e-004 | 4.3900e-003 | 3.5400e-003 | 1.0000e-005 | 2.3000e-004 | 6.0000e-005 | 2.9000e-004 | 6.0000e-005 | 5.0000e-005 | 1.1000e-004 | 0.0000 | 0.9298 | 0.9298 | 1.0000e-005 | 0.0000 | 0.9300 |
| 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 | 4.5000e-004 | 7.1000e-004 | 6.3600e-003 | 1.0000e-005 | 9.6000e-004 | 1.0000e-005 | 9.7000e-004 | 2.6000e-004 | 1.0000e-005 | 2.6000e-004 | 0.0000 | 0.8210 | 0.8210 | 5.0000e-005 | 0.0000 | 0.8221 |
| **Total** | **8.0000e-004** | **5.1000e-003** | **9.9000e-003** | **2.0000e-005** | **1.1900e-003** | **7.0000e-005** | **1.2600e-003** | **3.2000e-004** | **6.0000e-005** | **3.7000e-004** | **0.0000** | **1.7509** | **1.7509** | **6.0000e-005** | **0.0000** | **1.7521** |

## 3.2 Demolition - 2016

### 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 | | | | | 3.0200e-003 | 0.0000 | 3.0200e-003 | 4.6000e-004 | 0.0000 | 4.6000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0131 | 0.1124 | 0.0871 | 1.2000e-004 | | 8.0400e-003 | 8.0400e-003 | | 7.6700e-003 | 7.6700e-003 | 0.0000 | 10.8282 | 10.8282 | 2.1600e-003 | 0.0000 | 10.8737 |
| **Total** | **0.0131** | **0.1124** | **0.0871** | **1.2000e-004** | **3.0200e-003** | **8.0400e-003** | **0.0111** | **4.6000e-004** | **7.6700e-003** | **8.1300e-003** | **0.0000** | **10.8282** | **10.8282** | **2.1600e-003** | **0.0000** | **10.8737** |

### 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 | 3.5000e-004 | 4.3900e-003 | 3.5400e-003 | 1.0000e-005 | 2.3000e-004 | 6.0000e-005 | 2.9000e-004 | 6.0000e-005 | 5.0000e-005 | 1.1000e-004 | 0.0000 | 0.9298 | 0.9298 | 1.0000e-005 | 0.0000 | 0.9300 |
| 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 | 4.5000e-004 | 7.1000e-004 | 6.3600e-003 | 1.0000e-005 | 9.6000e-004 | 1.0000e-005 | 9.7000e-004 | 2.6000e-004 | 1.0000e-005 | 2.6000e-004 | 0.0000 | 0.8210 | 0.8210 | 5.0000e-005 | 0.0000 | 0.8221 |
| **Total** | **8.0000e-004** | **5.1000e-003** | **9.9000e-003** | **2.0000e-005** | **1.1900e-003** | **7.0000e-005** | **1.2600e-003** | **3.2000e-004** | **6.0000e-005** | **3.7000e-004** | **0.0000** | **1.7509** | **1.7509** | **6.0000e-005** | **0.0000** | **1.7521** |

## 3.3 Site Preparation - 2016

### 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 | | | | | 6.9000e-004 | 0.0000 | 6.9000e-004 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.3600e-003 | 0.0136 | 7.3400e-003 | 1.0000e-005 | | 8.3000e-004 | 8.3000e-004 | | 7.7000e-004 | 7.7000e-004 | 0.0000 | 0.8828 | 0.8828 | 2.7000e-004 | 0.0000 | 0.8884 |
| **Total** | **1.3600e-003** | **0.0136** | **7.3400e-003** | **1.0000e-005** | **6.9000e-004** | **8.3000e-004** | **1.5200e-003** | **7.0000e-005** | **7.7000e-004** | **8.4000e-004** | **0.0000** | **0.8828** | **0.8828** | **2.7000e-004** | **0.0000** | **0.8884** |

### 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 | 2.0000e-005 | 4.0000e-005 | 3.2000e-004 | 0.0000 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0411 | 0.0411 | 0.0000 | 0.0000 | 0.0411 |
| **Total** | **2.0000e-005** | **4.0000e-005** | **3.2000e-004** | **0.0000** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0411** | **0.0411** | **0.0000** | **0.0000** | **0.0411** |

## 3.3 Site Preparation - 2016

### 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 | | | | | 6.9000e-004 | 0.0000 | 6.9000e-004 | 7.0000e-005 | 0.0000 | 7.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.3600e-003 | 0.0136 | 7.3400e-003 | 1.0000e-005 | | 8.3000e-004 | 8.3000e-004 | | 7.7000e-004 | 7.7000e-004 | 0.0000 | 0.8828 | 0.8828 | 2.7000e-004 | 0.0000 | 0.8884 |
| **Total** | **1.3600e-003** | **0.0136** | **7.3400e-003** | **1.0000e-005** | **6.9000e-004** | **8.3000e-004** | **1.5200e-003** | **7.0000e-005** | **7.7000e-004** | **8.4000e-004** | **0.0000** | **0.8828** | **0.8828** | **2.7000e-004** | **0.0000** | **0.8884** |

### 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 | 2.0000e-005 | 4.0000e-005 | 3.2000e-004 | 0.0000 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 1.0000e-005 | 0.0000 | 1.0000e-005 | 0.0000 | 0.0411 | 0.0411 | 0.0000 | 0.0000 | 0.0411 |
| **Total** | **2.0000e-005** | **4.0000e-005** | **3.2000e-004** | **0.0000** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **1.0000e-005** | **0.0000** | **1.0000e-005** | **0.0000** | **0.0411** | **0.0411** | **0.0000** | **0.0000** | **0.0411** |

## 3.4 Grading - 2016

### 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 | | | | | 2.1900e-003 | 0.0000 | 2.1900e-003 | 9.0000e-004 | 0.0000 | 9.0000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.6200e-003 | 0.0225 | 0.0174 | 2.0000e-005 | | 1.6100e-003 | 1.6100e-003 | | 1.5300e-003 | 1.5300e-003 | 0.0000 | 2.1657 | 2.1657 | 4.3000e-004 | 0.0000 | 2.1747 |
| **Total** | **2.6200e-003** | **0.0225** | **0.0174** | **2.0000e-005** | **2.1900e-003** | **1.6100e-003** | **3.8000e-003** | **9.0000e-004** | **1.5300e-003** | **2.4300e-003** | **0.0000** | **2.1657** | **2.1657** | **4.3000e-004** | **0.0000** | **2.1747** |

### 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 | 9.0000e-005 | 1.4000e-004 | 1.2700e-003 | 0.0000 | 1.9000e-004 | 0.0000 | 1.9000e-004 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 0.0000 | 0.1642 | 0.1642 | 1.0000e-005 | 0.0000 | 0.1644 |
| **Total** | **9.0000e-005** | **1.4000e-004** | **1.2700e-003** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.1642** | **0.1642** | **1.0000e-005** | **0.0000** | **0.1644** |

## 3.4 Grading - 2016

### 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 | | | | | 2.1900e-003 | 0.0000 | 2.1900e-003 | 9.0000e-004 | 0.0000 | 9.0000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 2.6200e-003 | 0.0225 | 0.0174 | 2.0000e-005 | | 1.6100e-003 | 1.6100e-003 | | 1.5300e-003 | 1.5300e-003 | 0.0000 | 2.1657 | 2.1657 | 4.3000e-004 | 0.0000 | 2.1747 |
| **Total** | **2.6200e-003** | **0.0225** | **0.0174** | **2.0000e-005** | **2.1900e-003** | **1.6100e-003** | **3.8000e-003** | **9.0000e-004** | **1.5300e-003** | **2.4300e-003** | **0.0000** | **2.1657** | **2.1657** | **4.3000e-004** | **0.0000** | **2.1747** |

### 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 | 9.0000e-005 | 1.4000e-004 | 1.2700e-003 | 0.0000 | 1.9000e-004 | 0.0000 | 1.9000e-004 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 0.0000 | 0.1642 | 0.1642 | 1.0000e-005 | 0.0000 | 0.1644 |
| **Total** | **9.0000e-005** | **1.4000e-004** | **1.2700e-003** | **0.0000** | **1.9000e-004** | **0.0000** | **1.9000e-004** | **5.0000e-005** | **0.0000** | **5.0000e-005** | **0.0000** | **0.1642** | **0.1642** | **1.0000e-005** | **0.0000** | **0.1644** |

## 3.5 Building Construction - 2016

### 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 | 0.1382 | 1.3706 | 0.8212 | 1.1300e-003 | | 0.0940 | 0.0940 | | 0.0865 | 0.0865 | 0.0000 | 106.9167 | 106.9167 | 0.0323 | 0.0000 | 107.5939 |
| **Total** | **0.1382** | **1.3706** | **0.8212** | **1.1300e-003** | | **0.0940** | **0.0940** | | **0.0865** | **0.0865** | **0.0000** | **106.9167** | **106.9167** | **0.0323** | **0.0000** | **107.5939** |

### 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 | 6.5100e-003 | 0.0412 | 0.0731 | 9.0000e-005 | 2.2300e-003 | 5.7000e-004 | 2.8000e-003 | 6.4000e-004 | 5.3000e-004 | 1.1600e-003 | 0.0000 | 7.6855 | 7.6855 | 7.0000e-005 | 0.0000 | 7.6869 |
| Worker | 6.3600e-003 | 0.0100 | 0.0891 | 1.5000e-004 | 0.0135 | 1.1000e-004 | 0.0136 | 3.5800e-003 | 1.0000e-004 | 3.6800e-003 | 0.0000 | 11.4946 | 11.4946 | 6.9000e-004 | 0.0000 | 11.5091 |
| **Total** | **0.0129** | **0.0512** | **0.1622** | **2.4000e-004** | **0.0157** | **6.8000e-004** | **0.0164** | **4.2200e-003** | **6.3000e-004** | **4.8400e-003** | **0.0000** | **19.1801** | **19.1801** | **7.6000e-004** | **0.0000** | **19.1960** |

## 3.5 Building Construction - 2016

### 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 | 0.1382 | 1.3706 | 0.8212 | 1.1300e-003 | | 0.0940 | 0.0940 | | 0.0865 | 0.0865 | 0.0000 | 106.9166 | 106.9166 | 0.0323 | 0.0000 | 107.5938 |
| **Total** | **0.1382** | **1.3706** | **0.8212** | **1.1300e-003** | | **0.0940** | **0.0940** | | **0.0865** | **0.0865** | **0.0000** | **106.9166** | **106.9166** | **0.0323** | **0.0000** | **107.5938** |

### 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 | 6.5100e-003 | 0.0412 | 0.0731 | 9.0000e-005 | 2.2300e-003 | 5.7000e-004 | 2.8000e-003 | 6.4000e-004 | 5.3000e-004 | 1.1600e-003 | 0.0000 | 7.6855 | 7.6855 | 7.0000e-005 | 0.0000 | 7.6869 |
| Worker | 6.3600e-003 | 0.0100 | 0.0891 | 1.5000e-004 | 0.0135 | 1.1000e-004 | 0.0136 | 3.5800e-003 | 1.0000e-004 | 3.6800e-003 | 0.0000 | 11.4946 | 11.4946 | 6.9000e-004 | 0.0000 | 11.5091 |
| **Total** | **0.0129** | **0.0512** | **0.1622** | **2.4000e-004** | **0.0157** | **6.8000e-004** | **0.0164** | **4.2200e-003** | **6.3000e-004** | **4.8400e-003** | **0.0000** | **19.1801** | **19.1801** | **7.6000e-004** | **0.0000** | **19.1960** |

## 3.6 Paving - 2016

### 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 | 5.6000e-003 | 0.0531 | 0.0365 | 6.0000e-005 | | 3.3000e-003 | 3.3000e-003 | | 3.0600e-003 | 3.0600e-003 | 0.0000 | 4.9151 | 4.9151 | 1.3500e-003 | 0.0000 | 4.9433 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **5.6000e-003** | **0.0531** | **0.0365** | **6.0000e-005** | | **3.3000e-003** | **3.3000e-003** | | **3.0600e-003** | **3.0600e-003** | **0.0000** | **4.9151** | **4.9151** | **1.3500e-003** | **0.0000** | **4.9433** |

### 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 | 4.1000e-004 | 6.4000e-004 | 5.7300e-003 | 1.0000e-005 | 8.7000e-004 | 1.0000e-005 | 8.7000e-004 | 2.3000e-004 | 1.0000e-005 | 2.4000e-004 | 0.0000 | 0.7389 | 0.7389 | 4.0000e-005 | 0.0000 | 0.7399 |
| **Total** | **4.1000e-004** | **6.4000e-004** | **5.7300e-003** | **1.0000e-005** | **8.7000e-004** | **1.0000e-005** | **8.7000e-004** | **2.3000e-004** | **1.0000e-005** | **2.4000e-004** | **0.0000** | **0.7389** | **0.7389** | **4.0000e-005** | **0.0000** | **0.7399** |

## 3.6 Paving - 2016

### 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 | 5.6000e-003 | 0.0531 | 0.0365 | 6.0000e-005 | | 3.3000e-003 | 3.3000e-003 | | 3.0600e-003 | 3.0600e-003 | 0.0000 | 4.9151 | 4.9151 | 1.3500e-003 | 0.0000 | 4.9433 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **5.6000e-003** | **0.0531** | **0.0365** | **6.0000e-005** | | **3.3000e-003** | **3.3000e-003** | | **3.0600e-003** | **3.0600e-003** | **0.0000** | **4.9151** | **4.9151** | **1.3500e-003** | **0.0000** | **4.9433** |

### 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 | 4.1000e-004 | 6.4000e-004 | 5.7300e-003 | 1.0000e-005 | 8.7000e-004 | 1.0000e-005 | 8.7000e-004 | 2.3000e-004 | 1.0000e-005 | 2.4000e-004 | 0.0000 | 0.7389 | 0.7389 | 4.0000e-005 | 0.0000 | 0.7399 |
| **Total** | **4.1000e-004** | **6.4000e-004** | **5.7300e-003** | **1.0000e-005** | **8.7000e-004** | **1.0000e-005** | **8.7000e-004** | **2.3000e-004** | **1.0000e-005** | **2.4000e-004** | **0.0000** | **0.7389** | **0.7389** | **4.0000e-005** | **0.0000** | **0.7399** |

## 3.7 Architectural Coating - 2016

### 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 | 0.3766 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.8400e-003 | 0.0119 | 9.4200e-003 | 1.0000e-005 | | 9.8000e-004 | 9.8000e-004 | | 9.8000e-004 | 9.8000e-004 | 0.0000 | 1.2766 | 1.2766 | 1.5000e-004 | 0.0000 | 1.2798 |
| **Total** | **0.3784** | **0.0119** | **9.4200e-003** | **1.0000e-005** | | **9.8000e-004** | **9.8000e-004** | | **9.8000e-004** | **9.8000e-004** | **0.0000** | **1.2766** | **1.2766** | **1.5000e-004** | **0.0000** | **1.2798** |

### 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 | 7.0000e-005 | 1.1000e-004 | 9.5000e-004 | 0.0000 | 1.4000e-004 | 0.0000 | 1.5000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1232 | 0.1232 | 1.0000e-005 | 0.0000 | 0.1233 |
| **Total** | **7.0000e-005** | **1.1000e-004** | **9.5000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1232** | **0.1232** | **1.0000e-005** | **0.0000** | **0.1233** |

## 3.7 Architectural Coating - 2016

**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 | 0.3766 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 1.8400e-003 | 0.0119 | 9.4200e-003 | 1.0000e-005 | | 9.8000e-004 | 9.8000e-004 | | 9.8000e-004 | 9.8000e-004 | 0.0000 | 1.2766 | 1.2766 | 1.5000e-004 | 0.0000 | 1.2798 |
| **Total** | **0.3784** | **0.0119** | **9.4200e-003** | **1.0000e-005** | | **9.8000e-004** | **9.8000e-004** | | **9.8000e-004** | **9.8000e-004** | **0.0000** | **1.2766** | **1.2766** | **1.5000e-004** | **0.0000** | **1.2798** |

**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 | 7.0000e-005 | 1.1000e-004 | 9.5000e-004 | 0.0000 | 1.4000e-004 | 0.0000 | 1.5000e-004 | 4.0000e-005 | 0.0000 | 4.0000e-005 | 0.0000 | 0.1232 | 0.1232 | 1.0000e-005 | 0.0000 | 0.1233 |
| **Total** | **7.0000e-005** | **1.1000e-004** | **9.5000e-004** | **0.0000** | **1.4000e-004** | **0.0000** | **1.5000e-004** | **4.0000e-005** | **0.0000** | **4.0000e-005** | **0.0000** | **0.1232** | **0.1232** | **1.0000e-005** | **0.0000** | **0.1233** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | 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 | | | | | |
| Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Junior College (2Yr) | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Junior College (2Yr) | 13.00 | 5.00 | 5.00 | 6.40 | 88.60 | 5.00 | 92 | 7 | 1 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.455937 | 0.042338 | 0.214948 | 0.150714 | 0.068093 | 0.009944 | 0.017510 | 0.022507 | 0.002330 | 0.001401 | 0.008743 | 0.000855 | 0.004680 |

### 4.4 Fleet Mix

## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | 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 | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 84.6189 | 84.6189 | 3.8300e-003 | 7.9000e-004 | 84.9446 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 84.6189 | 84.6189 | 3.8300e-003 | 7.9000e-004 | 84.9446 |
| NaturalGas Mitigated | 4.4200e-003 | 0.0402 | 0.0338 | 2.4000e-004 | | 3.0500e-003 | 3.0500e-003 | | 3.0500e-003 | 3.0500e-003 | 0.0000 | 43.7397 | 43.7397 | 8.4000e-004 | 8.0000e-004 | 44.0058 |
| NaturalGas Unmitigated | 4.4200e-003 | 0.0402 | 0.0338 | 2.4000e-004 | | 3.0500e-003 | 3.0500e-003 | | 3.0500e-003 | 3.0500e-003 | 0.0000 | 43.7397 | 43.7397 | 8.4000e-004 | 8.0000e-004 | 44.0058 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Junior College (2Yr) | 819650 | 4.4200e-003 | 0.0402 | 0.0338 | 2.4000e-004 | | 3.0500e-003 | 3.0500e-003 | | 3.0500e-003 | 3.0500e-003 | 0.0000 | 43.7397 | 43.7397 | 8.4000e-004 | 8.0000e-004 | 44.0058 |
| **Total** | | **4.4200e-003** | **0.0402** | **0.0338** | **2.4000e-004** | | **3.0500e-003** | **3.0500e-003** | | **3.0500e-003** | **3.0500e-003** | **0.0000** | **43.7397** | **43.7397** | **8.4000e-004** | **8.0000e-004** | **44.0058** |

## 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Junior College (2Yr) | 819650 | 4.4200e-003 | 0.0402 | 0.0338 | 2.4000e-004 | | 3.0500e-003 | 3.0500e-003 | | 3.0500e-003 | 3.0500e-003 | 0.0000 | 43.7397 | 43.7397 | 8.4000e-004 | 8.0000e-004 | 44.0058 |
| **Total** | | **4.4200e-003** | **0.0402** | **0.0338** | **2.4000e-004** | | **3.0500e-003** | **3.0500e-003** | | **3.0500e-003** | **3.0500e-003** | **0.0000** | **43.7397** | **43.7397** | **8.4000e-004** | **8.0000e-004** | **44.0058** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Junior College (2Yr) | 290875 | 84.6189 | 3.8300e-003 | 7.9000e-004 | 84.9446 |
| **Total** | | **84.6189** | **3.8300e-003** | **7.9000e-004** | **84.9446** |

### 5.3 Energy by Land Use - Electricity

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| Junior College (2Yr) | 290875 | 84.6189 | 3.8300e-003 | 7.9000e-004 | 84.9446 |
| **Total** | | **84.6189** | **3.8300e-003** | **7.9000e-004** | **84.9446** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.1646 | 1.0000e-005 | 5.6000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0600e-003 | 1.0600e-003 | 0.0000 | 0.0000 | 1.1300e-003 |
| Unmitigated | 0.1646 | 1.0000e-005 | 5.6000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0600e-003 | 1.0600e-003 | 0.0000 | 0.0000 | 1.1300e-003 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0377 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.1269 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 5.0000e-005 | 1.0000e-005 | 5.6000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0600e-003 | 1.0600e-003 | 0.0000 | 0.0000 | 1.1300e-003 |
| **Total** | **0.1646** | **1.0000e-005** | **5.6000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.0600e-003** | **1.0600e-003** | **0.0000** | **0.0000** | **1.1300e-003** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Consumer Products | 0.1269 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 5.0000e-005 | 1.0000e-005 | 5.6000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 1.0600e-003 | 1.0600e-003 | 0.0000 | 0.0000 | 1.1300e-003 |
| Architectural Coating | 0.0377 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **0.1646** | **1.0000e-005** | **5.6000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **1.0600e-003** | **1.0600e-003** | **0.0000** | **0.0000** | **1.1300e-003** |

## 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 5.5537 | 0.0522 | 1.2700e-003 | 7.0434 |
| Unmitigated | 5.5537 | 0.0522 | 1.2700e-003 | 7.0442 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Junior College (2Yr) | 1.59409 / 2.49333 | 5.5537 | 0.0522 | 1.2700e-003 | 7.0442 |
| **Total** | | **5.5537** | **0.0522** | **1.2700e-003** | **7.0442** |

### 7.2 Water by Land Use

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| Junior College (2Yr) | 1.59409 / 2.49333 | 5.5537 | 0.0522 | 1.2700e-003 | 7.0434 |
| **Total** | | **5.5537** | **0.0522** | **1.2700e-003** | **7.0434** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 8.5764 | 0.5069 | 0.0000 | 19.2202 |
| Unmitigated | 8.5764 | 0.5069 | 0.0000 | 19.2202 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Junior College (2Yr) | 42.25 | 8.5764 | 0.5069 | 0.0000 | 19.2202 |
| **Total** | | **8.5764** | **0.5069** | **0.0000** | **19.2202** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| Junior College (2Yr) | 42.25 | 8.5764 | 0.5069 | 0.0000 | 19.2202 |
| **Total** | | **8.5764** | **0.5069** | **0.0000** | **19.2202** |

## 9.0 Operational Offroad

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

## 10.0 Vegetation

# Cuesta College Campus Instructional Building Project

**San Luis Obispo County, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Junior College (2Yr) | 32.50 | 1000sqft | 0.75 | 32,500.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 3.2 | **Precipitation Freq (Days)** | 44 |
| **Climate Zone** | 4 | | | **Operational Year** | 2016 |
| **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 -

Land Use - Actual lot acreage = 1.3 acres based on project site plan.

Construction Phase - Default CalEEMod construction schedule doubled to account for anticipated duration of construction activity.

Off-road Equipment - Default CalEEMod equipment lists for each phase of construction used.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Demolition - Demo size estimated based on project site plans showing existing portables on site.

Grading - Grading area based on project site plans.

Vehicle Trips - Project would replace existing classrooms and would not increase campus enrollment; therefore no new vehicle trips.

Area Coating -

Operational Off-Road Equipment - no text

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 5.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 200.00 |
| tblConstructionPhase | NumDays | 10.00 | 20.00 |
| tblConstructionPhase | NumDays | 2.00 | 4.00 |
| tblConstructionPhase | NumDays | 5.00 | 10.00 |
| tblConstructionPhase | NumDays | 1.00 | 2.00 |
| tblGrading | AcresOfGrading | 0.00 | 1.30 |
| tblGrading | AcresOfGrading | 1.00 | 1.30 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2016 |
| tblVehicleTrips | ST_TR | 11.23 | 0.00 |
| tblVehicleTrips | SU_TR | 1.21 | 0.00 |
| tblVehicleTrips | WD_TR | 27.49 | 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 | | | | | |
| 2016 | 75.7018 | 14.2149 | 9.9487 | 0.0141 | 1.1963 | 0.9467 | 2.0009 | 0.4772 | 0.8709 | 1.2453 | 0.0000 | 1,388.4365 | 1,388.4365 | 0.3638 | 0.0000 | 1,396.0771 |
| **Total** | **75.7018** | **14.2149** | **9.9487** | **0.0141** | **1.1963** | **0.9467** | **2.0009** | **0.4772** | **0.8709** | **1.2453** | **0.0000** | **1,388.4365** | **1,388.4365** | **0.3638** | **0.0000** | **1,396.0771** |

### 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 | | | | | |
| 2016 | 75.7018 | 14.2149 | 9.9487 | 0.0141 | 1.1963 | 0.9467 | 2.0009 | 0.4772 | 0.8709 | 1.2453 | 0.0000 | 1,388.4365 | 1,388.4365 | 0.3638 | 0.0000 | 1,396.0771 |
| **Total** | **75.7018** | **14.2149** | **9.9487** | **0.0141** | **1.1963** | **0.9467** | **2.0009** | **0.4772** | **0.8709** | **1.2453** | **0.0000** | **1,388.4365** | **1,388.4365** | **0.3638** | **0.0000** | **1,396.0771** |

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

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.9022 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |
| Energy | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.9264** | **0.2202** | **0.1883** | **1.3200e-003** | **0.0000** | **0.0167** | **0.0167** | **0.0000** | **0.0167** | **0.0167** | | **264.1973** | **264.1973** | **5.0800e-003** | **4.8400e-003** | **265.8055** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.9022 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |
| Energy | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.9264** | **0.2202** | **0.1883** | **1.3200e-003** | **0.0000** | **0.0167** | **0.0167** | **0.0000** | **0.0167** | **0.0167** | | **264.1973** | **264.1973** | **5.0800e-003** | **4.8400e-003** | **265.8055** |

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

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 1/1/2016 | 1/28/2016 | 5 | 20 | |
| 2 | Site Preparation | Site Preparation | 1/29/2016 | 2/1/2016 | 5 | 2 | |
| 3 | Grading | Grading | 2/2/2016 | 2/5/2016 | 5 | 4 | |
| 4 | Building Construction | Building Construction | 2/6/2016 | 11/11/2016 | 5 | 200 | |
| 5 | Paving | Paving | 11/12/2016 | 11/25/2016 | 5 | 10 | |
| 6 | Architectural Coating | Architectural Coating | 11/26/2016 | 12/9/2016 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 1.3**

**Acres of Grading (Grading Phase): 1.3**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 48,750; Non-Residential Outdoor: 16,250 (Architectural Coating – sqft)**

**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 | Rubber Tired Dozers | 1 | 1.00 | 255 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 6.00 | 97 | 0.37 |
| Site Preparation | Graders | 1 | 8.00 | 174 | 0.41 |
| Grading | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Grading | Rubber Tired Dozers | 1 | 1.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 2 | 6.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 4.00 | 226 | 0.29 |
| Building Construction | Forklifts | 2 | 6.00 | 89 | 0.20 |
| Building Construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 4 | 6.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 7.00 | 125 | 0.42 |
| Paving | Rollers | 1 | 7.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 1 | 7.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 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 | 4 | 10.00 | 0.00 | 27.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 2 | 5.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 4 | 10.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 5 | 14.00 | 5.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 7 | 18.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 3.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2016

### 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 | | | | | 0.3018 | 0.0000 | 0.3018 | 0.0457 | 0.0000 | 0.0457 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3122 | 11.2385 | 8.7048 | 0.0120 | | 0.8039 | 0.8039 | | 0.7674 | 0.7674 | | 1,193.6106 | 1,193.6106 | 0.2386 | | 1,198.6217 |
| **Total** | **1.3122** | **11.2385** | **8.7048** | **0.0120** | **0.3018** | **0.8039** | **1.1057** | **0.0457** | **0.7674** | **0.8131** | | **1,193.6106** | **1,193.6106** | **0.2386** | | **1,198.6217** |

### 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 | 0.0370 | 0.4357 | 0.3946 | 1.0200e-003 | 0.0235 | 5.5900e-003 | 0.0291 | 6.4300e-003 | 5.1400e-003 | 0.0116 | | 102.3595 | 102.3595 | 7.3000e-004 | | 102.3748 |
| 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 | 0.0485 | 0.0727 | 0.6481 | 1.0800e-003 | 0.0989 | 7.8000e-004 | 0.0996 | 0.0262 | 7.0000e-004 | 0.0269 | | 89.7799 | 89.7799 | 5.4300e-003 | | 89.8940 |
| **Total** | **0.0856** | **0.5084** | **1.0427** | **2.1000e-003** | **0.1223** | **6.3700e-003** | **0.1287** | **0.0327** | **5.8400e-003** | **0.0385** | | **192.1394** | **192.1394** | **6.1600e-003** | | **192.2688** |

## 3.2 Demolition - 2016

### 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 | | | | | 0.3018 | 0.0000 | 0.3018 | 0.0457 | 0.0000 | 0.0457 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3122 | 11.2385 | 8.7048 | 0.0120 | | 0.8039 | 0.8039 | | 0.7674 | 0.7674 | 0.0000 | 1,193.6106 | 1,193.6106 | 0.2386 | | 1,198.6217 |
| **Total** | **1.3122** | **11.2385** | **8.7048** | **0.0120** | **0.3018** | **0.8039** | **1.1057** | **0.0457** | **0.7674** | **0.8131** | **0.0000** | **1,193.6106** | **1,193.6106** | **0.2386** | | **1,198.6217** |

### 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 | 0.0370 | 0.4357 | 0.3946 | 1.0200e-003 | 0.0235 | 5.5900e-003 | 0.0291 | 6.4300e-003 | 5.1400e-003 | 0.0116 | | 102.3595 | 102.3595 | 7.3000e-004 | | 102.3748 |
| 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 | 0.0485 | 0.0727 | 0.6481 | 1.0800e-003 | 0.0989 | 7.8000e-004 | 0.0996 | 0.0262 | 7.0000e-004 | 0.0269 | | 89.7799 | 89.7799 | 5.4300e-003 | | 89.8940 |
| **Total** | **0.0856** | **0.5084** | **1.0427** | **2.1000e-003** | **0.1223** | **6.3700e-003** | **0.1287** | **0.0327** | **5.8400e-003** | **0.0385** | | **192.1394** | **192.1394** | **6.1600e-003** | | **192.2688** |

## 3.3 Site Preparation - 2016

### 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 | | | | | 0.6893 | 0.0000 | 0.6893 | 0.0744 | 0.0000 | 0.0744 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3593 | 13.6350 | 7.3401 | 9.3500e-003 | | 0.8338 | 0.8338 | | 0.7671 | 0.7671 | | 973.0842 | 973.0842 | 0.2935 | | 979.2481 |
| **Total** | **1.3593** | **13.6350** | **7.3401** | **9.3500e-003** | **0.6893** | **0.8338** | **1.5231** | **0.0744** | **0.7671** | **0.8415** | | **973.0842** | **973.0842** | **0.2935** | | **979.2481** |

### 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 | 0.0243 | 0.0363 | 0.3241 | 5.4000e-004 | 0.0494 | 3.9000e-004 | 0.0498 | 0.0131 | 3.5000e-004 | 0.0135 | | 44.8900 | 44.8900 | 2.7200e-003 | | 44.9470 |
| **Total** | **0.0243** | **0.0363** | **0.3241** | **5.4000e-004** | **0.0494** | **3.9000e-004** | **0.0498** | **0.0131** | **3.5000e-004** | **0.0135** | | **44.8900** | **44.8900** | **2.7200e-003** | | **44.9470** |

## 3.3 Site Preparation - 2016

### 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 | | | | | 0.6893 | 0.0000 | 0.6893 | 0.0744 | 0.0000 | 0.0744 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3593 | 13.6350 | 7.3401 | 9.3500e-003 | | 0.8338 | 0.8338 | | 0.7671 | 0.7671 | 0.0000 | 973.0842 | 973.0842 | 0.2935 | | 979.2481 |
| **Total** | **1.3593** | **13.6350** | **7.3401** | **9.3500e-003** | **0.6893** | **0.8338** | **1.5231** | **0.0744** | **0.7671** | **0.8415** | **0.0000** | **973.0842** | **973.0842** | **0.2935** | | **979.2481** |

### 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 | 0.0243 | 0.0363 | 0.3241 | 5.4000e-004 | 0.0494 | 3.9000e-004 | 0.0498 | 0.0131 | 3.5000e-004 | 0.0135 | | 44.8900 | 44.8900 | 2.7200e-003 | | 44.9470 |
| **Total** | **0.0243** | **0.0363** | **0.3241** | **5.4000e-004** | **0.0494** | **3.9000e-004** | **0.0498** | **0.0131** | **3.5000e-004** | **0.0135** | | **44.8900** | **44.8900** | **2.7200e-003** | | **44.9470** |

## 3.4 Grading - 2016

### 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 | | | | | 1.0974 | 0.0000 | 1.0974 | 0.4510 | 0.0000 | 0.4510 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3122 | 11.2385 | 8.7048 | 0.0120 | | 0.8039 | 0.8039 | | 0.7674 | 0.7674 | | 1,193.6106 | 1,193.6106 | 0.2386 | | 1,198.6217 |
| **Total** | **1.3122** | **11.2385** | **8.7048** | **0.0120** | **1.0974** | **0.8039** | **1.9013** | **0.4510** | **0.7674** | **1.2183** | | **1,193.6106** | **1,193.6106** | **0.2386** | | **1,198.6217** |

### 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 | 0.0485 | 0.0727 | 0.6481 | 1.0800e-003 | 0.0989 | 7.8000e-004 | 0.0996 | 0.0262 | 7.0000e-004 | 0.0269 | | 89.7799 | 89.7799 | 5.4300e-003 | | 89.8940 |
| **Total** | **0.0485** | **0.0727** | **0.6481** | **1.0800e-003** | **0.0989** | **7.8000e-004** | **0.0996** | **0.0262** | **7.0000e-004** | **0.0269** | | **89.7799** | **89.7799** | **5.4300e-003** | | **89.8940** |

## 3.4 Grading - 2016

### 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 | | | | | 1.0974 | 0.0000 | 1.0974 | 0.4510 | 0.0000 | 0.4510 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3122 | 11.2385 | 8.7048 | 0.0120 | | 0.8039 | 0.8039 | | 0.7674 | 0.7674 | 0.0000 | 1,193.6106 | 1,193.6106 | 0.2386 | | 1,198.6217 |
| **Total** | **1.3122** | **11.2385** | **8.7048** | **0.0120** | **1.0974** | **0.8039** | **1.9013** | **0.4510** | **0.7674** | **1.2183** | **0.0000** | **1,193.6106** | **1,193.6106** | **0.2386** | | **1,198.6217** |

### 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 | 0.0485 | 0.0727 | 0.6481 | 1.0800e-003 | 0.0989 | 7.8000e-004 | 0.0996 | 0.0262 | 7.0000e-004 | 0.0269 | | 89.7799 | 89.7799 | 5.4300e-003 | | 89.8940 |
| **Total** | **0.0485** | **0.0727** | **0.6481** | **1.0800e-003** | **0.0989** | **7.8000e-004** | **0.0996** | **0.0262** | **7.0000e-004** | **0.0269** | | **89.7799** | **89.7799** | **5.4300e-003** | | **89.8940** |

## 3.5 Building Construction - 2016

### 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 | 1.3816 | 13.7058 | 8.2122 | 0.0113 | | 0.9398 | 0.9398 | | 0.8646 | 0.8646 | | 1,178.5549 | 1,178.5549 | 0.3555 | | 1,186.0202 |
| **Total** | **1.3816** | **13.7058** | **8.2122** | **0.0113** | | **0.9398** | **0.9398** | | **0.8646** | **0.8646** | | **1,178.5549** | **1,178.5549** | **0.3555** | | **1,186.0202** |

### 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 | 0.0711 | 0.4074 | 0.8291 | 8.5000e-004 | 0.0228 | 5.7800e-003 | 0.0286 | 6.5000e-003 | 5.3100e-003 | 0.0118 | | 84.1898 | 84.1898 | 7.4000e-004 | | 84.2053 |
| Worker | 0.0680 | 0.1017 | 0.9074 | 1.5100e-003 | 0.1384 | 1.0900e-003 | 0.1395 | 0.0367 | 9.8000e-004 | 0.0377 | | 125.6919 | 125.6919 | 7.6100e-003 | | 125.8516 |
| **Total** | **0.1391** | **0.5091** | **1.7365** | **2.3600e-003** | **0.1612** | **6.8700e-003** | **0.1680** | **0.0432** | **6.2900e-003** | **0.0495** | | **209.8817** | **209.8817** | **8.3500e-003** | | **210.0569** |

## 3.5 Building Construction - 2016

### 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 | 1.3816 | 13.7058 | 8.2122 | 0.0113 | | 0.9398 | 0.9398 | | 0.8646 | 0.8646 | 0.0000 | 1,178.5549 | 1,178.5549 | 0.3555 | | 1,186.0202 |
| **Total** | **1.3816** | **13.7058** | **8.2122** | **0.0113** | | **0.9398** | **0.9398** | | **0.8646** | **0.8646** | **0.0000** | **1,178.5549** | **1,178.5549** | **0.3555** | | **1,186.0202** |

### 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 | 0.0711 | 0.4074 | 0.8291 | 8.5000e-004 | 0.0228 | 5.7800e-003 | 0.0286 | 6.5000e-003 | 5.3100e-003 | 0.0118 | | 84.1898 | 84.1898 | 7.4000e-004 | | 84.2053 |
| Worker | 0.0680 | 0.1017 | 0.9074 | 1.5100e-003 | 0.1384 | 1.0900e-003 | 0.1395 | 0.0367 | 9.8000e-004 | 0.0377 | | 125.6919 | 125.6919 | 7.6100e-003 | | 125.8516 |
| **Total** | **0.1391** | **0.5091** | **1.7365** | **2.3600e-003** | **0.1612** | **6.8700e-003** | **0.1680** | **0.0432** | **6.2900e-003** | **0.0495** | | **209.8817** | **209.8817** | **8.3500e-003** | | **210.0569** |

## 3.6 Paving - 2016

### 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 | 1.1203 | 10.6282 | 7.2935 | 0.0111 | | 0.6606 | 0.6606 | | 0.6113 | 0.6113 | | 1,083.5832 | 1,083.5832 | 0.2969 | | 1,089.8175 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.1203** | **10.6282** | **7.2935** | **0.0111** | | **0.6606** | **0.6606** | | **0.6113** | **0.6113** | | **1,083.5832** | **1,083.5832** | **0.2969** | | **1,089.8175** |

### 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 | 0.0874 | 0.1308 | 1.1667 | 1.9400e-003 | 0.1780 | 1.4000e-003 | 0.1794 | 0.0472 | 1.2700e-003 | 0.0485 | | 161.6038 | 161.6038 | 9.7800e-003 | | 161.8092 |
| **Total** | **0.0874** | **0.1308** | **1.1667** | **1.9400e-003** | **0.1780** | **1.4000e-003** | **0.1794** | **0.0472** | **1.2700e-003** | **0.0485** | | **161.6038** | **161.6038** | **9.7800e-003** | | **161.8092** |

## 3.6 Paving - 2016

### 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 | 1.1203 | 10.6282 | 7.2935 | 0.0111 | | 0.6606 | 0.6606 | | 0.6113 | 0.6113 | 0.0000 | 1,083.5832 | 1,083.5832 | 0.2969 | | 1,089.8175 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.1203** | **10.6282** | **7.2935** | **0.0111** | | **0.6606** | **0.6606** | | **0.6113** | **0.6113** | **0.0000** | **1,083.5832** | **1,083.5832** | **0.2969** | | **1,089.8175** |

### 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 | 0.0874 | 0.1308 | 1.1667 | 1.9400e-003 | 0.1780 | 1.4000e-003 | 0.1794 | 0.0472 | 1.2700e-003 | 0.0485 | | 161.6038 | 161.6038 | 9.7800e-003 | | 161.8092 |
| **Total** | **0.0874** | **0.1308** | **1.1667** | **1.9400e-003** | **0.1780** | **1.4000e-003** | **0.1794** | **0.0472** | **1.2700e-003** | **0.0485** | | **161.6038** | **161.6038** | **9.7800e-003** | | **161.8092** |

## 3.7 Architectural Coating - 2016

### 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 | 75.3188 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3685 | 2.3722 | 1.8839 | 2.9700e-003 | | 0.1966 | 0.1966 | | 0.1966 | 0.1966 | | 281.4481 | 281.4481 | 0.0332 | | 282.1449 |
| **Total** | **75.6872** | **2.3722** | **1.8839** | **2.9700e-003** | | **0.1966** | **0.1966** | | **0.1966** | **0.1966** | | **281.4481** | **281.4481** | **0.0332** | | **282.1449** |

### 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 | 0.0146 | 0.0218 | 0.1944 | 3.2000e-004 | 0.0297 | 2.3000e-004 | 0.0299 | 7.8700e-003 | 2.1000e-004 | 8.0800e-003 | | 26.9340 | 26.9340 | 1.6300e-003 | | 26.9682 |
| **Total** | **0.0146** | **0.0218** | **0.1944** | **3.2000e-004** | **0.0297** | **2.3000e-004** | **0.0299** | **7.8700e-003** | **2.1000e-004** | **8.0800e-003** | | **26.9340** | **26.9340** | **1.6300e-003** | | **26.9682** |

## 3.7 Architectural Coating - 2016

**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 | 75.3188 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3685 | 2.3722 | 1.8839 | 2.9700e-003 | | 0.1966 | 0.1966 | | 0.1966 | 0.1966 | 0.0000 | 281.4481 | 281.4481 | 0.0332 | | 282.1449 |
| **Total** | **75.6872** | **2.3722** | **1.8839** | **2.9700e-003** | | **0.1966** | **0.1966** | | **0.1966** | **0.1966** | **0.0000** | **281.4481** | **281.4481** | **0.0332** | | **282.1449** |

**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 | 0.0146 | 0.0218 | 0.1944 | 3.2000e-004 | 0.0297 | 2.3000e-004 | 0.0299 | 7.8700e-003 | 2.1000e-004 | 8.0800e-003 | | 26.9340 | 26.9340 | 1.6300e-003 | | 26.9682 |
| **Total** | **0.0146** | **0.0218** | **0.1944** | **3.2000e-004** | **0.0297** | **2.3000e-004** | **0.0299** | **7.8700e-003** | **2.1000e-004** | **8.0800e-003** | | **26.9340** | **26.9340** | **1.6300e-003** | | **26.9682** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

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

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Junior College (2Yr) | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Junior College (2Yr) | 13.00 | 5.00 | 5.00 | 6.40 | 88.60 | 5.00 | 92 | 7 | 1 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.455937 | 0.042338 | 0.214948 | 0.150714 | 0.068093 | 0.009944 | 0.017510 | 0.022507 | 0.002330 | 0.001401 | 0.008743 | 0.000855 | 0.004680 |

### 4.4 Fleet Mix

## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |
| NaturalGas Unmitigated | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Junior College (2Yr) | 2245.62 | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |
| **Total** | | **0.0242** | **0.2202** | **0.1849** | **1.3200e-003** | | **0.0167** | **0.0167** | | **0.0167** | **0.0167** | | **264.1902** | **264.1902** | **5.0600e-003** | **4.8400e-003** | **265.7980** |

### 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Junior College (2Yr) | 2.24562 | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |
| **Total** | | **0.0242** | **0.2202** | **0.1849** | **1.3200e-003** | | **0.0167** | **0.0167** | | **0.0167** | **0.0167** | | **264.1902** | **264.1902** | **5.0600e-003** | **4.8400e-003** | **265.7980** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.9022 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |
| Unmitigated | 0.9022 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Consumer Products | 0.6955 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 3.3000e-004 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |
| Architectural Coating | 0.2064 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9022** | **3.0000e-005** | **3.4000e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **7.1100e-003** | **7.1100e-003** | **2.0000e-005** | | **7.5400e-003** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Consumer Products | 0.6955 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 3.3000e-004 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |
| Architectural Coating | 0.2064 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9022** | **3.0000e-005** | **3.4000e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **7.1100e-003** | **7.1100e-003** | **2.0000e-005** | | **7.5400e-003** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

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

## 10.0 Vegetation

# Cuesta College Campus Instructional Building Project

**San Luis Obispo County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| Junior College (2Yr) | 32.50 | 1000sqft | 0.75 | 32,500.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 3.2 | **Precipitation Freq (Days)** | 44 |
| **Climate Zone** | 4 | | | **Operational Year** | 2016 |
| **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 -

Land Use - Actual lot acreage = 1.3 acres based on project site plan.

Construction Phase - Default CalEEMod construction schedule doubled to account for anticipated duration of construction activity.

Off-road Equipment - Default CalEEMod equipment lists for each phase of construction used.

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Demolition - Demo size estimated based on project site plans showing existing portables on site.

Grading - Grading area based on project site plans.

Vehicle Trips - Project would replace existing classrooms and would not increase campus enrollment; therefore no new vehicle trips.

Area Coating -

Operational Off-Road Equipment - no text

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 5.00 | 10.00 |
| tblConstructionPhase | NumDays | 100.00 | 200.00 |
| tblConstructionPhase | NumDays | 10.00 | 20.00 |
| tblConstructionPhase | NumDays | 2.00 | 4.00 |
| tblConstructionPhase | NumDays | 5.00 | 10.00 |
| tblConstructionPhase | NumDays | 1.00 | 2.00 |
| tblGrading | AcresOfGrading | 0.00 | 1.30 |
| tblGrading | AcresOfGrading | 1.00 | 1.30 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2016 |
| tblVehicleTrips | ST_TR | 11.23 | 0.00 |
| tblVehicleTrips | SU_TR | 1.21 | 0.00 |
| tblVehicleTrips | WD_TR | 27.49 | 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 | | | | | |
| 2016 | 75.7008 | 14.1968 | 9.6794 | 0.0142 | 1.1963 | 0.9466 | 2.0009 | 0.4772 | 0.8708 | 1.2453 | 0.0000 | 1,395.4574 | 1,395.4574 | 0.3638 | 0.0000 | 1,403.0975 |
| **Total** | **75.7008** | **14.1968** | **9.6794** | **0.0142** | **1.1963** | **0.9466** | **2.0009** | **0.4772** | **0.8708** | **1.2453** | **0.0000** | **1,395.4574** | **1,395.4574** | **0.3638** | **0.0000** | **1,403.0975** |

### 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 | | | | | |
| 2016 | 75.7008 | 14.1968 | 9.6794 | 0.0142 | 1.1963 | 0.9466 | 2.0009 | 0.4772 | 0.8708 | 1.2453 | 0.0000 | 1,395.4574 | 1,395.4574 | 0.3638 | 0.0000 | 1,403.0975 |
| **Total** | **75.7008** | **14.1968** | **9.6794** | **0.0142** | **1.1963** | **0.9466** | **2.0009** | **0.4772** | **0.8708** | **1.2453** | **0.0000** | **1,395.4574** | **1,395.4574** | **0.3638** | **0.0000** | **1,403.0975** |

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

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.9022 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |
| Energy | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.9264** | **0.2202** | **0.1883** | **1.3200e-003** | **0.0000** | **0.0167** | **0.0167** | **0.0000** | **0.0167** | **0.0167** | | **264.1973** | **264.1973** | **5.0800e-003** | **4.8400e-003** | **265.8055** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 0.9022 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |
| Energy | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |
| Mobile | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| **Total** | **0.9264** | **0.2202** | **0.1883** | **1.3200e-003** | **0.0000** | **0.0167** | **0.0167** | **0.0000** | **0.0167** | **0.0167** | | **264.1973** | **264.1973** | **5.0800e-003** | **4.8400e-003** | **265.8055** |

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

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Demolition | Demolition | 1/1/2016 | 1/28/2016 | 5 | 20 | |
| 2 | Site Preparation | Site Preparation | 1/29/2016 | 2/1/2016 | 5 | 2 | |
| 3 | Grading | Grading | 2/2/2016 | 2/5/2016 | 5 | 4 | |
| 4 | Building Construction | Building Construction | 2/6/2016 | 11/11/2016 | 5 | 200 | |
| 5 | Paving | Paving | 11/12/2016 | 11/25/2016 | 5 | 10 | |
| 6 | Architectural Coating | Architectural Coating | 11/26/2016 | 12/9/2016 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 1.3**

**Acres of Grading (Grading Phase): 1.3**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 48,750; Non-Residential Outdoor: 16,250 (Architectural Coating – sqft)**

**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 | Rubber Tired Dozers | 1 | 1.00 | 255 | 0.40 |
| Demolition | Tractors/Loaders/Backhoes | 2 | 6.00 | 97 | 0.37 |
| Site Preparation | Graders | 1 | 8.00 | 174 | 0.41 |
| Grading | Concrete/Industrial Saws | 1 | 8.00 | 81 | 0.73 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |
| Grading | Rubber Tired Dozers | 1 | 1.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 2 | 6.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 4.00 | 226 | 0.29 |
| Building Construction | Forklifts | 2 | 6.00 | 89 | 0.20 |
| Building Construction | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |
| Paving | Cement and Mortar Mixers | 4 | 6.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 7.00 | 125 | 0.42 |
| Paving | Rollers | 1 | 7.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 1 | 7.00 | 97 | 0.37 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 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 | 4 | 10.00 | 0.00 | 27.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Site Preparation | 2 | 5.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 4 | 10.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 5 | 14.00 | 5.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 7 | 18.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 3.00 | 0.00 | 0.00 | 13.00 | 5.00 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Demolition - 2016

### 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 | | | | | 0.3018 | 0.0000 | 0.3018 | 0.0457 | 0.0000 | 0.0457 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3122 | 11.2385 | 8.7048 | 0.0120 | | 0.8039 | 0.8039 | | 0.7674 | 0.7674 | | 1,193.6106 | 1,193.6106 | 0.2386 | | 1,198.6217 |
| **Total** | **1.3122** | **11.2385** | **8.7048** | **0.0120** | **0.3018** | **0.8039** | **1.1057** | **0.0457** | **0.7674** | **0.8131** | | **1,193.6106** | **1,193.6106** | **0.2386** | | **1,198.6217** |

### 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 | 0.0317 | 0.4258 | 0.2884 | 1.0200e-003 | 0.0235 | 5.5700e-003 | 0.0291 | 6.4300e-003 | 5.1200e-003 | 0.0116 | | 102.5977 | 102.5977 | 7.2000e-004 | | 102.6129 |
| 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 | 0.0451 | 0.0641 | 0.6391 | 1.1300e-003 | 0.0989 | 7.8000e-004 | 0.0996 | 0.0262 | 7.0000e-004 | 0.0269 | | 94.1437 | 94.1437 | 5.4300e-003 | | 94.2578 |
| **Total** | **0.0768** | **0.4899** | **0.9275** | **2.1500e-003** | **0.1223** | **6.3500e-003** | **0.1287** | **0.0327** | **5.8200e-003** | **0.0385** | | **196.7414** | **196.7414** | **6.1500e-003** | | **196.8707** |

## 3.2 Demolition - 2016

### 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 | | | | | 0.3018 | 0.0000 | 0.3018 | 0.0457 | 0.0000 | 0.0457 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3122 | 11.2385 | 8.7048 | 0.0120 | | 0.8039 | 0.8039 | | 0.7674 | 0.7674 | 0.0000 | 1,193.6106 | 1,193.6106 | 0.2386 | | 1,198.6217 |
| **Total** | **1.3122** | **11.2385** | **8.7048** | **0.0120** | **0.3018** | **0.8039** | **1.1057** | **0.0457** | **0.7674** | **0.8131** | **0.0000** | **1,193.6106** | **1,193.6106** | **0.2386** | | **1,198.6217** |

### 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 | 0.0317 | 0.4258 | 0.2884 | 1.0200e-003 | 0.0235 | 5.5700e-003 | 0.0291 | 6.4300e-003 | 5.1200e-003 | 0.0116 | | 102.5977 | 102.5977 | 7.2000e-004 | | 102.6129 |
| 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 | 0.0451 | 0.0641 | 0.6391 | 1.1300e-003 | 0.0989 | 7.8000e-004 | 0.0996 | 0.0262 | 7.0000e-004 | 0.0269 | | 94.1437 | 94.1437 | 5.4300e-003 | | 94.2578 |
| **Total** | **0.0768** | **0.4899** | **0.9275** | **2.1500e-003** | **0.1223** | **6.3500e-003** | **0.1287** | **0.0327** | **5.8200e-003** | **0.0385** | | **196.7414** | **196.7414** | **6.1500e-003** | | **196.8707** |

## 3.3 Site Preparation - 2016

### 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 | | | | | 0.6893 | 0.0000 | 0.6893 | 0.0744 | 0.0000 | 0.0744 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3593 | 13.6350 | 7.3401 | 9.3500e-003 | | 0.8338 | 0.8338 | | 0.7671 | 0.7671 | | 973.0842 | 973.0842 | 0.2935 | | 979.2481 |
| **Total** | **1.3593** | **13.6350** | **7.3401** | **9.3500e-003** | **0.6893** | **0.8338** | **1.5231** | **0.0744** | **0.7671** | **0.8415** | | **973.0842** | **973.0842** | **0.2935** | | **979.2481** |

### 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 | 0.0226 | 0.0321 | 0.3196 | 5.6000e-004 | 0.0494 | 3.9000e-004 | 0.0498 | 0.0131 | 3.5000e-004 | 0.0135 | | 47.0718 | 47.0718 | 2.7200e-003 | | 47.1289 |
| **Total** | **0.0226** | **0.0321** | **0.3196** | **5.6000e-004** | **0.0494** | **3.9000e-004** | **0.0498** | **0.0131** | **3.5000e-004** | **0.0135** | | **47.0718** | **47.0718** | **2.7200e-003** | | **47.1289** |

## 3.3 Site Preparation - 2016

### 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 | | | | | 0.6893 | 0.0000 | 0.6893 | 0.0744 | 0.0000 | 0.0744 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3593 | 13.6350 | 7.3401 | 9.3500e-003 | | 0.8338 | 0.8338 | | 0.7671 | 0.7671 | 0.0000 | 973.0842 | 973.0842 | 0.2935 | | 979.2481 |
| **Total** | **1.3593** | **13.6350** | **7.3401** | **9.3500e-003** | **0.6893** | **0.8338** | **1.5231** | **0.0744** | **0.7671** | **0.8415** | **0.0000** | **973.0842** | **973.0842** | **0.2935** | | **979.2481** |

### 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 | 0.0226 | 0.0321 | 0.3196 | 5.6000e-004 | 0.0494 | 3.9000e-004 | 0.0498 | 0.0131 | 3.5000e-004 | 0.0135 | | 47.0718 | 47.0718 | 2.7200e-003 | | 47.1289 |
| **Total** | **0.0226** | **0.0321** | **0.3196** | **5.6000e-004** | **0.0494** | **3.9000e-004** | **0.0498** | **0.0131** | **3.5000e-004** | **0.0135** | | **47.0718** | **47.0718** | **2.7200e-003** | | **47.1289** |

## 3.4 Grading - 2016

### 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 | | | | | 1.0974 | 0.0000 | 1.0974 | 0.4510 | 0.0000 | 0.4510 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3122 | 11.2385 | 8.7048 | 0.0120 | | 0.8039 | 0.8039 | | 0.7674 | 0.7674 | | 1,193.6106 | 1,193.6106 | 0.2386 | | 1,198.6217 |
| **Total** | **1.3122** | **11.2385** | **8.7048** | **0.0120** | **1.0974** | **0.8039** | **1.9013** | **0.4510** | **0.7674** | **1.2183** | | **1,193.6106** | **1,193.6106** | **0.2386** | | **1,198.6217** |

### 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 | 0.0451 | 0.0641 | 0.6391 | 1.1300e-003 | 0.0989 | 7.8000e-004 | 0.0996 | 0.0262 | 7.0000e-004 | 0.0269 | | 94.1437 | 94.1437 | 5.4300e-003 | | 94.2578 |
| **Total** | **0.0451** | **0.0641** | **0.6391** | **1.1300e-003** | **0.0989** | **7.8000e-004** | **0.0996** | **0.0262** | **7.0000e-004** | **0.0269** | | **94.1437** | **94.1437** | **5.4300e-003** | | **94.2578** |

## 3.4 Grading - 2016

### 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 | | | | | 1.0974 | 0.0000 | 1.0974 | 0.4510 | 0.0000 | 0.4510 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.3122 | 11.2385 | 8.7048 | 0.0120 | | 0.8039 | 0.8039 | | 0.7674 | 0.7674 | 0.0000 | 1,193.6106 | 1,193.6106 | 0.2386 | | 1,198.6217 |
| **Total** | **1.3122** | **11.2385** | **8.7048** | **0.0120** | **1.0974** | **0.8039** | **1.9013** | **0.4510** | **0.7674** | **1.2183** | **0.0000** | **1,193.6106** | **1,193.6106** | **0.2386** | | **1,198.6217** |

### 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 | 0.0451 | 0.0641 | 0.6391 | 1.1300e-003 | 0.0989 | 7.8000e-004 | 0.0996 | 0.0262 | 7.0000e-004 | 0.0269 | | 94.1437 | 94.1437 | 5.4300e-003 | | 94.2578 |
| **Total** | **0.0451** | **0.0641** | **0.6391** | **1.1300e-003** | **0.0989** | **7.8000e-004** | **0.0996** | **0.0262** | **7.0000e-004** | **0.0269** | | **94.1437** | **94.1437** | **5.4300e-003** | | **94.2578** |

## 3.5 Building Construction - 2016

### 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 | 1.3816 | 13.7058 | 8.2122 | 0.0113 | | 0.9398 | 0.9398 | | 0.8646 | 0.8646 | | 1,178.5549 | 1,178.5549 | 0.3555 | | 1,186.0202 |
| **Total** | **1.3816** | **13.7058** | **8.2122** | **0.0113** | | **0.9398** | **0.9398** | | **0.8646** | **0.8646** | | **1,178.5549** | **1,178.5549** | **0.3555** | | **1,186.0202** |

### 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 | 0.0575 | 0.4011 | 0.5724 | 8.5000e-004 | 0.0228 | 5.6800e-003 | 0.0285 | 6.5000e-003 | 5.2200e-003 | 0.0117 | | 85.1014 | 85.1014 | 7.1000e-004 | | 85.1164 |
| Worker | 0.0632 | 0.0898 | 0.8948 | 1.5800e-003 | 0.1384 | 1.0900e-003 | 0.1395 | 0.0367 | 9.8000e-004 | 0.0377 | | 131.8012 | 131.8012 | 7.6100e-003 | | 131.9609 |
| **Total** | **0.1207** | **0.4909** | **1.4672** | **2.4300e-003** | **0.1612** | **6.7700e-003** | **0.1679** | **0.0432** | **6.2000e-003** | **0.0494** | | **216.9025** | **216.9025** | **8.3200e-003** | | **217.0772** |

## 3.5 Building Construction - 2016

### 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 | 1.3816 | 13.7058 | 8.2122 | 0.0113 | | 0.9398 | 0.9398 | | 0.8646 | 0.8646 | 0.0000 | 1,178.5549 | 1,178.5549 | 0.3555 | | 1,186.0202 |
| **Total** | **1.3816** | **13.7058** | **8.2122** | **0.0113** | | **0.9398** | **0.9398** | | **0.8646** | **0.8646** | **0.0000** | **1,178.5549** | **1,178.5549** | **0.3555** | | **1,186.0202** |

### 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 | 0.0575 | 0.4011 | 0.5724 | 8.5000e-004 | 0.0228 | 5.6800e-003 | 0.0285 | 6.5000e-003 | 5.2200e-003 | 0.0117 | | 85.1014 | 85.1014 | 7.1000e-004 | | 85.1164 |
| Worker | 0.0632 | 0.0898 | 0.8948 | 1.5800e-003 | 0.1384 | 1.0900e-003 | 0.1395 | 0.0367 | 9.8000e-004 | 0.0377 | | 131.8012 | 131.8012 | 7.6100e-003 | | 131.9609 |
| **Total** | **0.1207** | **0.4909** | **1.4672** | **2.4300e-003** | **0.1612** | **6.7700e-003** | **0.1679** | **0.0432** | **6.2000e-003** | **0.0494** | | **216.9025** | **216.9025** | **8.3200e-003** | | **217.0772** |

## 3.6 Paving - 2016

### 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 | 1.1203 | 10.6282 | 7.2935 | 0.0111 | | 0.6606 | 0.6606 | | 0.6113 | 0.6113 | | 1,083.5832 | 1,083.5832 | 0.2969 | | 1,089.8175 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.1203** | **10.6282** | **7.2935** | **0.0111** | | **0.6606** | **0.6606** | | **0.6113** | **0.6113** | | **1,083.5832** | **1,083.5832** | **0.2969** | | **1,089.8175** |

### 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 | 0.0812 | 0.1154 | 1.1504 | 2.0300e-003 | 0.1780 | 1.4000e-003 | 0.1794 | 0.0472 | 1.2700e-003 | 0.0485 | | 169.4586 | 169.4586 | 9.7800e-003 | | 169.6640 |
| **Total** | **0.0812** | **0.1154** | **1.1504** | **2.0300e-003** | **0.1780** | **1.4000e-003** | **0.1794** | **0.0472** | **1.2700e-003** | **0.0485** | | **169.4586** | **169.4586** | **9.7800e-003** | | **169.6640** |

## 3.6 Paving - 2016

### 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 | 1.1203 | 10.6282 | 7.2935 | 0.0111 | | 0.6606 | 0.6606 | | 0.6113 | 0.6113 | 0.0000 | 1,083.5832 | 1,083.5832 | 0.2969 | | 1,089.8175 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.1203** | **10.6282** | **7.2935** | **0.0111** | | **0.6606** | **0.6606** | | **0.6113** | **0.6113** | **0.0000** | **1,083.5832** | **1,083.5832** | **0.2969** | | **1,089.8175** |

### 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 | 0.0812 | 0.1154 | 1.1504 | 2.0300e-003 | 0.1780 | 1.4000e-003 | 0.1794 | 0.0472 | 1.2700e-003 | 0.0485 | | 169.4586 | 169.4586 | 9.7800e-003 | | 169.6640 |
| **Total** | **0.0812** | **0.1154** | **1.1504** | **2.0300e-003** | **0.1780** | **1.4000e-003** | **0.1794** | **0.0472** | **1.2700e-003** | **0.0485** | | **169.4586** | **169.4586** | **9.7800e-003** | | **169.6640** |

## 3.7 Architectural Coating - 2016

### 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 | 75.3188 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3685 | 2.3722 | 1.8839 | 2.9700e-003 | | 0.1966 | 0.1966 | | 0.1966 | 0.1966 | | 281.4481 | 281.4481 | 0.0332 | | 282.1449 |
| **Total** | **75.6872** | **2.3722** | **1.8839** | **2.9700e-003** | | **0.1966** | **0.1966** | | **0.1966** | **0.1966** | | **281.4481** | **281.4481** | **0.0332** | | **282.1449** |

### 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 | 0.0135 | 0.0192 | 0.1917 | 3.4000e-004 | 0.0297 | 2.3000e-004 | 0.0299 | 7.8700e-003 | 2.1000e-004 | 8.0800e-003 | | 28.2431 | 28.2431 | 1.6300e-003 | | 28.2773 |
| **Total** | **0.0135** | **0.0192** | **0.1917** | **3.4000e-004** | **0.0297** | **2.3000e-004** | **0.0299** | **7.8700e-003** | **2.1000e-004** | **8.0800e-003** | | **28.2431** | **28.2431** | **1.6300e-003** | | **28.2773** |

## 3.7 Architectural Coating - 2016

**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 | 75.3188 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3685 | 2.3722 | 1.8839 | 2.9700e-003 | | 0.1966 | 0.1966 | | 0.1966 | 0.1966 | 0.0000 | 281.4481 | 281.4481 | 0.0332 | | 282.1449 |
| **Total** | **75.6872** | **2.3722** | **1.8839** | **2.9700e-003** | | **0.1966** | **0.1966** | | **0.1966** | **0.1966** | **0.0000** | **281.4481** | **281.4481** | **0.0332** | | **282.1449** |

**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 | 0.0135 | 0.0192 | 0.1917 | 3.4000e-004 | 0.0297 | 2.3000e-004 | 0.0299 | 7.8700e-003 | 2.1000e-004 | 8.0800e-003 | | 28.2431 | 28.2431 | 1.6300e-003 | | 28.2773 |
| **Total** | **0.0135** | **0.0192** | **0.1917** | **3.4000e-004** | **0.0297** | **2.3000e-004** | **0.0299** | **7.8700e-003** | **2.1000e-004** | **8.0800e-003** | | **28.2431** | **28.2431** | **1.6300e-003** | | **28.2773** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

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

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Junior College (2Yr) | 0.00 | 0.00 | 0.00 | | |
| Total | 0.00 | 0.00 | 0.00 | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| Junior College (2Yr) | 13.00 | 5.00 | 5.00 | 6.40 | 88.60 | 5.00 | 92 | 7 | 1 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.455937 | 0.042338 | 0.214948 | 0.150714 | 0.068093 | 0.009944 | 0.017510 | 0.022507 | 0.002330 | 0.001401 | 0.008743 | 0.000855 | 0.004680 |

### 4.4 Fleet Mix

## 5.0 Energy Detail

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |
| NaturalGas Unmitigated | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Junior College (2Yr) | 2245.62 | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |
| **Total** | | **0.0242** | **0.2202** | **0.1849** | **1.3200e-003** | | **0.0167** | **0.0167** | | **0.0167** | **0.0167** | | **264.1902** | **264.1902** | **5.0600e-003** | **4.8400e-003** | **265.7980** |

### 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Junior College (2Yr) | 2.24562 | 0.0242 | 0.2202 | 0.1849 | 1.3200e-003 | | 0.0167 | 0.0167 | | 0.0167 | 0.0167 | | 264.1902 | 264.1902 | 5.0600e-003 | 4.8400e-003 | 265.7980 |
| **Total** | | **0.0242** | **0.2202** | **0.1849** | **1.3200e-003** | | **0.0167** | **0.0167** | | **0.0167** | **0.0167** | | **264.1902** | **264.1902** | **5.0600e-003** | **4.8400e-003** | **265.7980** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.9022 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |
| Unmitigated | 0.9022 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Consumer Products | 0.6955 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 3.3000e-004 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |
| Architectural Coating | 0.2064 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9022** | **3.0000e-005** | **3.4000e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **7.1100e-003** | **7.1100e-003** | **2.0000e-005** | | **7.5400e-003** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Consumer Products | 0.6955 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 3.3000e-004 | 3.0000e-005 | 3.4000e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | | 7.1100e-003 | 7.1100e-003 | 2.0000e-005 | | 7.5400e-003 |
| Architectural Coating | 0.2064 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **0.9022** | **3.0000e-005** | **3.4000e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | | **7.1100e-003** | **7.1100e-003** | **2.0000e-005** | | **7.5400e-003** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

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

## 10.0 Vegetation

# Appendix B

*Geotechnical Engineering and Geologic Hazards Report*

# GEOTECHNICAL ENGINEERING
# AND GEOLOGIC HAZARDS REPORT
# CUESTA COLLEGE – SAN LUIS OBISPO CAMPUS
# INSTRUCTIONAL BUILDING
# HIGHWAY 1
# SAN LUIS OBISPO, CALIFORNIA

April 1, 2015

Prepared for

Mr. Terry Reece
Director of Facilities
San Luis Obispo Community College District

Prepared by

Earth Systems Pacific
4378 Old Santa Fe Road
San Luis Obispo, CA 93401

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April 1, 2015

FILE NO.: SL-17540-SA

Mr. Terry Reece
Director of Facilities
San Luis Obispo Community College District
PO Box 8106
San Luis Obispo, CA 93403-8106

PROJECT: CUESTA COLLEGE – SAN LUIS OBISPO CAMPUS
INSTRUCTIONAL BUILDING
HIGHWAY 1
SAN LUIS OBISPO, CALIFORNIA

SUBJECT: Geotechnical Engineering and Geologic Hazards Report

CONTRACT REF: Revised Proposal to Provide a Geotechnical Engineering Investigation, a Soil Corrosivity Study and a Geologic Hazards Assessment, Cuesta College – San Luis Obispo Campus, Instructional Building, San Luis Obispo, California, by Earth Systems Pacific, Doc. No. 1411-145.PRP.REV, revised December 5, 2014

Dear Mr. Reece:

In accordance with your authorization of the referenced revised proposal, this geotechnical engineering and geologic hazards report has been prepared for use in the development of plans and specifications for the Instructional Building to be constructed at Cuesta College in San Luis Obispo, California. Preliminary geotechnical recommendations for site preparation, grading, utility trenches, foundations, slabs-on-grade, retaining walls, asphalt concrete (AC) paths, drainage and maintenance, and observation and testing are presented herein. This report also describes the general geologic characteristics, identifies existing and potential geologic hazards, and discusses the impacts the geologic conditions may have upon the project. A geotechnical corrosivity study, which was subcontracted to HDR, Inc. of Claremont, California, is also included. Two bound copies and an electronic copy of this report are furnished for your use. As directed, electronic copies have also been forwarded as indicated below.

We appreciate the opportunity to have provided services for this project and look forward to working with you again in the future. If there are any questions concerning this report, please do not hesitate to contact the undersigned.

Sincerely,

Earth Systems Pacific

Fred J. Potthast, GE
Principal Engineer

4/1/15

Richard T. Gorman, CEG
Principal Geologist

Copy to: PMSM Architects, Ms. Monisha Adnani
Mr. Chris Blair

Doc. No.: 1504-002.SGR/tf

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### APPENDICES

## 1.0 INTRODUCTION

A new two-story Instructional Building is planned in the west corner of the Cuesta College San Luis Obispo campus. Directional references in this report are with respect to Project North as indicated on the Vicinity Map and the Boring Location Map in Appendix A. The new building will have a footprint of approximately 16,000 square feet, and it will be of steel-frame construction, with stud or masonry walls. It will be rectangular in plan, and will be surrounded by landscaping, pedestrian flatwork and/or asphalt-concrete (AC) paved paths. Conventional continuous and spread (pad) foundations with concrete slabs-on-grade are anticipated. Maximum continuous loads (DL+LL) of 4 klf and maximum isolated loads (DL+LL) of 150 kips have been assumed. An elevator with a hydraulic piston may be provided for access to the second floor. A grading plan was not available at the time this report was prepared; the recommendations of this report are based on the assumption that cuts and/or fills a maximum of 2 feet from the existing topography will be made to create the building area. Retaining walls for sitework, or connected to or forming part of the structure, and a maximum of 4 feet tall, may also be constructed. The building will be served by the existing campus utility systems, and the project will likely include relocation or addition of underground utility lines. No cut or fill slopes, AC pavement for vehicles, drainage basins or LID Improvements are planned.

## 2.0 SCOPE OF SERVICES

The scope of work for this report included the following: field reconnaissance by a registered geotechnical engineer and a certified engineering geologist; subsurface exploration; geotechnical and corrosivity (subcontracted to HDR, Inc.) laboratory testing of samples secured during the field investigation; geotechnical, geologic and corrosivity (subcontracted to HDR, Inc.) analyses of the data; and preparation of this report. The analysis and subsequent recommendations were based on preliminary information provided by the client, preliminary Site and Floor Plans provided by PMSM Architects (2014), and preliminary information provided by IDS Group (2014).

This report and preliminary geotechnical recommendations are intended to comply with the considerations of Sections 1803A.1 through 1803A.7, J104.3 and J104.4, as applicable, of the 2013 California Building Code (CBC); California Geological Survey Note 48 (CGS 2013); Interpretation of Regulations (IR) Document A-4 (DSA 2011); and common geotechnical engineering and engineering geology practice in this area under similar conditions at this time. The geotechnical test procedures were accomplished in general conformance with the standards noted, as modified by common geotechnical engineering practice in this area under similar conditions at this time.

Preliminary geotechnical recommendations for site preparation, grading, utility trenches, foundations, slabs-on-grade, retaining walls, asphalt concrete (AC) paths, drainage and maintenance, and observation and testing are presented to guide the development of project plans and specifications. The results of corrosivity testing and analyses with mitigation recommendations are also included; this scope of work was subcontracted to HDR, Inc. It is our intent that this geotechnical/geologic report be used exclusively by the client in the preparation of plans and specifications. Application beyond this intent is strictly at the user's risk.

This report does not address issues in the domain of contractors such as, but not limited to, site safety, loss of volume due to stripping of the site, shrinkage of soils during compaction, excavatability, dewatering, shoring, temporary slope angles, construction means and methods, etc. Analyses of the soil for mold potential, man-made asbestos, lead, radioisotopes, hydrocarbons, or chemical properties (other than geotechnical corrosivity) are beyond the scope of this report. Ancillary features such as temporary access roads, fences, flag and light poles, signage; and nonstructural fills are not within our scope and are also not addressed.

As there may be unresolved geotechnical issues with respect to this project, the geotechnical engineer should be retained to provide consultation as the design progresses, to review project plans as they near completion, to assist in verifying that pertinent geotechnical issues have been addressed, and to aid in conformance with the intent of this report. In the event that there are any changes in the nature, design, or location of improvements, or if any assumptions used in the preparation of this report prove to be incorrect, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are verified or are modified in writing. The criteria presented in this report are considered preliminary until such time as any peer review or review by any jurisdiction has been completed, conditions are observed by the geotechnical engineer in the field during construction, and the recommendations have been verified as appropriate or modified in writing.

## 3.0 SITE SETTING

The planned location of the new building on the campus is indicated on the Vicinity Map in Appendix A. The western portion of the proposed building area is currently occupied by a driveway loop that will be reconfigured to maintain the turn-around configuration for the adjacent parking lot. The central and western portions of the building area are currently occupied by portable buildings, which will be removed. AC-paved pedestrian paths provide access around and to the existing portable buildings, and there are mature shrubs and trees on the perimeters of the existing improvements. The building area is generally flat, with a slight

slope to the south-southwest. The approximate site coordinates and site elevation obtained from the Google Earth website (Europa Technologies 2015) are latitude 35.3291 N, longitude 120.7436 W, and 246 feet above mean sea level. The locations and dispositions of utility lines in the planned building area are unknown.

## 4.0 FIELD INVESTIGATION

On March 18, 2015, four borings were drilled in accessible locations on the site, to a maximum of 21.5 feet below the existing surfaces. The borings were drilled with a Mobile Drill Model B-53 truck-mounted drill rig, equipped with a 6-inch outside diameter hollow stem auger and an automatic trip hammer for sampling. The approximate locations of the borings are shown on the Boring Location Map in Appendix A. As the borings were drilled, soil samples were obtained using a ring-lined barrel sampler (ASTM D 3550-01/07 with shoe similar to D 2937-10). Standard penetration tests were also performed in the borings (ASTM D 1586-11) at selected depths. Bulk soil samples were obtained from the auger cuttings.

Soils encountered in the borings were categorized and logged in general accordance with the Unified Soil Classification System and ASTM D 2488-09a. Where bedrock was encountered, its properties were described based upon observation of ring and/or Standard Penetration Test samples, observation of the auger cuttings, and the effort required to drill and drive samples into the bedrock. Copies of the boring logs and a Boring Log Legend are included in Appendix A. In reviewing the boring logs and legend, the reader should recognize that the legend is intended as a guideline only, and there are a number of conditions that may influence the soil characteristics as observed during drilling. These include, but are not limited to, the presence of cobbles or boulders, cementation, variations in soil moisture, presence of groundwater, and other factors. It should also be noted that the descriptions of rock must span a much wider range of density and strength characteristics than soil, and are relative to other *rock* strata. For example, fractured and weathered rock may be described as "soft", yet it will be considerably harder than almost any type of soil. Conversely, a clay soil may be described as "hard", however it will not be nearly as hard as even "soft" rock such as the sandstone encountered on this site. Consequently, the logger must exercise judgment in interpreting the subsurface characteristics, possibly resulting in soil and rock descriptions that vary somewhat from the legend.

## 5.0 LABORATORY ANALYSIS

Selected ring samples were tested for unit weight and moisture (ASTM D 2937-10, modified for ring liners). Two bulk samples were tested for maximum density and optimum moisture content (ASTM D 1557-12), three bulk samples were tested for expansion index (ASTM D 4829-

11), and one bulk samples was tested for cohesion and angle of shearing resistance (ASTM D 3080, modified for consolidated, undrained conditions). The geotechnical laboratory test results are presented in Appendix B.

Three samples of the upper soils and crushed bedrock encountered on the site were submitted to HDR, Inc., for geotechnical corrosivity testing. HDR, Inc.'s Soil Corrosivity Study, which contains their results, evaluation and recommendations for mitigation, is presented in Appendix C.

## 6.0 GENERAL SUBSURFACE PROFILE

Similar subsurface conditions were found in all four borings. The upper 2.5 to 3 feet of soil was fill, composed of loose to medium dense clayey sand or clayey sand with gravel, and stiff sandy lean clay. Underlying the fill was very soft to hard bedrock (sandstone) of the Franciscan Melange. The bedrock was severely weathered and fractured.

During drilling, the soils and bedrock were classified as being slightly moist to very moist. Groundwater was not encountered in any of the borings, to the maximum depth explored of 21.5 feet.

Please refer to the logs in Appendix A for a more complete description of the subsurface conditions in the borings.

## 7.0 GEOLOGY

### Geologic Setting

Cuesta College lies on the eastern end of the Chorro Valley, which is bounded to the north by the northwest-trending Santa Lucia Mountain Range and to the south by the northwest-trending line of dacite and rhyodacite volcanic plugs known as the Seven Sisters. The closest volcanic plug to the site is Cerro Romauldo, approximately 1 mile southeast (see the Geologic Map in Appendix D). The Cuesta College campus lies between Dairy Creek, 3,000 feet to the east, and Pennington Creek, 510 feet west, which are tributary creeks to Chorro Creek, which is located approximately 1,700 feet south (see the Vicinity Map in Appendix A).

The geologic map of the Cayucos – San Luis Obispo Region (Hall and Prior 1975) indicates the site is underlain by alluvium (see the Geologic Map in Appendix D). Based on the results of our subsurface investigation, we do not concur with the Hall and Prior geologic map, as shallow sandstone bedrock of the Franciscan Mélange was encountered in the borings.

## Faulting

### Significant Faults

The San Andreas (Irish Hills segment), Los Osos, and Hosgri-San Simeon faults are the most significant regional *active* faults within a 65-mile radius of the site, which could affect the proposed instructional building and associated improvements during their anticipated lifespan. Regional faults and locations of historic earthquake events are depicted on the Historical Earthquake/Fault Map in Appendix D.

### San Andreas Fault

The San Andreas Fault, considered to be the most active fault in the general region, lies 37 miles to the northeast of the site. The San Andreas Fault undergoes a major change in character between Parkfield and Cholame. North of Cholame, the fault moves more or less constantly in a process called creep, whereas the south end of the fault is locked, moving only in very large earthquakes. The last major quake on this part of the fault was the 1857 event (magnitude 7.9). In the immediate vicinity of Parkfield, there is a 20-mile segment that is locked, generating an earthquake every 20 years or so on average. Dated quakes on this segment are 1881, 1901, 1922, 1934, and 1966, and are usually in the magnitude 5.5 to 6.0 range (Bakun 1988). A 6.0-magnitude earthquake occurred on this fault segment on September 28, 2004.

### Los Osos Fault (Irish Hills segment)

The Irish Hills segment of the Los Osos Fault, at its closest point to the site, is approximately 3 miles to the south. The Los Osos Fault consists of four distinct segments. From northwest to southeast, these are the Estero Bay, the Irish Hills, the Lopez Reservoir, and the Newsome Ridge segments. PG&E (1988) suggests that the Irish Hills segment displays the best expressed geomorphic features, displacing late Pleistocene and Holocene deposits. The Irish Hills segment starts in the vicinity of Los Osos and extends to just past San Luis Obispo Creek. A two-mile long segment west of Laguna Lake is considered to be active (Treiman 1989) and is zoned as a State Earthquake Fault Zone under the Alquist-Priolo Act (Hart 1997). This active segment lies about 16 miles to the southwest of the site. The Los Osos Fault comprises a northwest-trending series of high- and low-angle faults that exhibit a complex history of both strike-slip and reverse displacement. However, during late Quaternary, movement appears to have been primarily reverse displacement (PG&E 1988).

### Hosgri-San Simeon Fault System

The Hosgri-San Simeon Fault System lies approximately 13.5 miles to the west of the site. A northwest-trending strike-slip fault, the San Simeon Fault extends from offshore of Ragged Point to just offshore of San Simeon Point, where it joins the northern end of the Hosgri Fault.

From this point, the Hosgri Fault extends to an ocean shelf 2 miles west of Point Buchon, and then trends toward the Point Sal area. The fault system is considered active by the 2004 United States Geologic Survey (Jennings & Bryant 2010), based on Hall's claims of recent offset terrace deposits along San Simeon Cove, and also by a relocation of the 1927 "Lompoc Earthquake" onto the southern end of the Hosgri Fault (Hall 1975, 1976, 1977).

On December 22, 2003, a 6.5 magnitude earthquake occurred approximately 6 miles northeast of San Simeon, California and approximately 28 miles north of the subject site. Analysis by the USGS and the University of California at Berkeley indicates that the event had a thrust (reverse-faulting) mechanism (Goel 2004). The earthquake occurred in the vicinity of the northern end of the Hosgri-San Simeon Fault.

### Groundwater

During drilling, the soils and bedrock were classified as being slightly moist to very moist. Groundwater was not encountered in any of the borings, to the maximum depth explored of 21.5 feet.

## 8.0 SEISMICITY

### Earthquake History

The historic seismicity in the site region was researched using EQSEARCH (Blake, updated 2012). The ground motion attenuation relation used was Boore, Joyner and Fumal (Boore, et al., 1997) for a 2013 CBC Site Class C – very dense soil/soft bedrock. EQSEARCH is a custom catalog of historical Central California earthquakes. This catalog computes the epicentral distance from the selected site to each of the earthquakes within the specified search area. The epicentral distances should be considered estimates, particularly for earthquake data prior to 1932, when modern instruments were first used to record earthquake data. The parameters used for the search consisted of earthquake Richter magnitudes ranging from 5.0 to 9.0 that occurred within a 65-mile radius of the site, from 1800 to December 2012. The site coordinates used in this search were latitude 35.3291 N and longitude 120.7436 W (Europa Technologies 2015). The Historical Earthquake/Fault Map in Appendix D depicts faults within the general region of the project site, as well as historical earthquake epicenters and their magnitudes.

The results of the search indicated that within the given parameters, 48 earthquakes have occurred (see the Historical Earthquake/Fault Map in Appendix D). The highest peak horizontal ground acceleration (PGA) estimated to have occurred at the site from those historical earthquakes was 0.25g. This earthquake had a 5.9 magnitude, occurred in 1906, and was the closest earthquake to have occurred near the site; it was approximately 3 miles southeast. The largest magnitude earthquake that the search revealed was a 7.9 magnitude event. This

earthquake was located approximately 53 miles east and was known as the "1857 Earthquake" on the San Andreas Fault. It produced an estimated peak horizontal ground acceleration of 0.11g at the site. Earthquake magnitudes and locations returned by the search within the site vicinity are plotted on the Historical Earthquake/Fault Map in Appendix D.

**Design Acceleration Parameters**

The site is in a region of generally high seismicity and has the potential to experience strong ground shaking from earthquakes on regional or local causative faults. The site is not in a State of California Earthquake Fault Zone (Bryant & Hart 1997, revised 2007) or in a 2013 CBC Site Class E or F category. The San Luis Obispo County, Department of Planning and Building Permit View web site (2013) indicated that the site is not located within a high landslide hazard zone, but is in a high liquefaction zone. However, the subsurface investigation indicated that the site is underlain by shallow sandstone bedrock, therefore we do not agree with the classification of San Luis Obispo County. According to CBC Section 1616A 1.3 the site is assigned to Seismic Design Category D as the site mapped spectral response acceleration parameter at a 1 second period ($S_1$) is 0.435g, which is less than 0.75g. The ASCE 7-10 Site Design Response Acceleration Parameters are shown in the table below. Based on the above parameters, a site specific analysis of the ground motion hazard at the site was not warranted.

To characterize the seismicity at the site and to provide seismic design parameters for the architect/engineer, a General Procedure Ground Motion Analysis was performed to calculate the potential ground motions at the site. The ground motions were obtained from the United States Geological Survey Earthquake Hazards Program website (USGS 2015) using the 2013 ASCE 7-10 Standard Analysis Method, for Site Class C – very dense soil/soft bedrock. The results of this analysis are presented in the following table.

**SUMMARY OF DESIGN RESPONSE ACCELERATION PARAMETERS**

| Mapped Spectral Response Acceleration for Site Class B | | Site Coefficients for Site Class C | | Adjusted MCE Spectral Response Accelerations for Site Class C | | Design Spectral Response Accelerations for Site Class C | |
|---|---|---|---|---|---|---|---|
| Seismic Parameter | Value (g) | Site Coefficient | Value | Seismic Parameter | Value (g) | Seismic Parameter | Value (g) |
| $S_S$ | 1.154 | $F_a$ | 1.000 | $S_{MS}$ | 1.154 | $S_{DS}$ | 0.769 |
| $S_1$ | 0.435 | $F_v$ | 1.365 | $S_{M1}$ | 0.594 | $S_{D1}$ | 0.396 |
| Peak Mean Ground Acceleration ($PGA_M$) 0.462 g | | | | | | | |

### Seismic Design Category

Section 1613A.3.5 of the 2013 CBC indicates that structures will be assigned to Seismic Design Category D unless $S_1 \geq 0.75$. The $S_1$ calculated for the site is 0.435g; therefore, the site would be a Seismic Design Category D.

## 9.0 GEOLOGIC HAZARDS

### Surface Ground Rupture

Surface ground rupture generally occurs at sites that are traversed by, or lie very near to, a causative fault. The site is not located in any State Earthquake Fault Zones (Bryant & Hart 2007) and there are no mapped faults crossing the site. The closest mapped active fault to the site is the Irish Hills segment of the Los Osos Fault, located approximately 3 miles south. Therefore, the potential for surface fault rupture to occur at the site is considered to be very low.

### Liquefaction and Seismically Induced Settlement

The term liquefaction refers to the liquefied condition and subsequent softening that can occur in soils when they are subjected to cyclic strains, such as those generated during a seismic event. Previous studied have concluded that liquefaction within the upper 50 feet of soil can potentially affect improvements at the ground surface. Due to the shallow depth to the sandstone bedrock, the potential for liquefaction to occur is considered to be nil.

Seismically induced settlement of sufficient magnitude to cause structural damage is normally associated with poorly consolidated, predominantly sandy soils, or variable consolidation characteristics within a building area. Due to the shallow depth to the sandstone bedrock, the potential for seismically induced settlement to occur at the site is considered to be nil.

### Slope Stability

The site is generally flat with no significant slopes on or adjacent to it; therefore, the potential for slope instability to impact the site is considered to be nil.

### Flooding

According to the Federal Emergency Management Agency (FEMA 2012), the site is not located in a special flood hazard area.

### Tsunami and Seiche Potential

Hazardous tsunamis along the California coastline can be caused by vertical displacement of submarine faults, or by submarine landslides. Due to the site's location of approximately 7 miles from the Pacific Ocean, the potential for the site to be affected by a tsunami event is considered to be nil.

A seiche is a single water wave that can be generated in a reservoir, lake or pond as the result of long-period surface waves normally generated by strong local earthquakes or larger earthquakes at farther distances. As there are no reservoirs, lakes or ponds in the vicinity of the site, the potential for a seiche to affect the project site is considered to be nil.

**Naturally Occurring Asbestos**

Asbestos-bearing rock units within the Central Coast area generally consist of serpentinite, ultramafic rock units consisting of olivine-hornblende and some schist metamorphic rock units. There are no naturally occurring asbestos-bearing rock formations (serpentinite or ultramafic rock) on the site. The site is underlain predominantly by sandstone bedrock, which is not an asbestos-bearing geologic unit. Therefore, the potential for naturally-occurring asbestos to occur on the site is nil.

**Radon**

Radon is a naturally-occurring, gaseous element formed by the radioactive decay of radium atoms, and is associated with certain rock or soil units. The occurrence of radon correlates with the presence of specific minerals, and its concentrations in soil or rock will vary depending on the mineralogy of the surrounding bedrock, temperature, barometric pressure, moisture and other factors. According to Special Report 208, by the California Geological Survey (Churchill 2008) radon is most commonly found in areas of San Luis Obispo County that are underlain by bedrock of the Monterey formation. As the site is underlain by sandstone bedrock, there is a low potential for radon to occur at the site. A copy of the Radon Map from the Churchill report is included in Appendix D.

## 10.0 CONCLUSIONS

**Geology**

It is our opinion that there are no significant local or regional geologic conditions or hazards that would preclude development of the proposed Instructional Building and other improvements as described in the "Introduction" section of this report, provided the recommendations contained herein are implemented in the design and construction.

Site Geology

The site is generally underlain by shallow sandstone bedrock, which is overlain by 2.5 to 3.0 feet of fill soil.

Groundwater

Groundwater was not found in any of the borings to the maximum depth explored of 21.5 feet.

Slope Stability

As the site is generally flat with no significant slopes on or adjacent to it, the potential for slope instability to impact the site is nil.

Seismicity

The site is located within the seismically active Southern California area, and moderate to severe ground shaking can be expected during the life of the proposed project. The largest historical mean peak horizontal acceleration estimated to have occurred in the vicinity of the site was 0.25g.

Surface Ground Rupture

The site is not located in any State Earthquake Fault Zones and there are no mapped faults crossing the site. The closest mapped active fault to the site is Irish Hills segment of the Los Osos Fault, approximately 3 miles south. Therefore, the potential for surface fault rupture to occur at the site is considered to be very low.

Liquefaction and Seismically Induced Settlement

The site is underlain by shallow sandstone bedrock, therefore the potentials for liquefaction and/or seismically induced settlement at the site are considered to be nil.

Flooding

The site is not located in a special flood hazard area.

Radon

The Radon Potential Hazard Map for Western San Luis Obispo County (Churchill 2008) indicates the site is located within a low radon potential zone for indoor radon levels.

Naturally Occurring Asbestos

There are no naturally occurring asbestos-bearing rock formations (serpentinite or ultramafic rock) on the site. The site is underlain predominantly by sandstone bedrock, which is not an asbestos-bearing geologic unit. Therefore, the potential for naturally-occurring asbestos on the site is nil.

**Geotechnical Engineering**

In our opinion, the site is suitable, from a geotechnical engineering standpoint, for the proposed Instructional Building and site improvements, as described in the "Introduction" section of this report, provided the recommendations contained herein are implemented in the

design and construction. The primary geotechnical engineering concerns are the presence of fill and the corresponding potential for differential settlement in the planned building area, the expansion potential of the upper soils, and the erodible nature and corrosive potential of the site soils. Provided that the building area is prepared as recommended in the "Grading" section of this report, conventional continuous and spread (pad) foundations may be used to support the proposed Instructional Building.

Differential settlement can occur when a foundation spans materials having variable consolidation characteristics, such as the fill that was encountered in the upper 2.5 to 3 feet of all four borings drilled in the planned building area. We are unaware of any documentation (i.e., grading observation or compaction testing records) regarding the placement of the fill, but it is assumed that the fill was placed when the school was originally developed, and it may have been modified or augmented prior to placement of the existing portable buildings. Undocumented fill has a greater potential for variability than fill that has been placed and tested in a controlled earthwork program. Such variable conditions could stress and possibly damage foundations, often resulting in severe cracks and displacement. Therefore, to reduce this potential for variability and settlement, a program of overexcavation and recompaction of the fill material is recommended prior to construction of foundations for the Instructional Building. Overexcavation and recompaction of existing fill is also recommended for any sitework retaining walls, however it is not considered necessary in areas to support flatwork or AC paths for pedestrian access.

Expansion index testing yielded results of 40 and 47 for the fill soils found in the upper 2.5 to 3.0 feet, and a result of 13 for a crushed sample of the underlying bedrock. Per CBC Section 1803A.5.3, the fill soils are considered to be expansive, while the underlying bedrock is nonexpansive. The more commonly used ASTM classification is that the fill soils would be considered to have a "low" expansion potential. Expansive soils tend to swell with increases in soil moisture and shrink as soil moisture decreases; the upper 3 to 5 feet of any soil profile is the zone most affected by these seasonal soil moisture fluctuations. The volume changes that the soils undergo in this cyclical pattern can stress and damage foundations and slabs-on-grade if precautionary measures are not incorporated during design and in the construction procedure. Footings are typically deepened and additional reinforcement is provided. Imported nonexpansive soils are recommended to be placed beneath slabs-on-grade.

The soils above the bedrock are considered to be erodible. It is essential that all surface drainage be controlled and directed to appropriate discharge points, and that surface soils, particularly those disturbed during construction, are stabilized by vegetation or other means *during and following construction*.

As indicated in the Soil Corrosivity Study by HDR, Inc. (see Appendix C), the electrical resistivities of the samples tested were in the mildly and moderately corrosive categories with as received moisture contents; when saturated, the resistivities were in the corrosive category. Soil pH values were neutral to mildly alkaline. The soluble salt contents of the soils were low to moderate. Soil ammonium and nitrate concentrations were low. The soils were classified as corrosive to ferrous metals. Please refer to the Soil Corrosivity Study in Appendix C for a complete summary of the test results, and recommendations for mitigation.

## 11.0 PRELIMINARY GEOTECHNICAL RECOMMENDATIONS

The following recommendations are for the Instructional Building and the other site improvements as described in the "Introduction" section of this report. If locations, elevations, structural loads, etc., change, the recommendations contained herein may require modification. In developing the following recommendations, it was assumed that irrigated landscaping or flatwork that would keep the soils at relatively uniform, year-round moisture will be installed for a zone of at least five feet around the perimeter of all improvements.

Two distinct types of Portland cement concrete (PCC) slabs-on-grade are discussed in the following recommendations. The building's interior slabs (if used) are defined as "slabs-on-grade." Sidewalks are referred to as "exterior pedestrian flatwork." Asphalt concrete (AC) paths may also be utilized for pedestrian access, however it is assumed that they will not support vehicle traffic.

Unless otherwise noted, the following definitions are used in the recommendations presented below. Where terms are not defined, definitions commonly used in the construction industry are intended.

- **Building Area** – The building area is defined as the area within and extending a minimum of 5 feet beyond the perimeter of the foundations for the Instructional Building. The building area includes any retaining walls, covered walkways or other improvements that are connected to the structure and that are intended to act in a manner similar to it.
- **Exterior Pedestrian Flatwork and Asphalt Concrete (AC) Path Areas** – The areas within and extending a minimum of 1 foot beyond the limits of all exterior pedestrian flatwork and all AC paths.
- **Sitework Retaining Wall Area** – The area within and extending a minimum of 3 feet beyond the foundation limits of any sitework retaining wall.

- **Grading Area** – The entire area to be graded, including the building, exterior pedestrian flatwork and AC path areas, and sitework retaining wall areas.
- **Existing Grade:** Elevations of the site that existed as of the date of this report.
- **Finish Pad Grade:** The elevation in the building area where earthwork operations are typically considered to be complete. It does not include any sand or gravel that might be placed below slabs-on-grade in association with vapor protection for the slabs.
- **Scarified:** Plowed or ripped in two orthogonal directions to a depth of not less than 12 inches.
- **Moisture Conditioned:** Adjusting the soil moisture to optimum moisture content, or just above, prior to application of compactive effort.
- **Compacted/Recompacted:** Soils placed in level lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 90 percent of maximum dry density. Based on maximum dry density by ASTM D 1557-12 and field density by ASTM D 6938-10, or other methods acceptable to the geotechnical engineer and jurisdiction.

**Site Preparation**

1. The ground surface in the grading areas should be prepared for construction by removing the existing portable buildings, existing flatwork and AC paths, and all other improvements, vegetation, large roots, debris, organic topsoil, and other deleterious materials. Existing utility lines that will not remain in service should be either removed or abandoned. The appropriate method of abandonment will depend upon the type and depth of the utility. Recommendations for abandonment can be made as necessary.

2. Voids created by the removal of materials or utilities described above should be called to the attention of the geotechnical engineer. No fill should be placed unless the underlying soil has been observed by the geotechnical engineer.

**Grading**

1. Following site preparation, all existing fill in the building area should be removed to a level plane in the bedrock at the deepest point of the fill. The resulting level plane in the underlying bedrock should be scarified a minimum of 6 inches, moisture conditioned and compacted.

2. Following site preparation, all existing fill in sitework retaining wall areas should be overexcavated to the deepest point of the fill. The resulting excavated surfaces should be scarified a minimum of 6 inches, moisture conditioned and compacted. Overexcavation elevations may be stepped where the fill depth changes or where retaining walls are stepped to conform to any site contours. If bedrock is exposed at bottom of foundation elevation, no overexcavation and recompaction is considered necessary.

3. Following site preparation and any excavations to grade, or prior to placement of fill, the soil in any exterior pedestrian flatwork and AC path areas, and in all other grading areas, should be scarified, moisture conditioned and recompacted.

4. Voids created by dislodging cobbles and/or debris during scarification should be backfilled and recompacted, and the dislodged materials should be removed from the work area.

5. Previously removed site soils and other similar soils may be placed as fill beyond the building area, and in the building area to a maximum height of 12 inches below bottom of slab elevation. The final 12 inches of fill below bottom of slab elevation in the building area should be nonexpansive.

6. Nonexpansive materials are defined as imported soils that fall in the GW, GP, GM, GC, SP, SW, SC and SM categories per ASTM D 2487-11, and that have an expansion index of 10 or less (ASTM D 4829-11). The clean sand layer described in the "Slabs-on-Grade" section of this report (if utilized below structural slabs or exterior pedestrian flatwork) is considered to be part of the minimum recommended thickness of nonexpansive material utilized, not in addition to it.

7. Imported soils used in the building area should have strength and expansion qualities equal to or better than the site soils. Imported soils should not exceed the geotechnical corrosivity potential of the onsite soils and bedrock. See the Soil Corrosivity Study in Appendix C for the corrosivity parameters of the site soils and bedrock. Proposed imported materials should be reviewed by the geotechnical engineer before being brought to the site, and on an intermittent basis during placement.

8. All materials used as fill should be cleaned of any debris and rocks larger than 3 inches in diameter. When fill material includes rocks, the rocks should be placed in a sufficient soil matrix to ensure that voids caused by nesting of the rocks will not occur and that the fill can be properly compacted.

9. The recommended soil moisture content should be maintained throughout construction, and during the lives of the structures and sitework improvements. Failure to maintain the soil moisture content can result in desiccation cracks and disturbance, which are an indication of degradation of the soil compaction. If desiccation cracks are allowed to develop, or if soils near improvements such as foundations, flatwork, etc. are otherwise disturbed, damage to those improvements may result. Soils that have cracked or are otherwise disturbed should be removed, moisture conditioned, and recompacted.

**Utility Trenches**

1. Utility trenches adjacent to foundations should not be excavated within the zone of foundation influence, as shown in Typical Detail A in Appendix E.

2. Utilities that must pass beneath foundations should be placed with properly compacted utility trench backfill and the foundation should be designed to span the trench.

3. A select, noncorrosive, granular, easily compacted material should be used as bedding and shading immediately around utilities. The site soil may be used for trench backfill above the select material beyond the building area, and to within 1 foot below bottom of slab elevation in the building area. Within the building area, imported nonexpansive soils should be utilized to backfill the final foot below bottom of slab elevation of all trenches.

4. In general, trench backfill should be compacted to a minimum of 90 percent of maximum dry density. Trench backfill in the upper 12 inches of subgrade and an aggregate base in AC path areas should be compacted to a minimum of 95 percent of maximum dry density. A minimum of 85 percent of maximum dry density will generally be sufficient where trench backfill is located in landscaped or other unimproved areas, where settlement of trench backfill would not be detrimental.

5. Prior to applying compactive effort, soils should be moisture conditioned. Trench backfill should be placed in level lifts not exceeding 6 inches in loose thickness and compacted to the minimums recommended above.

6. Compaction of trench backfill by jetting or flooding is not recommended at this site due to the expansive soils and the shallow depth to bedrock. However, to aid in *encasing* utility conduits, particularly corrugated drain pipes, and multiple, closely-spaced

conduits in a single trench with the bedding and shading material, jetting or flooding may be useful. Flooding or jetting should only be attempted with extreme caution, and any flooding or jetting operation should be subject to review by the geotechnical engineer.

7. Long-term settlement of properly compacted sand should be assumed to be about 0.25 to 0.5 percent of the depth of the backfill. Where trenches are backfilled with site soils, the anticipated settlement would be about twice that of sand. Improvements that are constructed over or near trenches should be designed to accommodate the potential for settlement.

8. The Soil Corrosivity Study by HDR, Inc. in Appendix C should be used by the architect/engineer in specifying appropriate corrosion protection measures for utility improvements.

9. The recommendations of this section are minimums only, and may be superseded by the architect/engineer based upon soil corrosivity or the requirements of pipe manufacturers, utility companies or the governing jurisdiction.

**Foundations**

1. The Instructional Building may be supported by continuous and spread footings bearing in firm recompacted soils or firm bedrock, but not on a combination of the two. The final determination regarding the bearing material will depend on the final grading plan and finish floor elevation the structure, and should be made by the geotechnical engineer when that information is available. The earthwork recommendations provided in the "Grading" section of this report are intended to provide a uniform thickness of recompacted soil below finish pad grade, to facilitate the decision regarding the appropriate bearing material.

2. Based on soil expansion potential only, minimum overall foundations depths of 18 inches below lowest adjacent grade within 6 feet laterally of the base of foundations should be maintained. Spread footings should be at least 24 inches square.

3. Minimum continuous footing reinforcement should consist of two No. 4 rebars, one at the top and one at the bottom. Spread footings should be reinforced in accordance with the requirements of the architect/engineer.

4. Footings bearing in firm recompacted soil may be designed using maximum allowable bearing capacities of 1,800 psf dead load and 2,500 psf dead plus live loads. Using these criteria, maximum settlement and differential settlement are expected to be less than 1/2-inch and less than 3/8-inch in 25 feet, respectively.

5. Footings bearing in firm bedrock may be designed using maximum allowable bearing capacities of 2,500 psf dead load and 3,500 psf dead plus live loads. Using these criteria, maximum settlement and differential settlement are expected to be less than 3/8-inch and less than 1/4-inch in 25 feet, respectively.

6. Allowable bearing capacities may be increased by one-third when transient loads such as wind or seismicity are included. Foundations may be designed using the site design response parameters contained in the table on Page 7 in the "Seismicity" section of this report.

7. To calculate resistance to lateral loads, please see the values presented in the "Retaining Walls" section of this report. Lateral capacity is based on the assumption that any backfill adjacent to foundations has been properly compacted. Passive and friction components of resistance may be combined in the analysis without reduction to either value.

8. Footing excavations should be observed by the geotechnical engineer prior to placement of reinforcing steel. Soils in footing excavations should be lightly moistened and no desiccation cracks should be present prior to concrete placement.

9. The Soil Corrosivity Study by HDR Engineering, Inc. in Appendix C should be used by the architect/engineer in specifying appropriate corrosion protection measures for all foundation elements.

**Slabs-on-Grade**

Interior Slabs-On-Grade

1. Interior slabs-on-grade should have a minimum thickness of 4 full inches. They should be reinforced and doweled to foundations per the specifications of the architect/engineer. At a minimum, interior slabs should be reinforced with No. 3 rebar at 24 inches on center each way. All structural slabs should contain minimum rebar meeting the criteria of ACI 318, Section 7.12.2 (ACI 2011). At a minimum, foundation dowels should be lap spliced to the slab rebar. The size and spacing of the dowels should match the size and spacing of the slab rebar.

Exterior Pedestrian Flatwork

1. Exterior pedestrian flatwork should have a minimum thickness of 4 full inches. Minimum reinforcement for nonstructural exterior pedestrian flatwork placed over at least 12 inches of nonexpansive imported soils per the following paragraph should consist of No. 3 rebar placed at 24 inches on-center each way. If the thickness of nonexpansive soil below the flatwork is less than 12 inches, the minimum reinforcement should consist of No. 3 rebar at 18 inches on-center each way.

2. In conventional construction, it is common to use 4 to 6 inches of sand beneath exterior pedestrian flatwork. However, due to the low expansion potential of the site soils, there will be a risk of movement and damage to the flatwork if conventional measures are used. Heaving and cracking could occur. This movement could be reduced by the placement of additional nonexpansive material beneath the flatwork. If it is desired to fully mitigate the expansive soil conditions, then at least 12 inches of imported nonexpansive material should be provided below the flatwork where the expansive site soils are exposed at finish grade. If it is acceptable for the flatwork to experience movement due to expansive soils, then the thickness of the nonexpansive soil can be reduced. Under all flatwork, however, the thicker the nonexpansive layer, the better the expansive soil protection.

3. Another measure that can be taken to reduce the risk of movement of flatwork due to expansive soils is to provide thickened edges or grade beams around the perimeters of the flatwork. If it is desired to fully mitigate the expansive soil conditions, then the thickened edges or grade beams could be up to 12 inches deep. If it is acceptable for the flatwork to experience movement, then the thickened edges or grade beams can be reduced. At a minimum, any thickened edge or grade beam should be reinforced by two No. 4 rebar, one at the top and one at the bottom.

4. It is recognized that the measures discussed above for protecting exterior flatwork from expansive soils are expensive, possibly more expensive than simply replacing flatwork that has heaved and/or cracked. Consequently, the above measures for protecting exterior flatwork are only suggestions for consideration by the client and/or architect/engineer. The degree to which exterior flatwork is protected from expansive soil damage is left to the discretion of the owner and/or architect/engineer.

5. Flatwork should be constructed with frequent joints to allow articulation as the flatwork moves in response to seasonal soil temperature and moisture variations. The expansive soil underlying any nonexpansive material placed below flatwork should be moisture conditioned, and no desiccation cracks should be present, prior to casting the flatwork.

6. Flatwork at doorways, and at other areas where maintaining the elevation of the flatwork is desired when mitigating expansive soil potential, should be doweled to the perimeter foundation, at a minimum, by No. 3 dowels lapped to the flatwork rebar at 24 inches on center. In other areas, the flatwork may be doweled to the foundation or the flatwork may be allowed to "float free," at the discretion of the architect/engineer. Flatwork that is intended to float free should be separated from foundations by a felt joint or other means.

Moisture Vapor Transmission

1. Due to the current use of impermeable floor coverings, water-soluble flooring adhesives, and the speed at which buildings are now constructed, moisture vapor transmission through slabs is a much more common problem than in past years. Where moisture vapor transmitted from the underlying soil would be undesirable, slabs should be protected from subsurface moisture vapor. A number of options for vapor protection are discussed below; however, the means of vapor protection, including the type and thickness of the vapor retarder, if specified, are left to the discretion of the architect/engineer.

2. Where specified, vapor retarders should conform to ASTM Standard E 1745-11. This standard specifies properties for three performance classes; Class A, B and C. The appropriate class should be selected based on the sensitivity of floor coverings to moisture intrusion and the potential for damage to the vapor retarder during placement of slab reinforcement and concrete.

3. Several recent studies, including those of American Concrete Institute Committee 302 (ACI 2004), have concluded that excess water above the vapor retarder increases the potential for moisture damage to floor coverings and could increase the potential for mold growth or other microbial contamination. The studies also concluded that it is preferable to eliminate the typical sand layer beneath the slab and place the slab concrete in direct contact with a Class A vapor retarder, particularly during wet weather construction. However, placing the concrete directly on the vapor retarder requires special attention to using the proper vapor retarder, a very low water-cement ratio in the concrete mix, and special finishing and curing techniques.

4. Probably the next most effective option would be the use of vapor-inhibiting admixtures in the slab concrete mix and/or application of a sealer to the surface of the slab. This would also require special concrete mixes and placement procedures, depending upon the recommendations of the admixture or sealer manufacturer.

5. Another option that may be a reasonable compromise between effectiveness and cost considerations is the use of a subslab vapor retarder protected by a sand layer. If a Class A vapor retarder is specified, the retarder can be placed directly on the nonexpansive soil. The retarder should be covered with a minimum 2 inches of *clean* sand. If a less durable vapor retarder is specified (i.e. ASTM E 1745-11, Class B or C), a minimum of 4 inches of clean sand should be provided, and the retarder should be placed in the center of the clean sand layer. Clean sand is defined as a well or poorly graded sand (ASTM D 2487-11) of which less than 3 percent passes the No. 200 sieve. The clean sand layer, if used, is considered to be a part of the minimum 12-inch thickness of nonexpansive imported materials recommended in the "Grading" section of this report to be placed below slabs-on-grade, not in addition to it.

6. Regardless of the underslab vapor retarder selected, proper installation of the retarder per ASTM E 1643-11 is critical for optimum performance. Where utilized, the vapor retarder should be placed a minimum of 1 inch above the flow line of the drainage path surrounding the structures, or 1 inch above the area drain grates if area drains are used to collect runoff around the structures. All seams must be properly lapped, and all seams and utility penetrations properly sealed in accordance with the vapor retarder manufacturer's recommendations.

7. If the sand is used between the vapor retarder and the slab, it should be moistened only as necessary to promote concrete curing; saturation of the sand should be avoided, as the excess moisture would be on top of the vapor retarder, potentially resulting in vapor transmission through the slab for months or years.

8. The architect/engineer should designate any special measures to be used in conjunction with moisture vapor transmission protection, if needed, to mitigate the high potential for indoor radon levels.

9. Positive drainage away from the building should be maintained; see the "Drainage and Maintenance" section of this report for additional discussion of this issue. If water is allowed to pond near the structure, it may seep into the ground and migrate laterally through cracks or utility penetrations in the foundation, ultimately gaining access above the vapor retarder.

Slabs-on-Grade - General

1. To reduce shrinkage cracks in all interior and exterior slabs-on-grade, the concrete aggregates should be of appropriate size and proportion, the water/cement ratio should be low, the concrete should be properly placed and finished, contraction joints should be installed, and the concrete should be properly cured. This is particularly applicable to slabs that will be cast directly upon a vapor retarder and those that will be protected from transmission of vapor by use of admixtures or surface sealers. Concrete materials, placement, and curing specifications should be at the direction of the architect/engineer; AC 302.1R-04 (ACI 2004) is suggested as a resource for the architect/engineer in preparing such specification.

2. To provide stability for curbs adjacent to exterior pedestrian flatwork, they should be set back a minimum distance equal to one-third the height of any adjacent descending slope, but not less than 5 feet from the tops of slopes. Alternately, curbs may be deepened to provide stability. The geotechnical engineer should review, on an individual basis, any situation where curbs must be deepened to meet this recommendation.

3. The Soil Corrosivity Study by HDR, Inc. in Appendix C should be used by the architect/engineer in specifying appropriate corrosion protection measures for all slabs-on-grade.

**Retaining Walls**

1. Retaining walls connected to or forming part of the building should be founded in either firm soil that has been recompacted per the "Grading" section of this report, or in firm bedrock (but not a combination of the two) to match the bearing conditions for the balance of the building. The final determination regarding the bearing material will depend on the final grading plan and finish floor elevation the structure, and should be made by the geotechnical engineer when that information is available. Sitework retaining walls may be supported by either firm soil that has been recompacted per the "Grading" section of this report, or bedrock. If a sitework retaining wall crosses a recompacted soil/bedrock transition, a construction joint should be placed in the

footing and wall at the transitions. Foundations for all retaining walls should have minimum overall depths (not including any keyway) of 18 inches below lowest grade within 6 feet laterally of any adjacent slope.

2. Retaining wall design may be based on the following parameters:

| | |
|---|---|
| Active equivalent fluid pressure (site soils) | 55 pcf |
| Active equivalent fluid pressure (imported sand/gravel backfill) | 35 pcf |
| At-rest equivalent fluid pressure (site soils) | 75 pcf |
| At-rest equivalent fluid pressure (imported sand/gravel backfill) | 50 pcf |
| Passive equivalent fluid pressure (site soils) | 250 pcf |
| Passive equivalent fluid pressure (bedrock) | 350 pcf |
| Maximum toe pressure (site soils) | 2,500 psf |
| Maximum toe pressure (bedrock) | 3,500 psf |
| Coefficient of sliding friction (site soils) | 0.25 |
| Coefficient of sliding friction (bedrock) | 0.40 |

3. No surcharges are taken into consideration in the values presented in Paragraph 2. The maximum toe pressures presented are *allowable* values; no factors of safety, load factors or other factors have been applied to the remaining values. With the exception of the maximum toe pressures, these values will require application of appropriate factors of safety, load factors, and/or other factors as deemed appropriate by the architect/engineer.

4. If the active or at-rest pressures presented in Paragraph 2 for *imported sand or gravel backfill* are utilized for design of retaining walls, the sand or gravel should be used exclusively as backfill above a 1:1 plane extended upward from the back of the wall footing to approximately 1 foot from the top of the wall backfill. The upper foot should be backfilled with native soil, except in areas where AC paths or exterior pedestrian flatwork will abut the top of the wall. In such cases, the gravel should extend to the nonexpansive material, aggregate base, or other material below the improved surface, as appropriate.

5. The active and at-rest pressures presented in Paragraph 2 are applicable to a horizontal retained surface behind the wall. Walls having a retained surface that slopes upward from the wall should be designed for an additional equivalent fluid pressure of 1 pcf for the active case and 1.5 pcf for the at-rest case, for every degree of slope inclination.

6. It is assumed that retaining wall heights will not exceed 5 feet.

7. Section 1803A.5.12.1 of the 2013 CBC requires that dynamic seismic lateral earth pressures be provided by the geotechnical engineer for walls retaining more than 6 feet of backfill. As the walls for this project will not retain more than 6 feet, design for seismic lateral earth pressures is not required.

8. Long-term settlement of properly compacted sand or gravel retaining wall backfill should be assumed to be about 0.25 to 0.5 percent of the depth of the backfill; long-term settlement of properly compacted site soil retaining wall backfill would be about twice that of sand or gravel backfill. Improvements that are constructed near the tops of retaining walls should be designed to accommodate long-term settlement.

9. All retaining walls should be drained with perforated pipe encased in a free-draining gravel blanket. The pipe should be placed perforations downward, and should discharge in a nonerosive manner away from foundations and other improvements. The gravel blanket should have a width of approximately 1 foot and should extend upward to approximately 1 foot from the top of the wall backfill. The upper foot should be backfilled with native soil, except in areas where AC paths or exterior pedestrian flatwork will abut the top of the wall. In such cases, the gravel should extend to the nonexpansive material, aggregate base, or other material below the improved surface, as appropriate. To reduce infiltration of the soil into the gravel, a permeable synthetic filter fabric conforming to Standard Specifications Section 88-1.02B – Class C (Caltrans 2010), should be placed between the two. Manufactured synthetic drains, such as Miradrain or Enkadrain are acceptable alternatives to the use of gravel, provided that they are installed in accordance with the recommendations of the manufacturer.

10. Where weep hole drainage can be properly discharged, the perforated pipe may be omitted in lieu of weep holes on maximum 4-foot centers. A filter fabric as described above should be placed between the weep holes and the drain gravel.

11. Walls facing areas where moisture transmission through the wall would be undesirable should be *thoroughly* waterproofed in accordance with the specifications of the architect/engineer.

12. The architect/engineer should bear in mind that retaining walls by their nature are flexible structures, and that surface treatments on walls often crack. Where walls are to be plastered or otherwise have a finish applied, the flexibility should be considered in determining the suitability of the surfacing material, spacing of horizontal and vertical control joints, etc. The flexibility should also be considered where a retaining wall will abut or be connected to a rigid structure, and where the geometry of the wall is such that its flexibility will vary along its length.

13. The Soil Corrosivity Study by HDR, Inc. in Appendix C should be used by the architect/engineer in specifying appropriate corrosion protection measures for all retaining walls.

**Asphalt Concrete (AC) Paths**

1. Paths for pedestrian access may be constructed of AC over AB. Design methods for AC pavement do not typically consider pedestrian loading only. Therefore, the section design is typically based on local experience and anticipated life span. For this application, a minimum pavement section of 1.5 to 2.0 inches of AC over 2 to 4 inches of AB is considered appropriate. As with exterior pedestrian flatwork these minimum thicknesses of AC and AB could be subject to movement due to expansive soils. If it is desired to filly mitigate the expansive soil conditions, the AB thickness can be increased to 12 inches.

2. It is recognized that the increased AB thickness recommended above for protecting AC paths from expansive soils will be expensive, possibly more expensive than simply replacing AC paths that has heaved and/or cracked. Consequently, this measure for protecting AC paths is only a suggestion for consideration by the client and/or architect/engineer. The degree to which AC paths are protected from expansive soil damage is left to the discretion of the owner and/ or architect/engineer.

3. AB should conform to the requirements of Section 26 of the Standard Specifications (Caltrans 2010). AC should conform to the requirements of Section 32 of the Standard Specifications (Caltrans 2010).

4. The upper 12 inches of subgrade and all AB in pavement areas should be compacted to a minimum of 95 percent of maximum dry density. Subgrade and aggregate base should be firm and unyielding when proofrolled with heavy, rubber-tired grading equipment prior to continuing construction.

5. The governing jurisdiction may have additional requirements for pavement that could take precedence over the above recommendations.

**Drainage and Maintenance**

1. Per Section 1804A.3 of the 2013 CBC, unpaved ground surfaces should be *finish graded* to direct surface runoff away from foundations and other improvements at a minimum 5 percent grade for a minimum distance of 10 feet. The site should be similarly sloped to drain away from foundation, slopes, and other improvements during construction. Where this is not practicable due to other improvements, etc., swales with improved surfaces, area drains, or other drainage facilities, should be used to collect and discharge runoff.

2. Any eaves of the buildings should be fitted with roof gutters. Runoff from flatwork, roof gutters, downspouts, planter drains, area drains, etc. should discharge in a nonerosive manner away from foundations and other improvements in accordance with the requirements of the governing agencies. Erosion protection should be placed at all discharge points unless the discharge is to a pavement surface.

3. To reduce the potential for planter drainage gaining access to subslab areas, any raised planter boxes adjacent to foundations should be installed with drains and sealed sides and bottoms. Drains should also be provided for areas adjacent to the structure that would not otherwise freely drain.

4. The on-site soils are erodible; stabilization of soils disturbed during construction by vegetation or other means *during* and *following* construction, is essential to reduce erosion damage. Care should be taken to establish and maintain vegetation. The landscaping should be planned and installed to maintain the surface drainage recommended above. Surface drainage should also be maintained during construction.

5. Maintenance of drainage and other improvements is critical to the long-term stability of the site and the integrity of the structures. Site improvements should be maintained on a regular basis.

6. All exterior drains, retaining wall drains, and drain outlets should be maintained to be free-flowing. Vegetation and erosion matting (if utilized) should be maintained or augmented as needed. Irrigation systems should be maintained so that soils around structures are maintained at a relatively uniform year-round moisture content, and are neither over-watered nor allowed to dry and desiccate.

7. To reduce the potential for disruption of drainage patterns and undermining of structures, fill areas, etc., all rodent activity should be aggressively controlled.

**Observation and Testing**

1. It must be recognized that the recommendations contained in this report are based on a limited number of borings and rely on continuity of the subsurface conditions encountered.

2. It is assumed that the geotechnical engineer will be retained to provide consultation during the design phase, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation.

3. At a minimum, the geotechnical engineer should be retained to provide:
   - Review of final plans, details and specifications
   - Professional observation during grading, trench and retaining wall backfill, and foundation construction
   - Oversight of special inspection and compaction testing grading and backfill

4. Special inspection of grading and backfill should be provided as per Section 1704A.7 and Table 1704A.7 of the CBC. The special inspector should be under the direction of the geotechnical engineer. At a minimum, the following items should be inspected and/or tested by the special inspector:
   - Stripping and clearing of vegetation
   - Overexcavation of the building and sitework retaining wall areas to the recommended depth
   - Scarification and moisture conditioning of overexcavated areas
   - Scarification and moisture conditioning of exterior pedestrian flatwork, AC path and all other grading areas
   - Fill quality, placement, moisture conditioning and compaction
   - Utility trench backfill
   - Foundation excavations

5. A program of quality assurance should be developed prior to beginning construction. At a minimum, the program should include all geotechnical items shown on the testing and inspection schedule of the approved plans. It should also include any additional inspection items required by the engineer and/or the governing jurisdiction. These items should be discussed at a preconstruction site meeting among a representative of the owner, the geotechnical engineer, special inspector, the project inspector, the engineer, and contractors. The geotechnical engineer should be notified at least 48 hours prior to beginning grading operations.

6. Locations and frequency of compaction tests should be as per the recommendation of the geotechnical engineer at the time of construction. The recommended test location and frequency may be subject to modification by the geotechnical engineer, based upon soil and moisture conditions encountered, size and type of equipment used by the contractor, the general trend of the results of compaction tests, or other factors.

## 12.0 CLOSURE

This report is valid for the conditions, as they exist at this time for the type of project described herein. Our intent was to perform the investigation in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions at this time. No representation, warranty, or guarantee is either expressed or implied. This report is intended for the exclusive use by the client as discussed in the "Scope of Services" section. Application beyond the stated intent is strictly at the user's risk.

This report is valid for conditions as they exist at this time for the type of project described herein. The conclusions and recommendations contained in this report could be rendered invalid, either in whole or in part, due to changes in building codes, regulations, standards of geotechnical or construction practice, changes in physical conditions, or the broadening off knowledge. If Earth Systems Pacific is not retained to provide construction observation and testing services, it shall not be responsible for the interpretation of the information by others or any consequences arising therefrom.

If changes with respect to project type or location become necessary, if items not addressed in this report are incorporated into plans, or if any of the assumptions used in the preparation of this report are not correct, the geotechnical engineer shall be notified for modifications to this report. The geotechnical engineer should be retained throughout the design process to provide geotechnical guidance as the design progresses. Any items not specifically addressed in this report should comply with the CBC and the requirements of the governing jurisdiction.

The preliminary recommendations of this soils report are based upon the geotechnical conditions encountered at the site, and may be augmented by additional requirements of the architect/engineer, or by additional recommendations provided by the geotechnical engineer based on conditions exposed at the time of construction.



Thank you for this opportunity to have been of service. If you have any questions, please feel free to contact this office at your convenience.

End of Text

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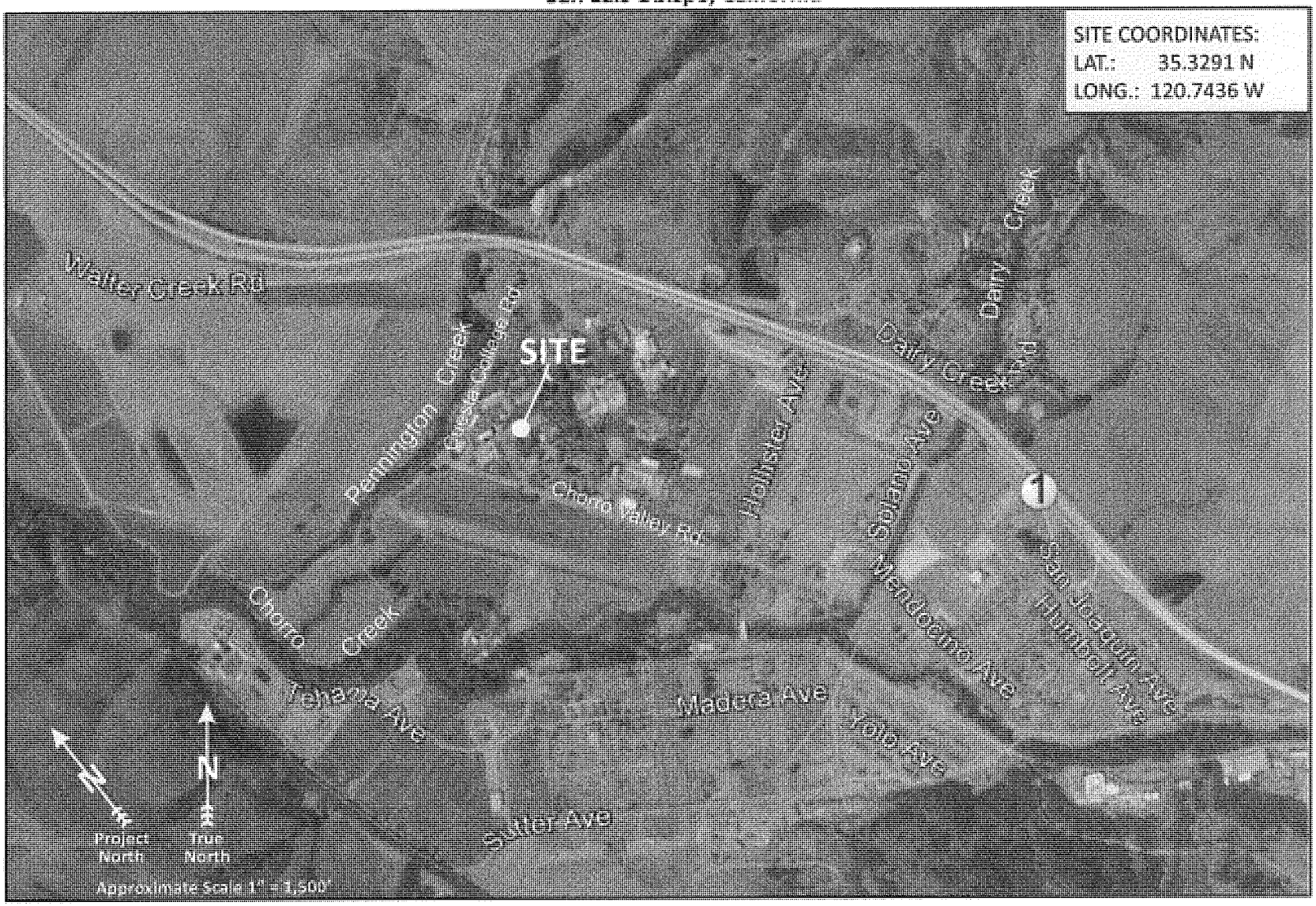
## APPENDIX A

Vicinity Map
Boring Location Map
Boring Logs
Boring Log Legend

# VICINITY MAP

**CUESTA COLLEGE - SAN LUIS OBISPO CAMPUS**
**INSTRUCTIONAL BUILDING**
**Highway 1**
**San Luis Obispo, California**




*Extract from: Google Earth Website*


**EARTH SYSTEMS PACIFIC**
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www.earthsystems.com - email: esp@earthsystems.com

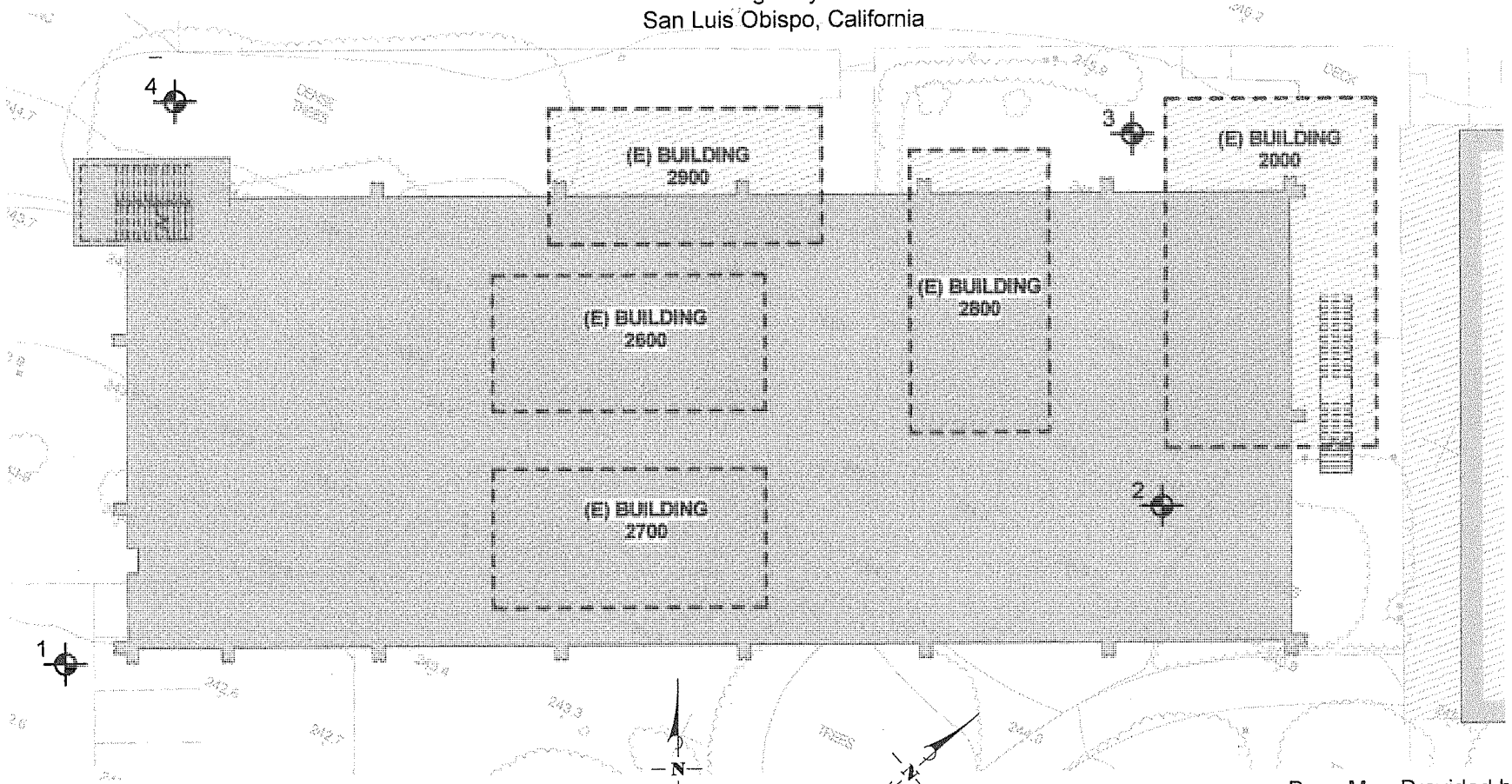

March 2015

SL-17540-SA

# BORING LOCATION MAP

## CUESTA COLLEGE - SAN LUIS OBISPO CAMPUS
## INSTRUCTIONAL BUILDING

Highway 1
San Luis Obispo, California




Base Map Provided by Client

LEGEND

4 Boring Location (Approx.)

PROJECT TRUE

NOT TO SCALE


**Earth Systems Pacific**

4378 Old Santa Fe Road
San Luis Obispo, CA 93401-8116

(805) 544-3276 • FAX (805) 544-1786
E-mail: esp@earthsystems.com


March 19, 2015

SB

SL-17540-SA
CUESTA COLLEGE SLO INSTRUCTIONAL BUILDING-031915borings

# Earth Systems Pacific

Boring No. 1
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem Auger

JOB NO.: SL-17540-SA
DATE: 03/18/15

**CUESTA COLLEGE - SAN LUIS OBISPO CAMPUS**
**INSTRUCTIONAL BUILDING**
**Highway 1**
**San Luis Obispo, California**

| DEPTH (feet) | USCS CLASS | SYMBOL | SOIL DESCRIPTION | SAMPLE DATA: INTERVAL (feet) | SAMPLE TYPE | DRY DENSITY (pcf) | MOISTURE (%) | BLOWS PER 6 IN. |
|---|---|---|---|---|---|---|---|---|
| 0 - 1 | SC | | CLAYEY SAND WITH GRAVEL: dark brown, loose, very moist (Fill) | 1.0 - 2.5 | Ring | 123.4 | 12.5 | 3, 7, 31 |
| 1 - 2 | | | moist | | | | | |
| 2 - 3 | | | SANDSTONE: olive brown, soft, moist, fractured, clayey (Franciscan Melange) | | | | | |
| 3 - 4 | | | | | | | | |
| 4 - 5 | | | | 5.0 - 5.5 | Ring | -- | -- | 50/6.0" |
| 5 - 6 | | | | | | | | |
| 6 - 7 | | | moderately hard | 7.5 - 8.0 | SPT | | | 50/2.0" |
| 7 - 8 | | | | | | | | |
| 8 - 9 | | | End of Boring @ 8.0' due to refusal<br>No subsurface water encountered | | | | | |
| 9 - 10 | | | | | | | | |
| 10 - 11 | | | | | | | | |
| 11 - 12 | | | | | | | | |
| 12 - 13 | | | | | | | | |
| 13 - 14 | | | | | | | | |
| 14 - 15 | | | | | | | | |
| 15 - 16 | | | | | | | | |
| 16 - 17 | | | | | | | | |
| 17 - 18 | | | | | | | | |
| 18 - 19 | | | | | | | | |
| 19 - 20 | | | | | | | | |
| 20 - 21 | | | | | | | | |
| 21 - 22 | | | | | | | | |
| 22 - 23 | | | | | | | | |
| 23 - 24 | | | | | | | | |
| 24 - 25 | | | | | | | | |
| 25 - 26 | | | | | | | | |

LEGEND: Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

# Earth Systems Pacific

Boring No. 2
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem Auger

JOB NO.: SL-17540-SA
DATE: 03/18/15

**CUESTA COLLEGE - SAN LUIS OBISPO CAMPUS**
**INSTRUCTIONAL BUILDING**
**Highway 1**
**San Luis Obispo, California**

| DEPTH (feet) | USCS CLASS | SYMBOL | SOIL DESCRIPTION | SAMPLE DATA: INTERVAL (feet) | SAMPLE TYPE | DRY DENSITY (pcf) | MOISTURE (%) | BLOWS PER 6 IN. |
|---|---|---|---|---|---|---|---|---|
| 0 | SC | | CLAYEY SAND: gray, loose, moist (Fill) | | | | | |
| 1 | CL | | SANDY LEAN CLAY: brown, stiff, moist, some gravel | 1.0 - 4.0 | ○ | | | |
| 2 | | | | | | | | |
| 3 | | | SANDSTONE: orange brown, very soft, moist, severely weathered, fractured, clay infilling in fractures (Franciscan Melange) | 3.0 - 4.5 | ■ | 112.1 | 16.2 | 6<br>17<br>23 |
| 4 | | | | | | | | |
| 5 | | | | 5.0 - 6.5 | ■ | 112.7 | 12.1 | 13<br>34<br>50/4.5" |
| 6 | | | | | | | | |
| 7 | | | olive brown, soft | 7.0 - 10.0 | ○ | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | 10.0 - 10.5 | ■ | -- | -- | 50/5.5" |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | 15.0 - 15.5 | ● | | | 50/5.5" |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | moderately hard | | | | | |
| 20 | | | olive gray to gray, soft | 20.0 - 21.5 | ● | | | 23<br>34<br>50/4.0" |
| 21 | | | | | | | | |
| 22 | | | End of Boring @ 21.5'<br>No subsurface water encountered | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| 26 | | | | | | | | |

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

# Earth Systems Pacific

Boring No. 3
PAGE 1 OF 1
JOB NO.: SL-17540-SA
DATE: 03/18/15

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem Auger

**CUESTA COLLEGE - SAN LUIS OBISPO CAMPUS**
**INSTRUCTIONAL BUILDING**
**Highway 1**
**San Luis Obispo, California**

| DEPTH (feet) | USCS CLASS | SYMBOL | SOIL DESCRIPTION | SAMPLE DATA: INTERVAL (feet) | SAMPLE TYPE | DRY DENSITY (pcf) | MOISTURE (%) | BLOWS PER 6 IN. |
|---|---|---|---|---|---|---|---|---|
| 0 | SC | | CLAYEY SAND WITH GRAVEL: red brown, medium dense, moist (Fill) | 1.0 -2.5 | Ring | 116.9 | 12.5 | 10<br>13<br>20 |
| 4 | | | SANDSTONE: orange brown, very soft, moist, severely weathered, fractured, clay infilling in fractures (Franciscan Melange) | | | | | |
| 5 | | | olive brown | 5.0 - 6.0 | Ring | -- | -- | 13<br>50/4.5" |
| 10 | | | | 10.0 - 11.0 | SPT | | | 17<br>50/5.5" |
| 14 | | | olive gray | | | | | |
| 15 | | | | 15.0 - 15.5 | SPT | | | 50/5.5" |
| 19 | | | gray, moderately hard | | | | | |
| 20 | | | | 20.0 - 20.5 | SPT | | | 50/4.0" |
| 21 | | | End of Boring @ 20.5'<br>No subsurface water encountered | | | | | |

LEGEND: ▬ Ring Sample ◯ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

# Earth Systems Pacific

Boring No. 4
PAGE 1 OF 1

LOGGED BY: R. Wagner
DRILL RIG: Mobile B-53
AUGER TYPE: 6" Hollow Stem Auger

JOB NO.: SL-17540-SA
DATE: 03/18/15

**CUESTA COLLEGE - SAN LUIS OBISPO CAMPUS**
**INSTRUCTIONAL BUILDING**
**Highway 1**
**San Luis Obispo, California**

| DEPTH (feet) | USCS CLASS | SYMBOL | SOIL DESCRIPTION | SAMPLE DATA: INTERVAL (feet) | SAMPLE TYPE | DRY DENSITY (pcf) | MOISTURE (%) | BLOWS PER 6 IN. |
|---|---|---|---|---|---|---|---|---|
| 0 | SC | | CLAYEY SAND WITH GRAVEL: brown, medium dense, moist (Fill) | 0.0 - 2.0 | ○ | | | |
| 3 | | | SANDSTONE: olive brown, soft, slightly moist (Franciscan Melange) | 3.0 - 3.5 | ■ | NO RETURN | | 50/4.0" |
| 5 | | | moderately hard | 5.0 - 5.5 | ■ | | | 50/3.0" |
| 7 | | | hard | 5.0 - 8.0 | ○ | | | |
| 9 | | | moderately hard | | | | | |
| 14.5 | | | | 14.5 - 15.0 | ● | NO RETURN | | 50/2.5" |
| 15 | | | End of Boring @ 15.0' due to refusal<br>No subsurface water encountered | | | | | |

LEGEND: ■ Ring Sample ○ Grab Sample ▭ Shelby Tube Sample ● SPT

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

Earth Systems Pacific

# BORING LOG LEGEND

| SAMPLE / SUBSURFACE WATER SYMBOLS | GRAPH. SYMBOL |
|---|---|
| CALIFORNIA MODIFIED | |
| STANDARD PENETRATION TEST (SPT) | |
| SHELBY TUBE | |
| BULK | |
| SUBSURFACE WATER DURING DRILLING | |
| SUBSURFACE WATER AFTER DRILLING | |

## UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487)

| MAJOR DIVISIONS | GROUP SYMBOL | TYPICAL DESCRIPTIONS | GRAPH. SYMBOL |
|---|---|---|---|
| COARSE GRAINED SOILS (MORE THAN HALF OF MATERIAL IS LARGER THAN #200 SIEVE SIZE) | GW | WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES | |
| | GP | POORLY GRADED GRAVELS, OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES | |
| | GM | SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON-PLASTIC FINES | |
| | GC | CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES | |
| | SW | WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES | |
| | SP | POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES | |
| | SM | SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES | |
| | SC | CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES | |
| FINE GRAINED SOILS (HALF OR MORE OF MATERIAL IS SMALLER THAN #200 SIEVE SIZE) | ML | INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY | |
| | CL | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS | |
| | OL | ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY | |
| | MH | INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS | |
| | CH | INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS | |
| | OH | ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS | |
| | PT | PEAT AND OTHER HIGHLY ORGANIC SOILS | |

## OBSERVED MOISTURE CONDITION

| DRY | SLIGHTLY MOIST | MOIST | VERY MOIST | WET (SATURATED) |
|---|---|---|---|---|

## CONSISTENCY

| COARSE GRAINED SOILS | | | FINE GRAINED SOILS | | |
|---|---|---|---|---|---|
| BLOWS/FOOT | | DESCRIPTIVE TERM | BLOWS/FOOT | | DESCRIPTIVE TERM |
| SPT | CA SAMPLER | | SPT | CA SAMPLER | |
| 0-10 | 0-16 | LOOSE | 0-2 | 0-3 | VERY SOFT |
| 11-30 | 17-50 | MEDIUM DENSE | 3-4 | 4-7 | SOFT |
| 31-50 | 51-83 | DENSE | 5-8 | 8-13 | MEDIUM STIFF |
| OVER 50 | OVER 83 | VERY DENSE | 9-15 | 14-25 | STIFF |
| | | | 16-30 | 26-50 | VERY STIFF |
| | | | OVER 30 | OVER 50 | HARD |

## GRAIN SIZES

| U.S. STANDARD SERIES SIEVE | | | | CLEAR SQUARE SIEVE OPENING | | |
|---|---|---|---|---|---|---|
| # 200 | # 40 | # 10 | # 4 | 3/4" | 3" | 12" |

| SILT & CLAY | SAND | | | GRAVEL | | COBBLES | BOULDERS |
|---|---|---|---|---|---|---|---|
| | FINE | MEDIUM | COARSE | FINE | COARSE | | |

## TYPICAL BEDROCK HARDNESS

| MAJOR DIVISIONS | TYPICAL DESCRIPTIONS |
|---|---|
| EXTREMELY HARD | CORE, FRAGMENT, OR EXPOSURE CANNOT BE SCRATCHED WITH KNIFE OR SHARP PICK; CAN ONLY BE CHIPPED WITH REPEATED HEAVY HAMMER BLOWS |
| VERY HARD | CANNOT BE SCRATCHED WITH KNIFE OR SHARP PICK; CORE OR FRAGMENT BREAKS WITH REPEATED HEAVY HAMMER BLOWS |
| HARD | CAN BE SCRATCHED WITH KNIFE OR SHARP PICK WITH DIFFICULTY (HEAVY PRESSURE); HEAVY HAMMER BLOW REQUIRED TO BREAK SPECIMEN |
| MODERATELY HARD | CAN BE GROOVED 1/16 INCH DEEP BY KNIFE OR SHARP PICK WITH MODERATE OR HEAVY PRESSURE; CORE OR FRAGMENT BREAKS WITH LIGHT HAMMER BLOW OR HEAVY MANUAL PRESSURE |
| SOFT | CAN BE GROOVED OR GOUGED EASILY BY KNIFE OR SHARP PICK WITH LIGHT PRESSURE, CAN BE SCRATCHED WITH FINGERNAIL; BREAKS WITH LIGHT TO MODERATE MANUAL PRESSURE |
| VERY SOFT | CAN BE READILY INDENTED, GROOVED OR GOUGED WITH FINGERNAIL, OR CARVED WITH KNIFE; BREAKS WITH LIGHT MANUAL PRESSURE |

## TYPICAL BEDROCK WEATHERING

| MAJOR DIVISIONS | TYPICAL DESCRIPTIONS |
|---|---|
| FRESH | NO DISCOLORATION, NOT OXIDIZED |
| SLIGHTLY WEATHERED | DISCOLORATION OR OXIDATION IS LIMITED TO SURFACE OF, OR SHORT DISTANCE FROM, FRACTURES: SOME FELDSPAR CRYSTALS ARE DULL |
| MODERATELY WEATHERED | DISCOLORATION OR OXIDATION EXTENDS FROM FRACTURES, USUALLY THROUGHOUT; Fe-Mg MINERALS ARE "RUSTY", FELDSPAR CRYSTALS ARE "CLOUDY" |
| INTENSELY WEATHERED | DISCOLORATION OR OXIDATION THROUGHOUT; FELDSPAR AND Fe-Mg MINERALS ARE ALTERED TO CLAY TO SOME EXTENT, OR CHEMICAL ALTERATION PRODUCES IN SITU DISAGGREGATION |
| DECOMPOSED | DISCOLORATION OR OXIDATION THROUGHOUT, BUT RESISTANT MINERALS SUCH AS QUARTZ MAY BE UNALTERED; FELDSPAR AND Fe-Mg MINERALS ARE COMPLETELY ALTERED TO CLAY |

# APPENDIX B

Geotechnical Laboratory Test Results

Cuesta College - SLO Campus
Instructional Building

SL-17540-SA

## BULK DENSITY TEST RESULTS

ASTM D 2937-10 (modified for ring liners)

March 26, 2015

| BORING NO. | DEPTH feet | MOISTURE CONTENT, % | WET DENSITY, pcf | DRY DENSITY, pcf |
|---|---|---|---|---|
| 1 | 2.0 - 2.5 | 12.5 | 138.8 | 123.4 |
| 2 | 4.0 - 4.5 | 16.2 | 130.3 | 112.1 |
| 2 | 6.0 - 6.5 | 12.1 | 126.3 | 112.7 |
| 3 | 2.0 - 2.5 | 12.5 | 131.5 | 116.9 |

## EXPANSION INDEX TEST RESULTS

ASTM D 4829-11

| BORING NO. | DEPTH feet | EXPANSION INDEX |
|---|---|---|
| 2 | 1.0 - 4.0 | 47 |
| 4 | 0.0 - 2.0 | 40 |
| 4 | 5.0 - 8.0 | 13 |

Cuesta College - SLO Campus
Instructional Building

SL-17540-SA

## MOISTURE-DENSITY COMPACTION TEST

ASTM D 1557-12 (Modified)

PROCEDURE USED: A

PREPARATION METHOD: Moist

RAMMER TYPE: Mechanical

SPECIFIC GRAVITY: 2.70 (assumed)

March 26, 2015

Boring #2 @ 1.0 - 4.0'

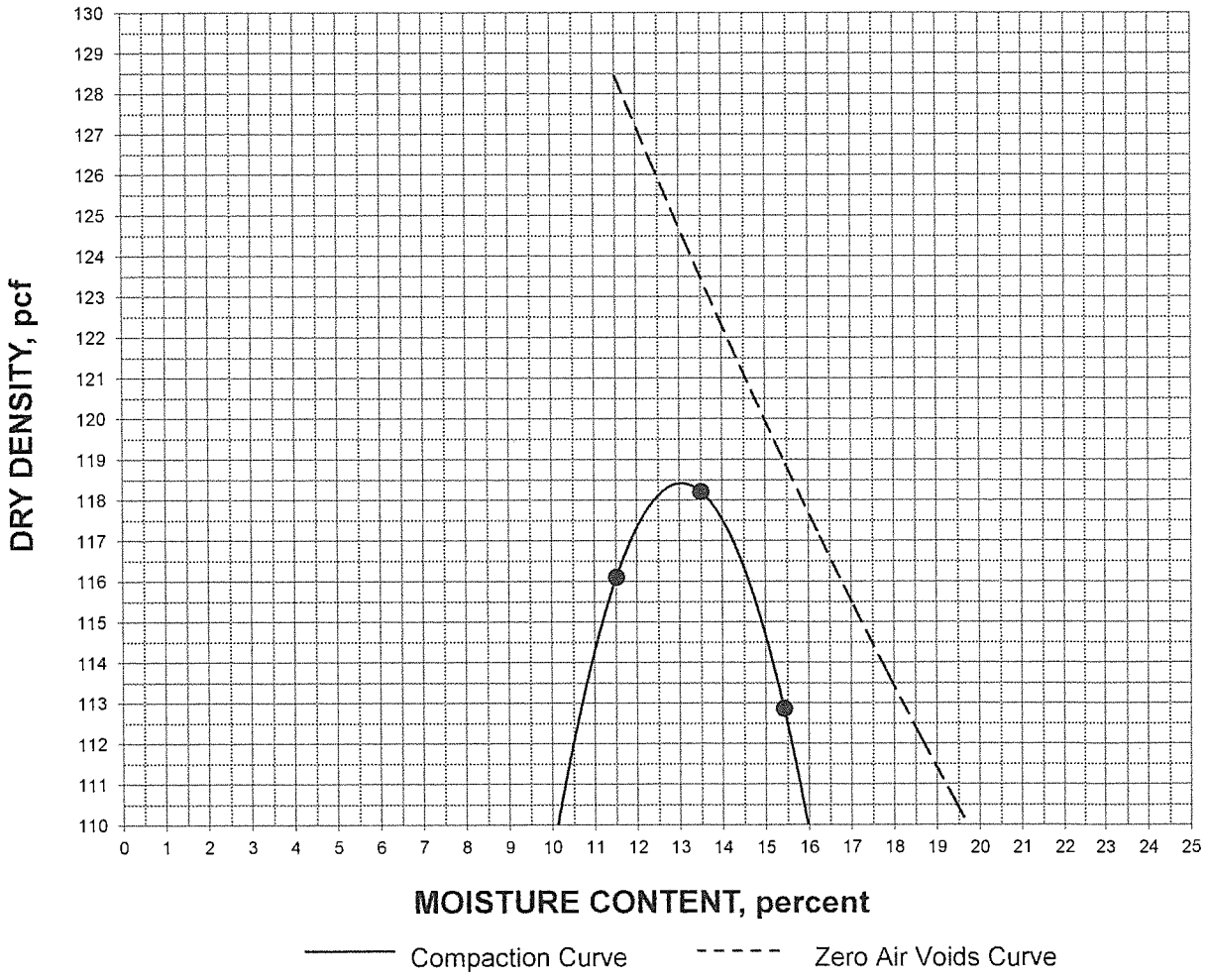
Brown Sandy Lean Clay (CL)

SIEVE DATA:

| Sieve Size | % Retained (Cumulative) |
|---|---|
| 3/4" | 0 |
| 3/8" | 0 |
| #4 | 0 |

**MAXIMUM DRY DENSITY: 118.4 pcf**

**OPTIMUM MOISTURE: 13.1%**



Cuesta College - SLO Campus
Instructional Building

SL-17540-SA

## DIRECT SHEAR

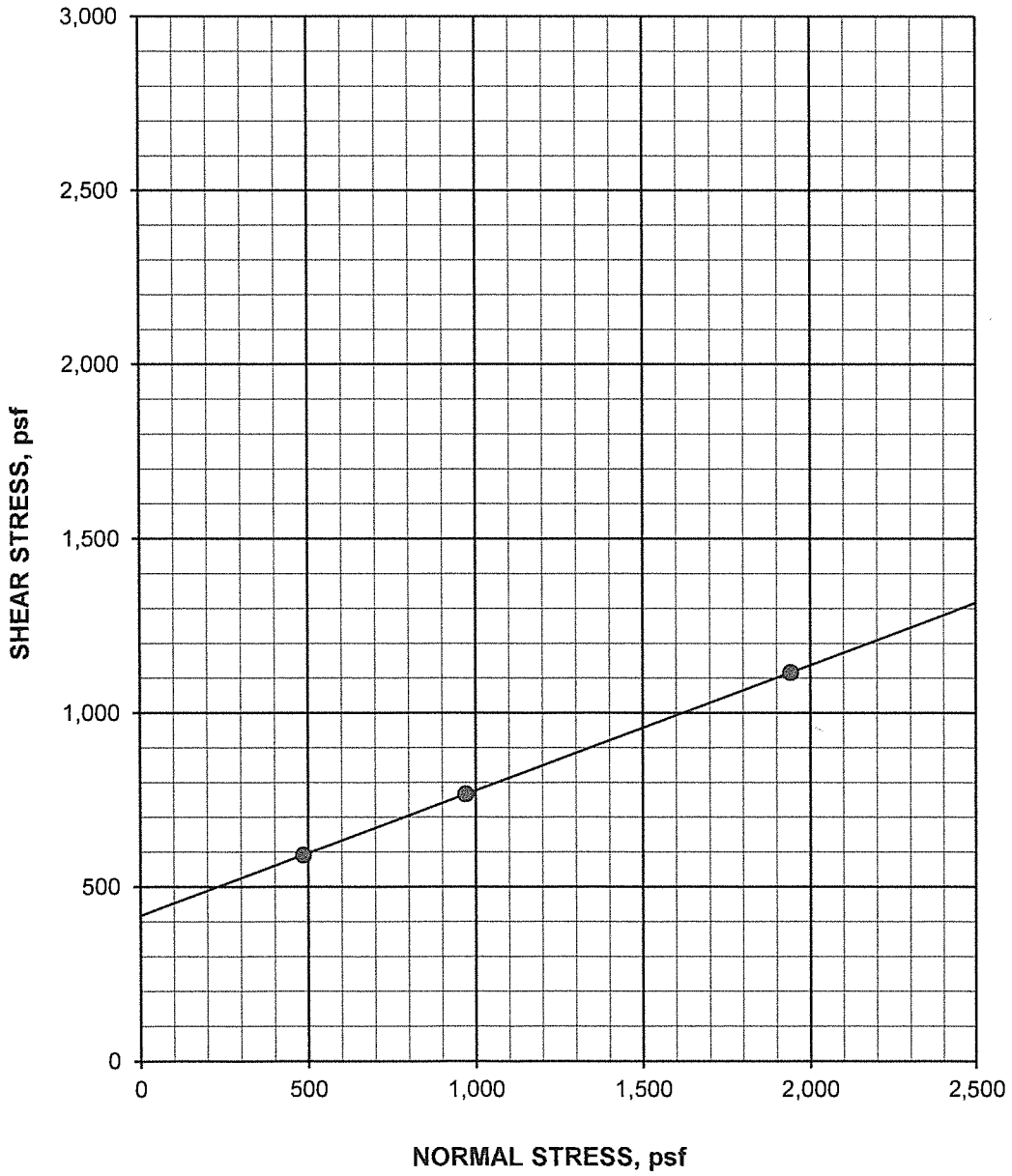
**ASTM D 3080/D3080M-11 (modified for consolidated, undrained conditions)**

March 26, 2015

Boring #2 @ 1.0 - 4.0'
Sandy Lean Clay (CL)
Compacted to 90% RC, saturated

INITIAL DRY DENSITY: 106.6 pcf
INITIAL MOISTURE CONTENT: 13.1 %
PEAK SHEAR ANGLE (Ø): 20°
COHESION (C): 417 psf

### SHEAR vs. NORMAL STRESS



Cuesta College - SLO Campus
Instructional Building

SL-17540-SA

## DIRECT SHEAR continued

ASTM D 3080/D3080M-11 (modified for consolidated, undrained conditions)

Boring #2 @ 1.0 - 4.0'

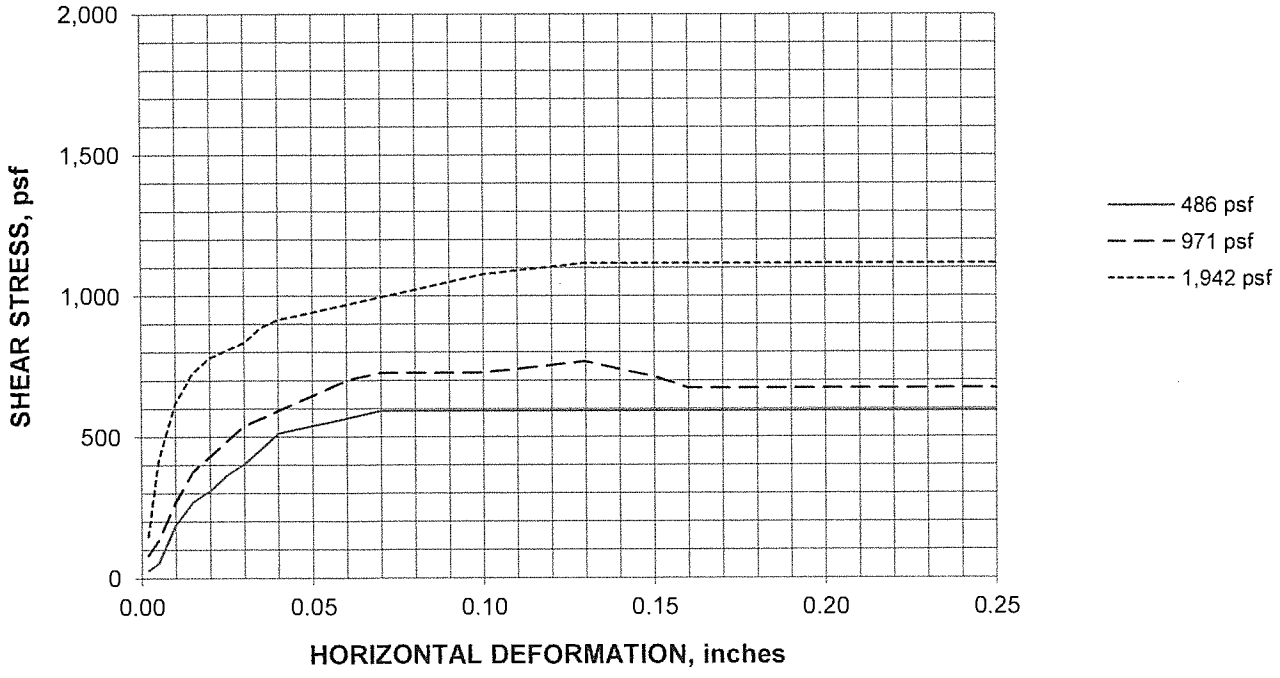
March 26, 2015

Sandy Lean Clay (CL)

Compacted to 90% RC, saturated

SPECIFIC GRAVITY: 2.70 (assumed)

| SAMPLE NO.: | 1 | 2 | 3 | AVERAGE |
|---|---|---|---|---|
| **INITIAL** | | | | |
| WATER CONTENT, % | 13.1 | 13.1 | 13.1 | 13.1 |
| DRY DENSITY, pcf | 106.6 | 106.6 | 106.6 | 106.6 |
| SATURATION, % | 60.9 | 60.9 | 60.9 | 60.9 |
| VOID RATIO | 0.581 | 0.581 | 0.581 | 0.581 |
| DIAMETER, inches | 2.410 | 2.410 | 2.410 | |
| HEIGHT, inches | 1.00 | 1.00 | 1.00 | |
| **AT TEST** | | | | |
| WATER CONTENT, % | 26.6 | 26.2 | 25.8 | |
| DRY DENSITY, pcf | 107.8 | 109.4 | 112.8 | |
| SATURATION, % | 100.0 | 100.0 | 100.0 | |
| VOID RATIO | 0.564 | 0.540 | 0.494 | |
| HEIGHT, inches | 0.99 | 0.97 | 0.95 | |



Cuesta College - SLO Campus
Instructional Building

SL-17540-SA

## MOISTURE-DENSITY COMPACTION TEST

ASTM D 1557-12 (Modified)

PROCEDURE USED: A

PREPARATION METHOD: Moist

RAMMER TYPE: Mechanical

SPECIFIC GRAVITY: 2.65 (assumed)

March 26, 2015

Boring #4 @ 0.0 - 2.0'

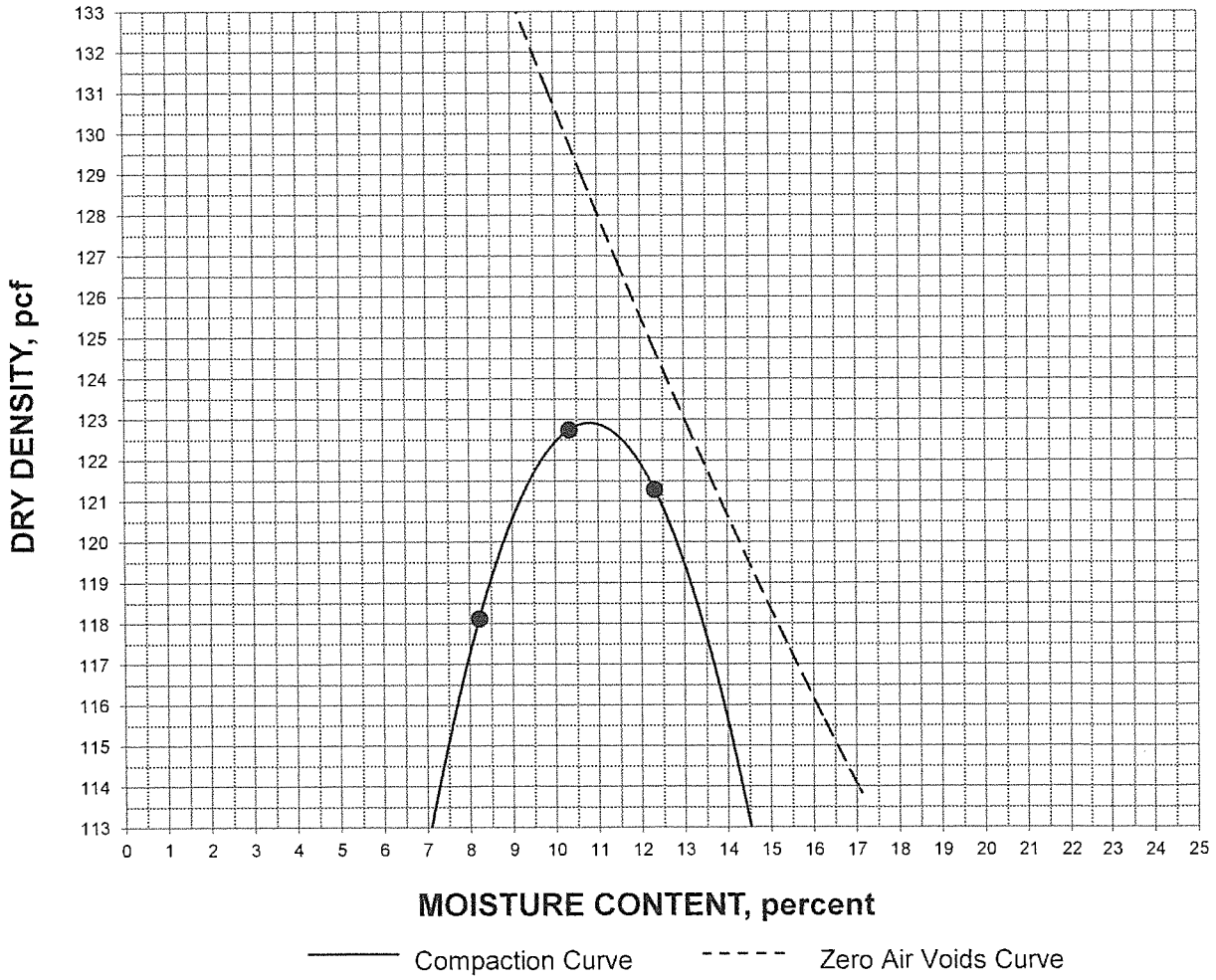
Brown Clayey Sand with Gravel (SC)

SIEVE DATA:

| Sieve Size | % Retained (Cumulative) |
|---|---|
| 3/4" | 0 |
| 3/8" | 7 |
| #4 | 21 |

**MAXIMUM DRY DENSITY: 122.9 pcf**

**OPTIMUM MOISTURE: 10.8%**



**APPENDIX C**

Soil Corrosivity Study by HDR, Inc.

March 30, 2015 via email: fred@earthsystems.com

EARTH SYSTEMS PACIFIC
4378 Old Santa Fe Road
San Luis Obispo, CA 93401

Attention: Mr. Fred J. Potthast

Re: Soil Corrosivity Study
Cuesta College - San Luis Obispo
Campus Instructional Building
San Luis Obispo, CA
HDR #254280, SL-17540-SA

# Introduction

Laboratory tests have been completed on three soil samples provided for the Cuesta College – San Luis Obispo Campus Instructional Building project. The purpose of these tests was to determine if the soils might have deleterious effects on underground utility piping, hydraulic elevator cylinders, and concrete structures. HDR Engineering, Inc. (HDR) assumes that the samples provided selected are representative of the most corrosive soils at the site.

The proposed classroom structure has two stories and no subterranean levels. The site is located at Highway 1 in San Luis Obispo, California, and the water table is reportedly deeper than 21.5 feet deep.

The scope of this study is limited to a determination of soil corrosivity and general corrosion control recommendations for materials likely to be used for construction. HDR's recommendations do not constitute, and are not meant as a substitute for, design documents for the purpose of construction. If the architects and/or engineers desire more specific information, designs, specifications, or review of design, HDR will be happy to work with them as a separate phase of this project.

hdrinc.com

431 W. Baseline Road, Claremont, CA 91711-1608
(909) 626-0967(909) 626-0967

# Laboratory Soil Corrosivity Tests

The electrical resistivity of each sample was measured in a soil box per ASTM G187 in its as-received condition and again after saturation with distilled water. Resistivities are at about their lowest value when the soil is saturated. The pH of the saturated samples was measured per CTM 643. A 5:1 water:soil extract from each sample was chemically analyzed for the major soluble salts commonly found in soil per ASTM D4327, ASTM D6919, and Standard Method 2320-B[1]. Laboratory analysis was performed under HDR laboratory number 15-0226SCS and the test results are shown in the attached Table 1.

# Soil Corrosivity

A major factor in determining soil corrosivity is electrical resistivity. The electrical resistivity of a soil is a measure of its resistance to the flow of electrical current. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of electrical current (DC) from the metal into the soil. Corrosion currents, following Ohm's Law, are inversely proportional to soil resistivity. Lower electrical resistivities result from higher moisture and soluble salt contents and indicate corrosive soil.

A correlation between electrical resistivity and corrosivity toward ferrous metals is:[2]

| Soil Resistivity in ohm-centimeters | Corrosivity Category |
|---|---|
| Greater than 10,000 | Mildly Corrosive |
| 2,001 to 10,000 | Moderately Corrosive |
| 1,001 to 2,000 | Corrosive |
| 0 to 1,000 | Severely Corrosive |

Other soil characteristics that may influence corrosivity towards metals are pH, soluble salt content, soil types, aeration, anaerobic conditions, and site drainage.

---

[1] *American Public Health Association (APHA). 2012. Standard Methods of Water and Wastewater. 22nd ed. American Public Health Association, American Water Works Association, Water Environment Federation publication. APHA, Washington D.C.*

[2] *Romanoff, Melvin. Underground Corrosion, NBS Circular 579. Reprinted by NACE. Houston, TX, 1989, pp. 166–167.*

Electrical resistivities were in the mildly and moderately corrosive categories with as-received moisture. When saturated, the resistivities were in the corrosive category. The resistivities dropped considerably with added moisture because the samples were dry as-received. The wide variations in soil resistivity can create concentration type corrosion cells that increase corrosion rates above what would be expected from the chemical characteristics alone.

Soil pH values varied from 6.9 to 7.4. This range is neutral to mildly alkaline.[3] These values do not particularly increase soil corrosivity.

The soluble salt content of the samples ranged from low to moderate.

Ammonium and nitrate were detected in low concentrations.

Tests were not made for sulfide and negative oxidation-reduction (redox) potential because these samples did not exhibit characteristics typically associated with anaerobic conditions.

This soil is classified as corrosive to ferrous metals.

# Corrosion Control Recommendations

The life of buried materials depends on thickness, strength, loads, construction details, soil moisture, etc., in addition to soil corrosivity, and is, therefore, difficult to predict. Of more practical value are corrosion control methods that will increase the life of materials that would be subject to significant corrosion.

The following recommendations are based on the soil conditions discussed in the Soil Corrosivity section above. Unless otherwise indicated, these recommendations apply to the entire site or alignment.

## Steel Pipe

Implement *all* the following measures:

---

[3] *Romanoff, Melvin. Underground Corrosion, NBS Circular 579. Reprinted by NACE. Houston, TX, 1989, p. 8.*

1. Underground steel pipe with rubber gasketed, mechanical, grooved end, or other nonconductive type joints should be bonded for electrical continuity. Electrical continuity is necessary for corrosion monitoring and cathodic protection.

2. Install corrosion monitoring test stations to facilitate corrosion monitoring and the application of cathodic protection:

    a. At each end of the pipeline.

    b. At each end of all casings.

    c. Other locations as necessary so the interval between test stations does not exceed 1,200 feet.

3. To prevent dissimilar metal corrosion cells and to facilitate the application of cathodic protection, electrically isolate each buried steel pipeline per NACE SP0286 from:

    a. Dissimilar metals.

    b. Dissimilarly coated piping (cement-mortar vs. dielectric).

    c. Above ground steel pipe.

    d. All existing piping.

4. Choose one of the following corrosion control options:

    **OPTION 1**

    a. Apply a suitable dielectric coating intended for underground use such as:

        i. Polyurethane per AWWA C222 *or*

        ii. Extruded polyethylene per AWWA C215 *or*

        iii. A tape coating system per AWWA C214 *or*

        iv. Hot applied coal tar enamel per AWWA C203 *or*

        v. Fusion bonded epoxy per AWWA C213.

    b. Apply cathodic protection to steel piping as per NACE SP0169.

**OPTION 2**

a. As an alternative to dielectric coating and cathodic protection, apply a ¾-inch cement mortar coating per AWWA C205 or encase in concrete 3 inches thick, using any type of ASTM C150 cement. Joint bonds, test stations, and insulated joints are still recommended for these alternatives.

NOTE: Some steel piping systems, such as for oil, gas, and high-pressure piping systems, have special corrosion and cathodic protection requirements that must be evaluated for each specific application.

## Hydraulic Elevator

Implement *all* the following measures:

1. Electrically insulate each cylinder from building metals by installing dielectric material between the piston platen and car, insulating the bolts, and installing an insulated joint in the oil line.

2. Choose one of the following corrosion control options for the hydraulic steel cylinders.

   **OPTION 1**

   a. Coat hydraulic elevator cylinders as described above for steel pipe, item #4, option 1.

   b. Apply cathodic protection to hydraulic cylinders as per NACE SP0169.

   **OPTION 2**

   a. As an alternative to electrical insulation and cathodic protection, place each cylinder in a plastic casing with a plastic watertight seal at the bottom.

3. The elevator oil line should be placed above ground if possible but, if underground, should be protected by one of the following corrosion control options:

   **OPTION 1**

   a. Provide a bonded dielectric coating.

   b. Electrically isolate the pipeline.

c. Apply cathodic protection to steel piping as per NACE SP0169.

**OPTION 2**

a. Place the oil line in a PVC casing pipe with solvent-welded joints to prevent contact with soil and soil moisture.

## Iron Pipe

Implement *all* the following measures:

1. To prevent dissimilar metal corrosion cells and to facilitate the application of cathodic protection, electrically insulate underground iron pipe from dissimilar metals and from above ground iron pipe with insulating joints per NACE SP0286.
2. Bond all nonconductive type joints for electrical continuity. Electrical continuity is necessary for corrosion monitoring and cathodic protection.
3. Install corrosion monitoring test stations to facilitate corrosion monitoring and the application of cathodic protection:
    a. At each end of the pipeline.
    b. At each end of any casings.
    c. Other locations as necessary so the interval between test stations does not exceed 1,200 feet.
4. Choose one of the following corrosion control options:

    **OPTION 1**

    a. Apply a suitable coating intended for underground use such as:
        i. Polyethylene encasement per AWWA C105; *or*
        ii. Epoxy coating; *or*
        iii. Polyurethane; *or*
        iv. Wax tape.

NOTE: The thin factory-applied asphaltic coating applied to ductile iron pipe for transportation and aesthetic purposes does not constitute a corrosion control coating.

b. Apply cathodic protection to cast and ductile iron piping as per NACE SP0169.

**OPTION 2**

a. As an alternative to coating systems described in Option 1 and cathodic protection, concrete encase all buried portions of metallic piping so that there is a minimum of 3 inches of concrete cover provided over and around surfaces of pipe, fittings, and valves using any type of ASTM C150 cement.

## Copper Tubing

Implement *all* the following measures:

1. Electrically insulate underground copper pipe from dissimilar metals and from above ground copper pipe with insulating devices per NACE SP0286.

2. Electrically insulate cold water piping from hot water piping systems.

3. Place cold water copper tubing in an 8-mil polyethylene sleeve or encase in double 4-mil thick polyethylene sleeves and bed and backfill with clean sand at least 2 inches thick surrounding the tubing. Clean sand should have a minimum resistivity of no less than 3,000 ohm-cm, and a pH of 6.0–8.0. Copper tubing for cold water can also be treated the same as for hot water.

4. Hot water tubing may be subject to a higher corrosion rate. Protect hot copper tubing by one of the following measures:

    a. Preventing soil contact. Soil contact may be prevented by placing the tubing above ground or encasing the tubing with PVC pipe with solvent-welded joints. *or*

    b. Applying cathodic protection per NACE SP0169. The amount of cathodic protection current needed can be minimized by coating the tubing.

### Plastic and Vitrified Clay Pipe

1. No special precautions are required for plastic and vitrified clay piping placed underground from a corrosion viewpoint.

2. Protect all metallic fittings and valves with wax tape per AWWA C217 or epoxy.

### All Pipe

1. On all pipes, appurtenances, and fittings not protected by cathodic protection, coat bare metal such as valves, bolts, flange joints, joint harnesses, and flexible couplings with wax tape per AWWA C217 after assembly.

2. Where metallic pipelines penetrate concrete structures such as building floors, vault walls, and thrust blocks use plastic sleeves, rubber seals, or other dielectric material to prevent pipe contact with the concrete and reinforcing steel.

### Concrete

1. From a corrosion standpoint, any type of ASTM C150 cement may be used for concrete structures and pipe because the sulfate concentration is negligible, 0 to 0.10 percent.[4,5,6]

2. Standard concrete cover over reinforcing steel may be used for concrete structures and pipe in contact with these soils due to the low chloride concentration[7] found onsite.

# Closure

The analysis and recommendations presented in this report are based upon data obtained from the laboratory samples. This report does not reflect variations that may occur across the site or due to the modifying effects of construction. If variations appear, HDR should be

---

[4] *2012 International Building Code (IBC) Section 1904.3*

[5] *2012 International Residential Code (IRC) which refers to American Concrete Institute (ACI) 318 Table 19.3.2.1*

[6] *2013 California Building Code (CBC) which refers to American Concrete Institute (ACI) 318 Table 19.3.2.1*

[7] *Design Manual 303: Concrete Cylinder Pipe. Ameron. p.65*

notified immediately so that further evaluation and supplemental recommendations can be provided.

HDR's services have been performed with the usual thoroughness and competence of the engineering profession. No other warranty or representation, either expressed or implied, is included or intended.

Please call if you have any questions.

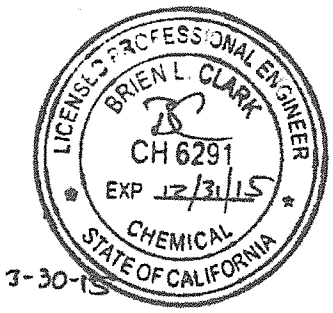
Respectfully Submitted,
HDR Engineering, Inc.

Lucy Quijarquez

Brien L. Clark, PE

Enc: Table 1

254280_SCS_Rpt_LQ_Rev00_BC



## Table 1 - Laboratory Tests on Soil Samples

*Earth Systems Pacific*
*Cuesta College - San Luis Obispo Campus Instructional Building*
*Your #SL-17540-SA, HDR Lab #15-0226SCS*
*19-Mar-15*

| Sample ID | | | 2 @ 1-4' CL (Sandy Lean Clay) | 2 @ 7-10' (Crusted Sandstone) | 4 @ 0-2' SC (Clayey Sand w/ Gravel) |
|---|---|---|---|---|---|
| **Resistivity** | | **Units** | | | |
| as-received | | ohm-cm | 4,400 | 8,800 | 22,400 |
| saturated | | ohm-cm | 1,040 | 1,120 | 1,120 |
| **pH** | | | 6.9 | 7.2 | 7.4 |
| **Electrical Conductivity** | | mS/cm | 0.17 | 0.20 | 0.21 |
| **Chemical Analyses** | | | | | |
| **Cations** | | | | | |
| calcium | $Ca^{2+}$ | mg/kg | 39 | 32 | 86 |
| magnesium | $Mg^{2+}$ | mg/kg | 35 | 25 | 38 |
| sodium | $Na^{1+}$ | mg/kg | 103 | 148 | 91 |
| potassium | $K^{1+}$ | mg/kg | 5.7 | 4.2 | 12 |
| **Anions** | | | | | |
| carbonate | $CO_3^{2-}$ | mg/kg | ND | ND | ND |
| bicarbonate | $HCO_3^{1-}$ | mg/kg | 189 | 146 | 339 |
| fluoride | $F^{1-}$ | mg/kg | 3.2 | 3.2 | 5.5 |
| chloride | $Cl^{1-}$ | mg/kg | 52 | 64 | 53 |
| sulfate | $SO_4^{2-}$ | mg/kg | 136 | 214 | 122 |
| phosphate | $PO_4^{3-}$ | mg/kg | ND | ND | 1.0 |
| **Other Tests** | | | | | |
| ammonium | $NH_4^{1+}$ | mg/kg | 0.4 | ND | 0.6 |
| nitrate | $NO_3^{1-}$ | mg/kg | 1.8 | 1.0 | 2.6 |
| sulfide | $S^{2-}$ | qual | na | na | na |
| Redox | | mV | na | na | na |

Electrical conductivity in millisiemens/cm and chemical analysis were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

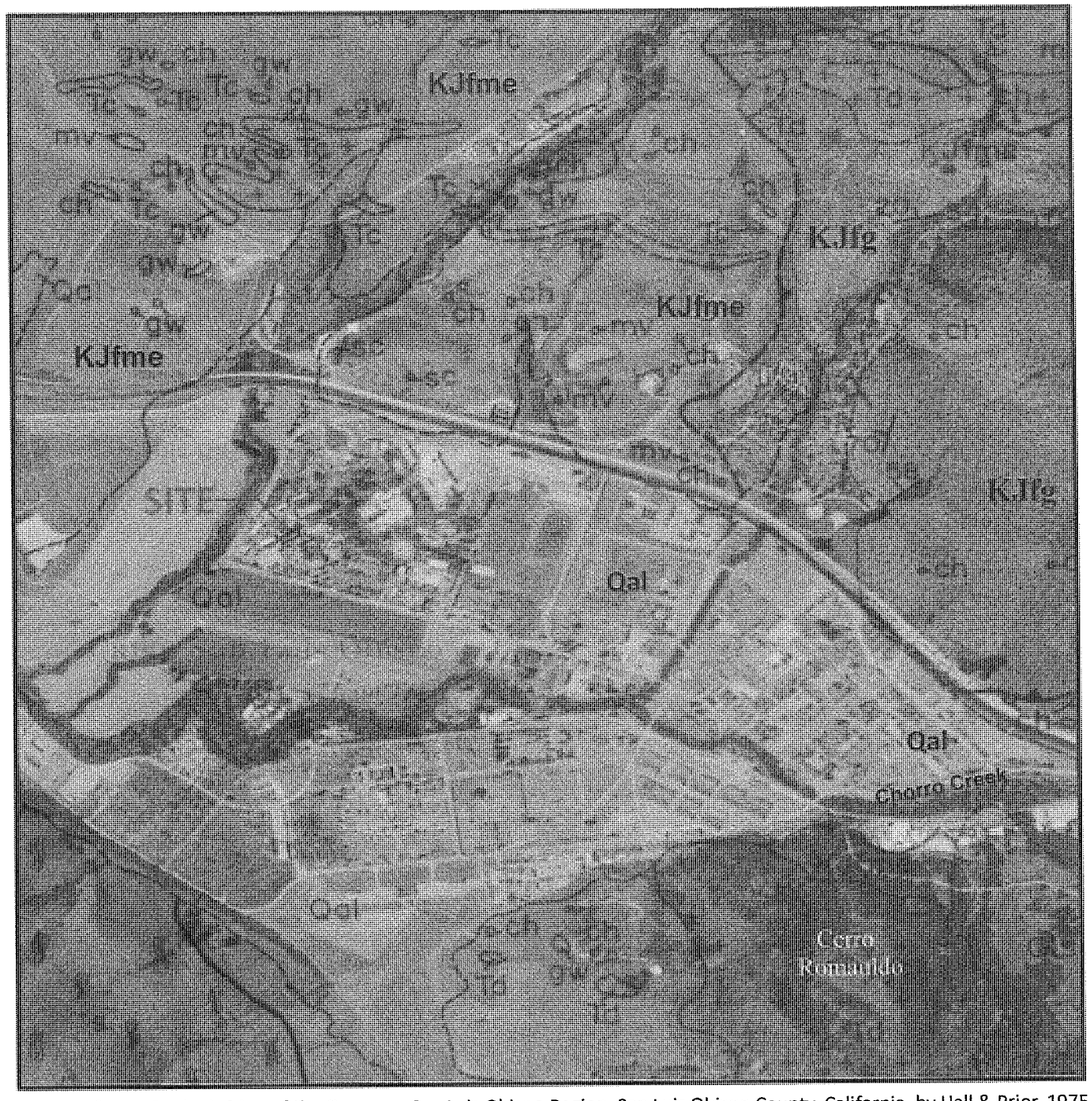
431 West Baseline Road · Claremont, CA 91711
Phone: 909.962.5485 · Fax: 909.626.3316

## APPENDIX D

Geologic Map
Historical Earthquake/Fault Map
FEMA Flood Zone Map
Radon Zone Map

# GEOLOGIC MAP

**CUESTA COLLEGE - SAN LUIS OBISPO CAMPUS**
**INSTRUCTIONAL BUILDING**
**Highway 1**
**San Luis Obispo, California**




*Extract from:* Geologic Map of the Cayucos - San Luis Obispo Region, San Luis Obispo County, California, by Hall & Prior, 1975

## EXPLANATION

### Geologic Units

Qal

**Alluvial Deposits**
Cobble-pebble gravel, sand and clay
Holocene

Td

**Dacite**
Miocene

Kjfme | KJfg

**Franciscan rocks**

KJfme: Melange (me), graywacke, largely composed of sheared greenish black claystone, includes exotic clasts of graywacke (gw); metavolcanic rocks (mv) primarily basalt and diabase; and other rocks.

KJfg: Graywacke, sandstone and claystone, Cretaceous or Jurassic

S

**Serpentinite**
-locally serpentinized ultramafic rocks

### Geologic Symbols

Contact
Dashed where approximately located or inferred

High-angle fault
Dashed where approximately located or inferred; dotted where concealed

Thrust or reverse fault
Dashed where approximately located or inferred; dotted where concealed. Saw-teeth on upper plate. Dip of fault plane between 30° and 80°

Anticline
Showing axis at surface. Dashed where approximately located; dotted where concealed

Syncline
Showing axis at surface. Dashed where approximately located; dotted where concealed

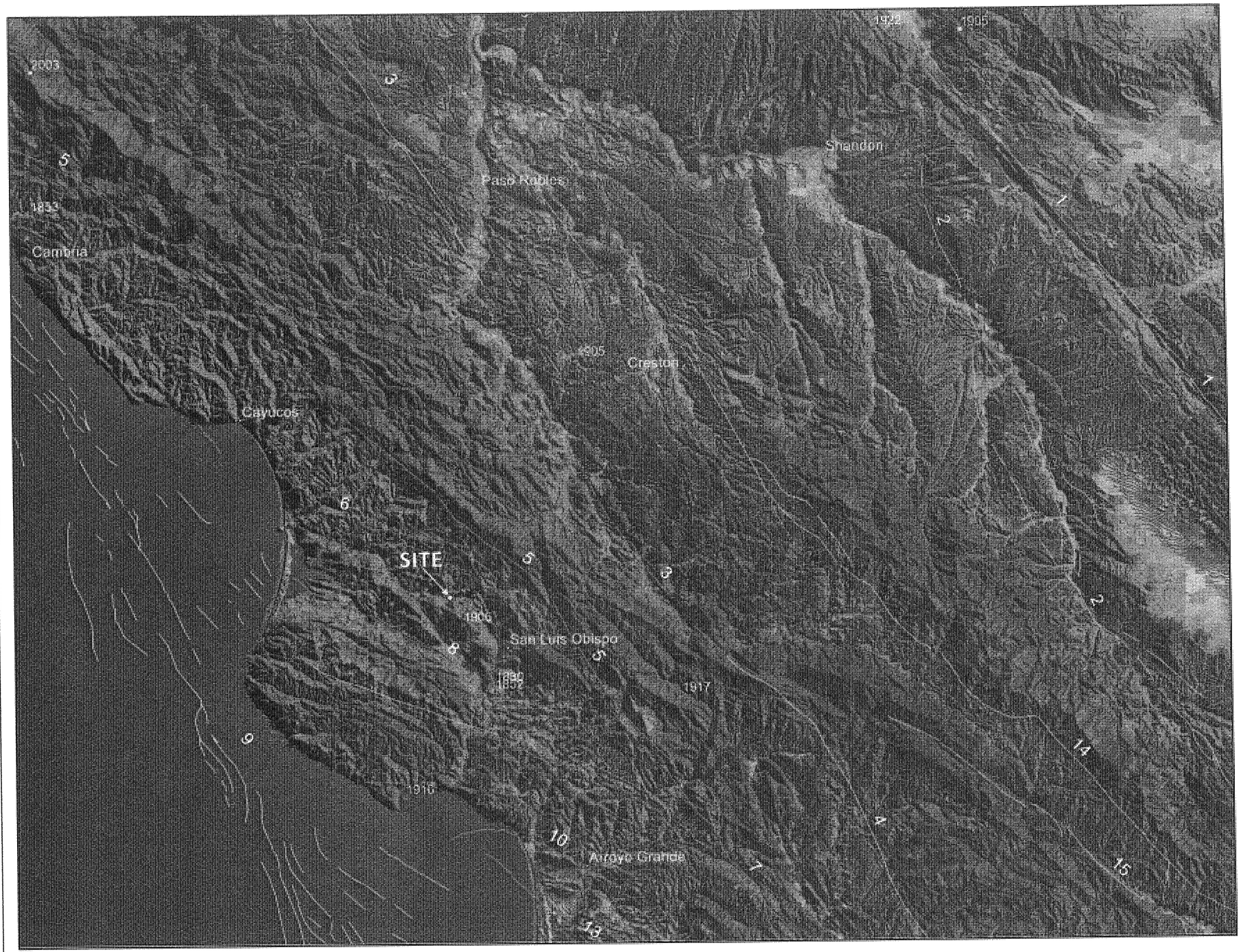
30 90
Horizontal Inclined Vertical
Strike and dip of beds

N

Approx. Scale: 1" = 1200'

**Earth Systems Pacific**
**4378 Old Santa Fe Road, San Luis Obispo, CA 93401**
**March 2015**

**(805) 544-3276 - (805) 544-1786 Fax**
**www.earthsysems.com - e-mail: esp@earthsystems.com**
**SL-17540-SA**




# HISTORICAL EARTHQUAKE/ FAULT MAP

**CUESTA COLLEGE - SAN LUIS OBISPO CAMPUS**
**INSTRUCTIONAL BUILDING**
**Highway 1**
**San Luis Obispo, California**

## LEGEND

- Historic rupture (<200 years)
- Holocene fault (<10,000 years)
- Late Quaternary (<700,000 years)
- Quaternary fault (<1.6 million)

### HISTORICAL EARTHQUAKE MAGNITUDE

5.0 to 5.9 6.0 to 6.9 7.0 to 7.9

### FAULTS

| | | | |
|---|---|---|---|
| 1 | San Andreas | 11 | Casmalia |
| 2 | San Juan | 12 | Lions Head |
| 3 | Rinconada | 13 | Oceano |
| 4 | East Huasna | 14 | La Panza |
| 5 | Oceanic | 15 | South Cuyama |
| 6 | Cambria | | |
| 7 | West Huasna | | |
| 8 | Los Osos | | |
| 9 | Hosgri-San Simeon | | |
| 10 | San Luis Range | | |

REFERENCES

Blake, T.F., EQSEARCH, 2000, updated 2012
Jennings, C.W. & Bryant, W.A., 2010

N

(Approximate Scale: 1" = 6 miles)

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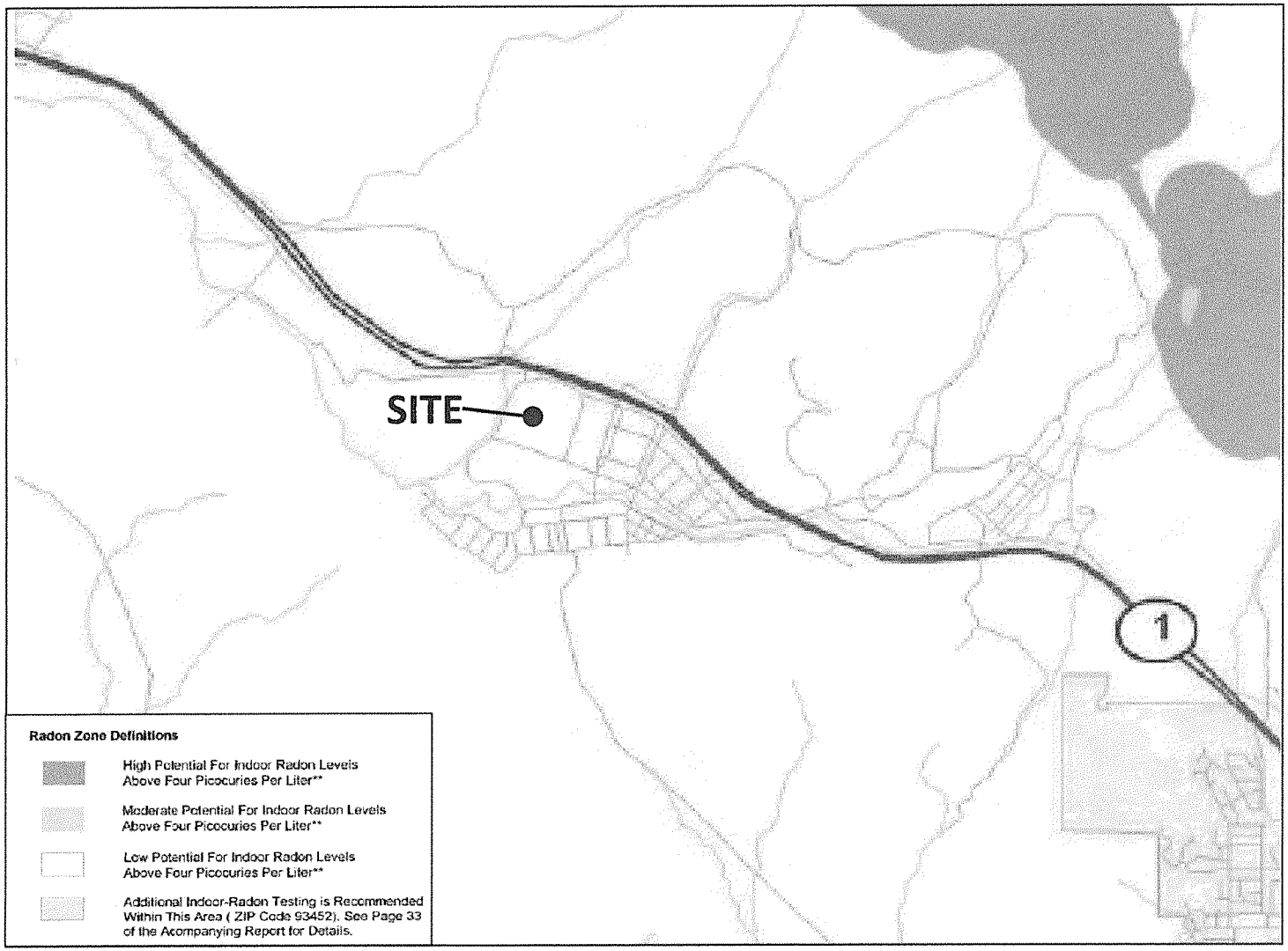
March 2015

SL -17540-SA

# RADON MAP

**CUESTA COLLEGE - SAN LUIS OBISPO CAMPUS**
**INSTRUCTIONAL BUILDING**
**Highway 1**
**San Luis Obispo, California**




**EARTH SYSTEMS PACIFIC**
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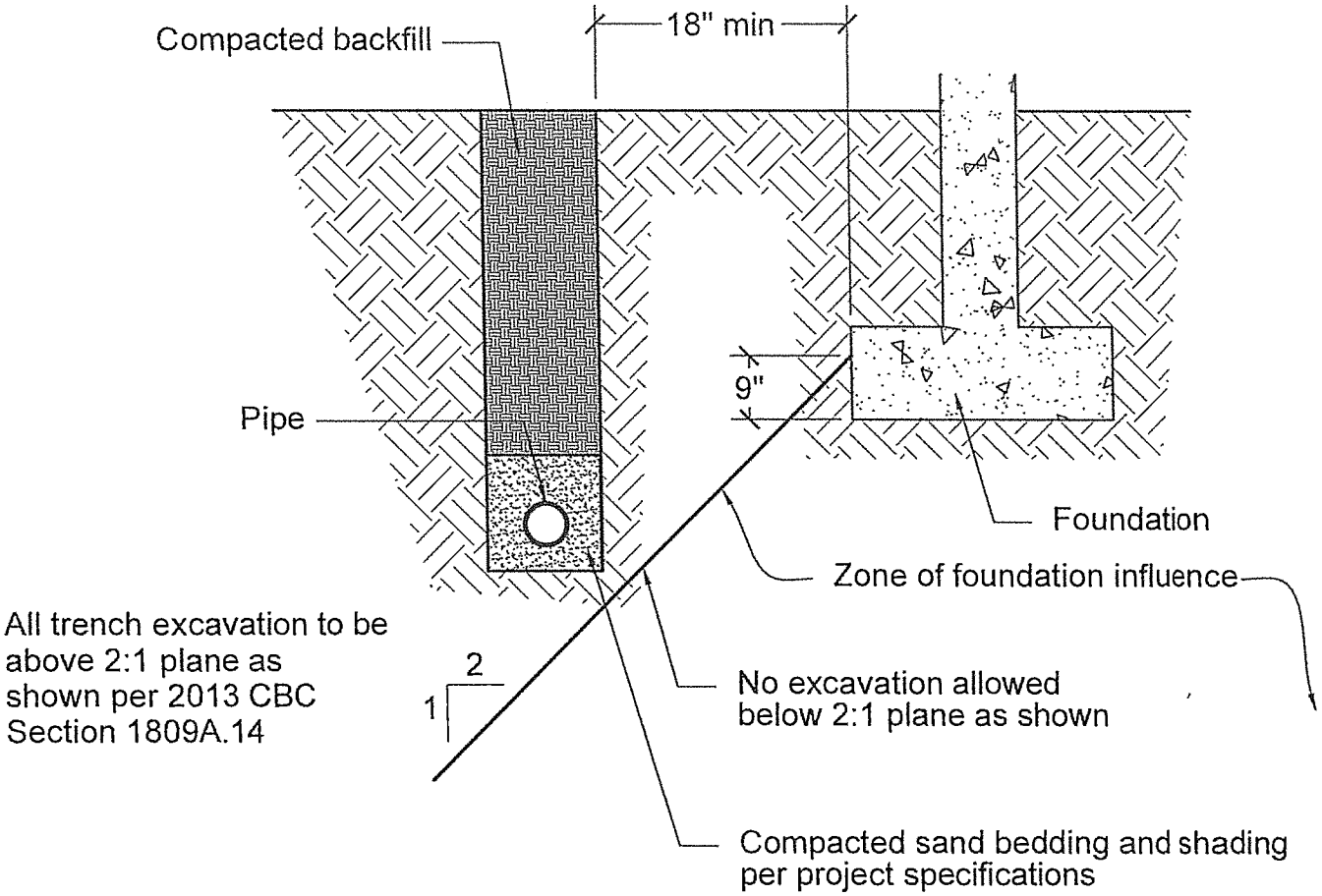
March 2015
SL-17540-SA

## APPENDIX E

Typical Detail A: Pipe Parallel to Foundations

# TYPICAL DETAIL A
## PIPE PLACED PARALLEL TO FOUNDATIONS*




**SCHEMATIC ONLY**
NOT TO SCALE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# Appendix C

*Response to Comments*

# COMMENTS and RESPONSES

## INTRODUCTION

Public review of the Draft Initial Study-Mitigated Negative Declaration (IS-MND) for the Cuesta College SLO Campus Instructional Building Project began on July 8, 2015 and ended on August 10, 2015. San Luis Obispo County Community College District received one comment letter on the Draft IS-MND. The comment letter and District's response follows. Each comment letter has been numbered sequentially and each separate issue raised by the commenter, if more than one, has been assigned a number. The responses to each comment identify first the number of the comment letter, and then the number assigned to each issue (1.2, for example, indicates that the response is for the second issue raised in comment letter number one).

Where a comment results in a change to the IS-MND text, a notation is made in the response indicating that the text is revised. Changes in text are signified by strikeouts (~~strikeouts~~) where text is removed and by underlines (<u>underlines</u>) where text is added.

Additional clerical revisions are also shown in the Final IS-MND in strikeout and underline format.

The comment letter was received from the following entity:

1. State of California Governor's Office of Planning and Research, State Clearinghouse and Planning Unit

Letter No. 1

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Edmund G. Brown Jr.
Governor

Ken Alex
Director

August 10, 2015

Terry Reece
Cuesta College - San Luis Obispo Community College District
P.O. Box 8106, Highway 1
San Luis Obispo, CA 93403-8106

Subject: Cuesta College SLO Campus Instructional Building Project
SCH#: 2015071020

Dear Terry Reece:

The State Clearinghouse submitted the above named Mitigated Negative Declaration to selected state agencies for review. The review period closed on August 7, 2015, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

# Document Details Report
## State Clearinghouse Data Base

| | |
|---|---|
| *SCH#* | 2015071020 |
| *Project Title* | Cuesta College SLO Campus Instructional Building Project |
| *Lead Agency* | Cuesta College |

| | |
|---|---|
| *Type* | MND Mitigated Negative Declaration |
| *Description* | The project involves construction of a two-story, approximately 32,500 gsf instructional building on the Cuesta College SLO campus in the County of San Luis Obispo. The project would not affect enrollment at Cuesta College. Five existing modular classroom structures located on the project site would be demolished to accommodate the new instructional building. Construction is anticipated to begin in late 2015. The Cuesta College campus is located south of Cabrillo Highway on the northwestern boundary of the City. The project site is located adjacent to the existing Faculty Office Building and the Children's Center Building. |

### Lead Agency Contact

| | | | |
|---|---|---|---|
| *Name* | Terry Reece | | |
| *Agency* | Cuesta College - San Luis Obispo Community College District | | |
| *Phone* | 805 546 3283 | *Fax* | |
| *email* | | | |
| *Address* | P.O. Box 8106, Highway 1 | | |
| *City* | San Luis Obispo | *State* CA | *Zip* 93403-8106 |

### Project Location

| | | | | |
|---|---|---|---|---|
| *County* | San Luis Obispo | | | |
| *City* | San Luis Obispo | | | |
| *Region* | | | | |
| *Lat / Long* | 35° 19' 45" N / 120° 44' 37" W | | | |
| *Cross Streets* | Highway 1 and Hollister Road | | | |
| *Parcel No.* | | | | |
| *Township* | | *Range* | *Section* | *Base* |

### Proximity to:

| | |
|---|---|
| *Highways* | Hwy 1 |
| *Airports* | |
| *Railways* | |
| *Waterways* | |
| *Schools* | Cuesta College |
| *Land Use* | Public Facilities/Public Facilities |

| | |
|---|---|
| *Project Issues* | Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Landuse; Cumulative Effects |
| *Reviewing Agencies* | Resources Agency; Department of Fish and Wildlife, Region 4; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 5; Air Resources Board; Regional Water Quality Control Board, Region 3; Department of Toxic Substances Control; Native American Heritage Commission |

*Date Received* 07/09/2015 *Start of Review* 07/09/2015 *End of Review* 08/07/2015

Note: Blanks in data fields result from insufficient information provided by lead agency.

**Letter 1: State of California Governor's Office of Planning and Research, State Clearinghouse and Planning Unit, August 10, 2015**

1.1. The commenter notes that the San Luis Obispo County Community College District is in compliance with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. No revisions to the IS-MND are required based on this comment. However, the comment will be forwarded to the San Luis Obispo County Community College District (SLOCCCD) decision-makers for their consideration.

# Appendix D

*Mitigation Monitoring and Reporting Program*

# CUESTA COLLEGE SLO CAMPUS INSTRUCTIONAL BUILDING PROJECT

# MITIGATION MONITORING AND REPORTING PROGRAM

CEQA requires that a reporting or monitoring program be adopted for the conditions of project approval that are necessary to mitigate or avoid significant effects on the environment (Public Resources Code 21081.6). This mitigation monitoring and reporting program is designed to ensure compliance with adopted mitigation measures during project implementation. For each mitigation measure recommended in the Final Initial Study-Mitigated Negative Declaration (Final IS-MND), specifications are made herein that identify the action required and the monitoring that must occur. In addition, a responsible agency is identified for verifying compliance with individual conditions of approval contained in this Mitigation Monitoring and Reporting Program.

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification | | |
|---|---|---|---|---|---|---|---|
| | | | | | Initial | Date | Comments |
| ***BIOLOGICAL RESOURCES*** | | | | | | | |
| **BIO-1 Native/Breeding Bird Protection.** To avoid impacts to nesting birds, including birds protected under the Migratory Bird Treaty Act, all initial ground disturbing activities including tree removal should be limited to the time period between August 16 and January 31 (i.e., outside the nesting season) if feasible. If initial site disturbance, grading, and vegetation removal cannot be conducted during this time period, a pre-construction survey for active nests within the project site shall be conducted by a qualified biologist at the site no more than two weeks prior to any construction activities. If an active bird nest is located, the nest site shall be fenced at a distance commensurate with the particular species and in consultation with the California Department of Fish and Wildlife (CDFW) until juveniles have fledged and when there is no evidence of a second attempt at nesting. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing. Construction personnel shall be instructed on the sensitivity of the area. The project proponent shall record the results of the recommended protective measures described above to document compliance with applicable state and federal laws pertaining to protection of native birds. | 1. Limit all initial ground disturbing activities, including tree removal, to the time period between August 16 and January 31.<br>2. A qualified biologist shall prepare a pre-construction survey if initial site disturbance cannot be conducted during the time specified above.<br>3. The project proponent shall record the results of protective measures to document compliance with applicable state and federal laws pertaining to protection of native birds. | 1. Monitor ground disturbing activities schedule prior to construction.<br>2. Review pre-construction survey no more than two weeks prior to construction<br>3. Review record of protective measures upon notice of located active bird nests. | Once | SLO County Community College District | | | |
| **BIO-2 Tree Protection and Replacement.** Existing trees on and adjacent to the project site shall be avoided through setbacks and installation of protective fencing to the extent feasible during demolition and construction. Trees that cannot be avoided and must be removed due to the proposed project shall be replaced at a rate of one native tree planted for | 1. Existing trees on and adjacent to the project site shall be avoided and trees that cannot be avoided and must be removed shall be replaced at a rate of one native tree planted for every one mature tree removed. | 1. Review of tree protection and replacement measures during construction. | 1. Periodically throughout construction.<br>2. Periodically for seven years or until stasis has been | SLO County Community College District | | | |

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification | | |
|---|---|---|---|---|---|---|---|
| | | | | | Initial | Date | Comments |
| every one mature tree removed. Replacement trees shall be installed on-site or at an approved off-site location under the direction of a certified arborist. A restoration and monitoring program shall be developed and implemented for a minimum of seven years or until stasis has been determined by certified arborist. | 2. The applicant shall develop and implement a tree restoration and monitoring program. | 2. Review of tree restoration and monitoring program for a minimum of seven years or until stasis has been determined. | determined. | | | | |
| ***CULTURAL RESOURCES*** | | | | | | | |
| **CR-1 Construction Monitoring.** A qualified archaeologist and paleontologist shall monitor all groundbreaking activities within the project site. In the event that archaeological and historic artifacts are encountered during project construction, all work in the vicinity of the find will be halted until such time as the find is evaluated by a qualified archaeologist and appropriate mitigation (e.g., curation, preservation in place, etc.), if necessary, is implemented. After the find has been appropriately mitigated consistent with Mitigation Measure CR-2 or Mitigation Measure CR-3, as appropriate, work in the area may resume. | A qualified archaeologist and paleontologist shall monitor all groundbreaking activities within the project site. In the event that archaeological and historic artifacts are encountered during project construction, all work in the vicinity of the find will be halted until such time as the find is evaluated by a qualified archaeologist and MM CR-2 or MM CR-3, is implemented. | Review of construction monitoring activities during construction. | Periodically throughout construction activities. | SLO County Community College District | | | |
| **CR-2 Procedure for Treatment of Uncovered Cultural Resources.** If buried cultural resources are uncovered during construction, all work will be halted in the vicinity of the archaeological discovery until a qualified archaeologist can visit the site of discovery and assess the significance of the cultural resource. In the event that any artifact or an unusual amount of bone, or shell is | The lead agency will halt all work if cultural resources or any artifact or an unusual amount of bone, or shell is encountered during construction until the find can be evaluated by a qualified archaeologist/ paleontologist. If the resources are found to be significant, they will be avoided or | Review of compliance with procedures for treatment of uncovered cultural resources upon discovery. | Once | SLO County Community College District | | | |

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification | | |
|---|---|---|---|---|---|---|---|
| | | | | | Initial | Date | Comments |
| encountered during construction, work will be immediately stopped and relocated to another area. The lead agency will stop construction within 100 feet of the exposed resource until a qualified archaeologist/paleontologist can evaluate the find (see 36 CFR 800.11.1 and CCR, Title 14, Section 15064.5[f]). Examples of such cultural materials might include: ground stone tools such as mortars, bowls, pestles, and manos; chipped stone tools such as projectile points or choppers; flakes of stone not consistent with the immediate geology such as obsidian or fused shale; historic trash pits containing bottles and/or ceramics; or structural remains. If the resources are found to be significant, they will be avoided or will be mitigated consistent with State Historic Preservation Office (SHPO) Guidelines. | will be mitigated consistent with State Historic Preservation Office (SHPO) Guidelines. | | | | | | |
| **CR-3 Procedure for Accidental Discovery of Human Remains.** In the event of an accidental discovery of any human remains, the steps and procedures specified in Health and Safety Code Section 7050.5, California Environmental Quality Act (CEQA) Section 15064.5(e), and Public Resources Code Section 5097.98 will be implemented. No further excavation or disturbance of the area where the remains are discovered and a nearby area reasonably suspected to overlie adjacent remains is allowed until the coroner is contacted and the appropriate steps taken pursuant to Health and Safety Code §7050.5 and Public Resource Code §5097.98. If the coroner determines the remains to be Native American, the coroner will contact the Native American Heritage Commission (NAHC) within 24 hours. If Native American human remains are discovered during project construction, it will be necessary to comply with state laws relating to the | In the event of an accidental discovery of any human remains, the steps and procedures specified in Health and Safety Code Section 7050.5, California Environmental Quality Act (CEQA) Section 15064.5(e), and Public Resources Code Section 5097.98 will be implemented. If Native American human remains are discovered during project construction, the applicant must comply with state laws relating to the disposition of Native American burials that are under the jurisdiction of the NAHC (Pub. Res. Code Section 5097) | Review of compliance with procedures for accidental discovery of human remains upon discovery. | Once | SLO County Community College District | | | |

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification | | |
|---|---|---|---|---|---|---|---|
| | | | | | Initial | Date | Comments |
| disposition of Native American burials that are under the jurisdiction of the NAHC (Pub. Res. Code Section 5097). For remains of Native American origin, no further excavation or disturbance will take place in the area where the remains are discovered and a nearby area reasonably suspected to overlie adjacent remains until the most likely descendant of the deceased Native American(s) has made a recommendation to the landowner or the person responsible for the excavation work regarding means of treating or disposing of the human remains and any associated grave goods, with appropriate dignity, as provided in the Pub. Res. Code Section 5097.98; or the NAHC is unable to identify a most likely descendant or the descendant fails to make a recommendation within 48 hours after being notified. In consultation with the most likely descendant, the project archaeologist and the lead agency will determine a course of action regarding preservation or excavation of Native American human remains, and this recommendation will be implemented expeditiously. If a most likely descendent cannot be located or does not make a recommendation, the project archaeologist and the lead agency will determine a course of action regarding preservation or excavation of Native American human remains, which will be submitted to the NAHC for review prior to implementation. | | | | | | | |
| **CR-1 Construction Monitoring.** A qualified archaeologist and paleontologist shall monitor all groundbreaking activities within the project site. In the event that archaeological and historic artifacts are encountered during project construction, all work in the vicinity of the find will be halted until such time as the find is | A qualified archaeologist and paleontologist shall monitor all groundbreaking activities within the project site. | Review of monitoring activities during construction. | Periodically throughout construction activities. | SLO County Community College District | | | |

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification | | |
|---|---|---|---|---|---|---|---|
| | | | | | Initial | Date | Comments |
| evaluated by a qualified archaeologist and appropriate mitigation (e.g., curation, preservation in place, etc.), if necessary, is implemented. After the find has been appropriately mitigated consistent with Mitigation Measure CR-2 or Mitigation Measure CR-3, as appropriate, work in the area may resume. | | | | | | | |
| ***NOISE*** | | | | | | | |
| **N-1 Construction Noise Reduction:** The following requirements shall be implemented during construction of the project:<br>• To ensure that noise emissions from construction vehicles and other equipment are limited to the minimum feasible levels, equip all noise-producing equipment and vehicles using internal combustion engines with mufflers, and air-inlet silencers where appropriate, that meet or exceed original factory specification. Equip mobile or fixed "package" equipment (e.g., arc-welders, air compressors) with shrouds and noise-control features that are readily available for that type of equipment.<br>• Install a sound barrier around the project site or adjacent classrooms or other noise-sensitive receptors within 250 feet of construction activity during operation of heavy construction equipment when adjacent classes are in session or facilities are in use. Temporary noise barriers should be made of noise-resistant material sufficient to achieve a Sound Transmission Class | All noise-producing equipment and vehicles shall be equipped with noise-control features. Temporary noise barriers shall be installed around the project site. | Review of consistency with noise-reducing requirements prior to construction. | Once | SLO County Community College District | | | |

| Mitigation Measure/ Condition of Approval | Action Required | Monitoring Timing | Monitoring Frequency | Responsible Agency | Compliance Verification | | |
|---|---|---|---|---|---|---|---|
| | | | | | Initial | Date | Comments |
| (STC) rating of STC 30 or greater, based on sound transmission loss data taken according to ASTM Test Method E90. Such a barrier may provide as much as a 10 dB insertion loss, provided it is positioned as close as possible to the noise source or to the receptors. To be effective, the barrier must be long and tall enough to completely block the line-of-sight between the noise source and the receptors. The gaps between adjacent panels must be filled-in to avoid having noise penetrate directly through the barrier. | | | | | | | |