SUPPLEMENT TO NOTICE OF EXEMPTION
Temecula Valley High School Practice Field Lighting Project

Temecula Valley Unified School District

The Temecula Valley Unified School District (District) is planning to install nighttime sports lighting to the multiuse practice field at the Temecula Valley High School campus. The proposed project is prompted by Senate Bill 328, which requires the new school start time of 8:30 am, and would allow the District to use the field in the evening hours. This Supplement to Notice of Exemption (Supplement) provides justification for the Categorical Exemption pursuant to the California Environmental Quality Act (CEQA) Guidelines under California Code of Regulations, Title 14 §§ 15300.2, 15301, 15303, 15304, and 15311.

1. EXISTING CONDITIONS

PROJECT LOCATION

Temecula Valley High School is at 31555 Rancho Vista Road in the City of Temecula, Riverside County (Assessor's Parcel Number 955-020-001). Regional access to the high school is provided by the I-15 freeway, which is approximately 1.7 miles west of the high school, as shown on Figure 1, *Regional Location*. The existing campus is approximately 65 acres and bounded by Rancho Vista Road to the north; Pauba Road to the south; Margarita Road to the west; and Linfield Christian School to the east, across the Third San Diego Aqueduct. The existing practice field is approximately 4.6 acres. The main access to the high school is provided via four driveways from Rancho Vista Road and one driveway from Margarita Road. The proposed project would disturb approximately 6,000 square feet of the existing high school campus. See Figure 2, *Local Vicinity*.

EXISTING CONDITIONS

The project site is developed with the existing grass multiuse practice field. Part of the practice field is lined as a soccer field but also serves as the outfields for two practice baseball fields. See Figure 3, *Aerial Photograph*.

SURROUNDING LAND USES

The multiuse practice field is bounded by existing high school facilities on all sides: to the north by portable classrooms, to the south by a natural hillside and the Air Force Junior Reserve Officer Training Corps Program field, to the west by a surface parking lot, and to the east by existing hardcourts and the bleachers for the varsity baseball field. The closest off-site receptor is approximately 262 feet away: the Ronald Reagan Sports Park beyond Margarita Road to the west. Margarita Road is a Major Arterial (four-lane divided, maximum two-way daily traffic volume of 36,000) with an average daily traffic volume of 25,780 for the year 2019 (Temecula 2005, 2019).

2. PROJECT DESCRIPTION

TVUSD proposes to add nighttime sports lighting to the existing multiuse practice field at Temecula Valley High School. See Figure 4, *Proposed Lighting Plan*. The practice field lighting would consist of five galvanized steel poles (three 90 feet tall, one 80 feet, and one 70 feet) with LED luminaires mounted at 70 to 90 feet. Each light pole would have 4 to 6 luminaires per pole, for a total of 25 luminaires, including a back-to-back mounting configuration for one 90-foot pole and one 70-foot pole. Average light levels for the practice field would be approximately 30.1 foot-candles (fc) for the soccer field and 15.4 fc for the surrounding grass area outside of the soccer field. The proposed lighting plan is included as Attachment A, *Proposed Lighting Plan*, to this Supplement. No additional sports program would be added that could increase participants or spectators, as shown in Table 1, *Existing and Proposed Practice Field Use Schedule*. As with the existing conditions, the newly lit practice field would be available for use by community groups after school

hours, when it is not in use by students, and during weekends, as provided by the District's use policy under the Civic Center Act.

Table 1 Existing and Proposed Practice Field Use Schedule

Use/Activity	Season (Month)	Number of Events per Season	Participants (students and coaching staff)	Spectators	Hours of Operation	
					Start	End
Existing Schedule						
Weekday Practices	Aug to June	Daily	150	0	3:30 pm	6:00 pm
Weekday Games/Events	Nov to June	2–3/wk	50	50	3:30 pm	5:00 pm
Weekend/Community Use	Year Round	1–2/wk	50	50	8:00 am	12:00 pm
Proposed Schedule						
Weekday Practices	Aug to June	Daily	150	0	3:30 pm	9:00 pm
Weekday Games/Events	Nov to June	2–3/wk	50	50	3:30 pm	9:00 pm
Weekend/Community Use	Year Round	1–2/week	50	50	8:00 am	6:00 pm

The proposed project would require limited demolition of hardscape and softscape to install lighting poles as well as trenching and backfilling for electrical utility improvements. The proposed project would disturb approximately 6,000 square feet of surface area of the approximately 65 acres of high school campus. It would remove approximately 800 square feet of concrete and 4,000 square feet of grass, fine grade 4,500 square feet, and excavate and export 183 cubic yards of soils for placement of the light poles and for trenching and backfilling for electrical utility improvements. No structural demolition would be required, and no PA system would be installed. The District is tentatively scheduled to start construction in November 2022, and the construction would take approximately six weeks.

3. REASONS WHY THE PROJECT IS EXEMPT

The proposed project is exempt from further environmental documentation under the California Environmental Quality Act (Public Resources Code §§ 21000 et seq.), categorical exemptions Class 1, Class 3, Class 4, and Class 11.

> Class 1, Existing Facilities (CEQA Guidelines § 15301), consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment or topographical features, involving negligible or no expansion of existing or former use.

The practice field already exists on the Temecula Valley High School campus. The proposed project would install five light poles on the practice field to allow for evening use of the field. The proposed project is not intended to expand the use of the existing school facility but is prompted by SB 328, which requires high schools to start no earlier than 8:30 am. Thus after-school sports activities start later, affecting how long such activities can last unless the practice field is lighted for evening use. The addition of five light poles on the existing school facility would involve negligible expansion of existing uses, and the proposed project meets the criteria for an exemption under CEQA Guidelines Section 15301. A review of the possible exceptions to the exemption, as outlined under CEQA Guidelines Section 15300.2 and discussed in Section 4, *Exceptions to an Exemption*, determined that no characteristics or circumstances would invalidate findings that the project is exempt from further analysis under CEQA.

> Class 3, New Construction or Conversion of Small Structures (CEQA Guidelines § 15303), consists of construction and location of limited numbers of new, small facilities or structures; installation of small new equipment and facilities in small structures; and the conversion of existing small structures from one use to another where only minor modifications are made in the exterior of the structure.... Examples of this

exemption include ... (d) Water main, sewage, electrical, gas, and other utility extensions, including street improvements, of reasonable length to serve such construction.

The proposed project involves the installation on the existing multiuse practice field of five light poles with a total of 25 LED luminaires, which requires the extension of electrical utilities to power the light poles. The light poles would have a total electrical load of 30.02 kilowatts. The electrical utility system meets the criteria for an exemption under CEQA Guidelines § 15303. A review of the possible exceptions to the exemption, outlined under CEQA Guidelines § 15300.2 and discussed in Section 4 of this document, determined that no characteristics or circumstances would invalidate findings that the project is exempt from further analysis under CEQA.

> Class 4, Minor Alterations to Land (CEQA Guidelines § 15304), consists of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry or agricultural purposes.

The proposed project would disturb approximately 6,000 square feet of surface area on the 65-acre campus, removing approximately 800 square feet of concrete and 4,000 square feet of grass, fine grading 4,500 square feet, and excavating and exporting 183 cubic yards of soils for placement of the light poles and for trenching and backfilling for electrical utility improvements. These improvements would be minor alterations to the existing practice field and would not involve removal of healthy, mature, and/or scenic trees. Therefore, the proposed disturbance of soils for trenching and backfilling surfaces would meet the criteria for an exemption under CEQA Guidelines § 15304. A review of the possible exceptions to the exemption, as outlined under CEQA Guidelines § 15300.2 and discussed in Section 4 of this document, determined that no characteristics or circumstances would invalidate findings that the project is exempt from further analysis under CEQA.

> Class 11, Accessory Structures (CEQA Guidelines § 15311), consists of construction, or placement of minor structures accessory to (appurtenant to) existing commercial, industrial, or institutional facilities.

The light poles are accessory structures to the existing practice field at the Temecula Valley High School. These accessory structures would not change the nature of the use but would extend use of the field into evening hours, which became necessary because of SB 328. SB 328 does not allow high schools to start before 8:30 am, and after-school sports activities will need to start later and end later. These after-school sports activities cannot continue unless the practice field is lighted for evening use. The proposed light poles are accessory structures to the existing field and meet the criteria for an exemption under CEQA Guidelines § 15311. A review of the possible exceptions to the exemption, as outlined under CEQA Guidelines § 15300.2 and discussed in Section 4 of this document, determined that no characteristics or circumstances would invalidate findings that the project is exempt from further analysis under CEQA.

4. REVIEW OF EXCEPTIONS TO THE CATEGORICAL EXEMPTION

The proposed project has been reviewed under CEQA Guidelines § 15300.2, Exceptions, for any characteristics or circumstances that might invalidate findings that the project is exempt from further CEQA analysis. Each exception is reproduced and followed by an assessment of whether that exception applies to the proposed project.

(a) Location. Classes 3, 4, 5, 6, and 11 are qualified by consideration of where the project is to be located—a project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant. Therefore, these classes are considered to apply all instances, except where the project may impact on an environmental resource of hazardous or

critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.

The project site is on the existing Temecula Valley High School campus in a suburban community in the city of Temecula. The project site is already developed and used as a grass multiuse practice field and is surrounded by the existing campus facilities on all sides. The campus does not have any sensitive biological species due to its development as a school campus, actively maintained turf field and landscape, frequent human disturbances, and absence of habitat. The project site does not support native wildlife species, and it does not have any streams or water bodies, or native habitat for wildlife species to thrive (Keane Biological Consulting 2004). The project site is within the Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP) boundary but is not in a Criteria Cell or part of any conserved or reserved lands for biological resources (RCA 2022). There is no evidence of hazardous materials on the site (see (e), below).

(b) Cumulative Impact. All exemptions for these classes are inapplicable when the cumulative impact of successive projects of the same type in the same place, over time is significant.

A cumulative impact could occur if the project would result in an incrementally considerable contribution to a significant cumulative impact in consideration of past, present, and reasonably foreseeable future projects for each resource area. Because the proposed project would accommodate existing sports programs within the boundaries of the existing high school campus, the impacts would be limited to short-term construction and would not be cumulatively considerable. Although the District would provide similar sports field lighting to two other schools (Chaparral High School and Great Oak High School), those projects would also accommodate existing sports programs for evening use due to the passage of SB 328, and would not expand the use of the fields to result in a significant operational impact. Though there could be some overlapping of construction, considering the small scale and short duration of the construction, construction impacts would not result in any unusual environmental impacts. Cumulative impacts would not be significant. This exception does not apply to the proposed project.

(c) Significant Effects. A categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances.

Aesthetics

The lighting plan with lighting systems and spill light data are included in Attachment A to this Supplement. As shown, the proposed sports lighting would primarily light the soccer field at an average soccer field light level of 30.06 fc and also provide lighting for the grass area surrounding the soccer field at an average 15.41 fc. The proposed practice field lighting is not intended to light the infield of the two ballfields. The light levels for the entire practice field, including, the soccer field, grass area, and two ballfields, are shown on page 3 of the Lighting Plan (included as Attachment A to this Supplement). As shown on page 4 of Attachment A, the maximum light levels beyond the high school campus would be 0.1 fc on the east side of Margarita Road. Page 5 of Attachment A illustrates spill light levels on the west side of Margarita Road, which is 0.0 fc. In general, as an industry standard, a spill light level of 0.8 fc for residential properties is considered a less than significant impact. Therefore, less than significant spill light impacts to off-site receptors would result from project implementation.

Air Quality

As substantiated in Attachment B, *Air Quality Technical Memorandum*, to this Supplement, the proposed project would not result in any significant impact related to air quality during construction and operation of the proposed project.

Biological Resources

The project site is part of an existing high school campus and is already serving as a multiuse practice field. Therefore, the project site is heavily disturbed by human activities, and the proposed project would not disturb any native or sensitive habitat or special status species that could potentially result in a significant impact related to biological resources due to unusual circumstances. The project site does not support native wildlife species, and it does not have any streams or water bodies or native habitat for wildlife species (Keane Biological Consulting 2004).

Noise

As substantiated in Attachment C, *Noise Technical Memorandum*, to this Supplement, the proposed project would not result in any significant impact related to noise during construction and operation of the proposed project.

Transportation

For the purposes of CEQA, transportation impacts are analyzed in terms of vehicle miles traveled (VMT). Based on the City of Temecula Traffic Impact Analysis Guidelines, the proposed project is a "locally serving public facilit[y]," and therefore may be presumed to have a less than significant impact absent substantial evidence to the contrary (Temecula 2020). Furthermore, the proposed project would accommodate the existing high school programs and community uses and would not result in a substantial traffic increase. The proposed project would allow existing athletic programs to continue without interruption even with the later start hours. The proposed project would mainly serve students already on campus, and the new lights would allow students to participate in practices and games even when daylight is gone. As shown in Table 1, *Existing and Proposed Practice Field Use Schedule*, the number of participants and spectators would not change under the proposed conditions.

No other significant environmental impacts are anticipated. There is no reasonable possibility that the project would have a significant effect on the environment due to unusual circumstances. Therefore, this exception does not apply to the proposed project.

(d) **Scenic Highways.** A categorical exemption shall not be used for a project which may result in damage to scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, within a highway officially designated as a state scenic highway.

There are no officially designated state scenic highways near Temecula Valley High School. The closest officially designated state scenic highway is California State Route 74 (SR-74)—from the western boundary of the San Bernardino National Forest (western end) to SR-111 in Palm Desert (eastern end)—approximately 22 miles to the northeast (Caltrans 2022). The closest eligible state scenic highway is Interstate 15 (I-15) between SR-76 near the San Luis Rey River (southern end) to SR-91 near Corona (northern end) (Caltrans 2022). The school is approximately 1.7 miles east of I-15. Due to the distance between the project site and scenic highways, the proposed project would not have any effect on the scenic value of officially designated or eligible scenic highways. There are no scenic resources on campus or in the surrounding community. This exception does not apply to the proposed project.

(e) Hazardous Waste Sites. A categorical exemption shall not be used for a project located on a site which is included on any list compiled pursuant to Section 65962.5 of the Government Code.

California Government Code Section 65962.5 requires the compiling of lists of the following types of hazardous materials sites: hazardous waste facilities; hazardous waste discharges for which the State Water Quality Control Board has issued certain types of orders; public drinking water wells containing detectable levels of organic contaminants; underground storage tanks with reported unauthorized releases; and solid waste disposal facilities from which hazardous waste has migrated.

Five environmental lists were searched for hazardous materials sites on the school campus and within a 500-foot radius:

» GeoTracker: State Water Resources Control Board (SWRCB 2022)

» EnviroStor: Department of Toxic Substances Control (DTSC 2022a)

» EJScreen: US Environmental Protection Agency (EPA 2022a)

» EnviroMapper: US Environmental Protection Agency (EPA 2022b)

» Solid Waste Information System (SWIS): California Department of Resources Recovery and Recycling (CalRecycle 2022)

The project site is not listed on GeoTracker, EnviroStor, EJScreen, EnviroMapper, or SWIS as hazardous materials sites. EnviroStor identifies that Temecula Valley High School was investigated for school use, but the investigation found no potential contaminants of concern, and no further action was required. Therefore, the project would not create a hazard to the public because of a hazardous materials site pursuant to Government Code § 65962.5. This exception does not apply to the proposed project.

(f) Historical Resources. A categorical exemption shall not be used for a project which may cause a substantial adverse change in the significance of historical resources.

Under Public Resources Code § 21084.1, a historical resource is a resource listed in or determined to be eligible for listing in the California Register of Historical Resources. Additionally, historical resources in a local register of historical resources are presumed to be historically or culturally significant, and a lead agency can determine whether the resource may be an historical resource.

Temecula Valley High School opened in 1985 and is the city's first high school (TVUSD 2022). A review of the National Register of Historic Places and California Historic Resources databases shows that Temecula Valley High School is not listed or identified as a historic resource (NPS 2022; OHP 2022). The Temecula General Plan Open Space / Conservation Element does not identify the school as a historic resource (Temecula 2005). Furthermore, the existing practice field does not contain any structures or objects that could qualify as a historic resource. The project would not cause significant impacts on historical resources This exception does not apply to the proposed project.

Conclusion

As substantiated in this document, the proposed project would not meet the conditions specified in § 15300.2, Exceptions, of the CEQA Guidelines, and the project is categorically exempt under Class 1, Class 3, Class 4, and Class 11.

4. REFERENCES

California Department of Resources Recycling and Recovery (CalRecycle). 2022, September 19 (accessed). SWIS Facility/Site Search. https://www2.calrecycle.ca.gov/SWFacilities/Directory/.

California Department of Transportation (Caltrans). 2022, September 19 (accessed). Scenic Highways, California State Scenic Highways, State Scenic Highway Map, California State Scenic Highway System Map. https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa.

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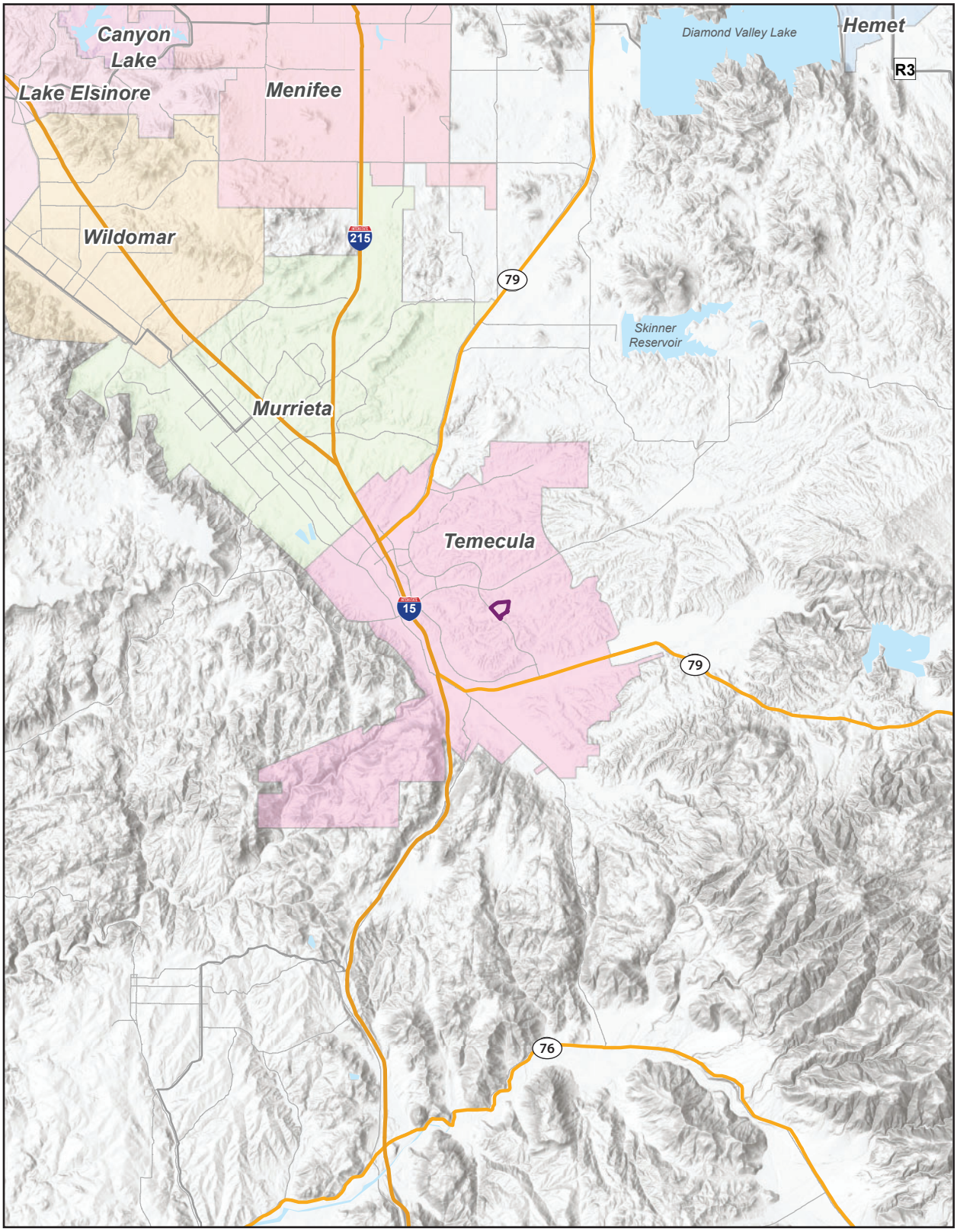
US Fish and Wildlife Service (USFWS). September 26, 2022 (accessed). National Wetlands Inventory, Wetland Mapper. https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.

Figure 1 - Regional Location

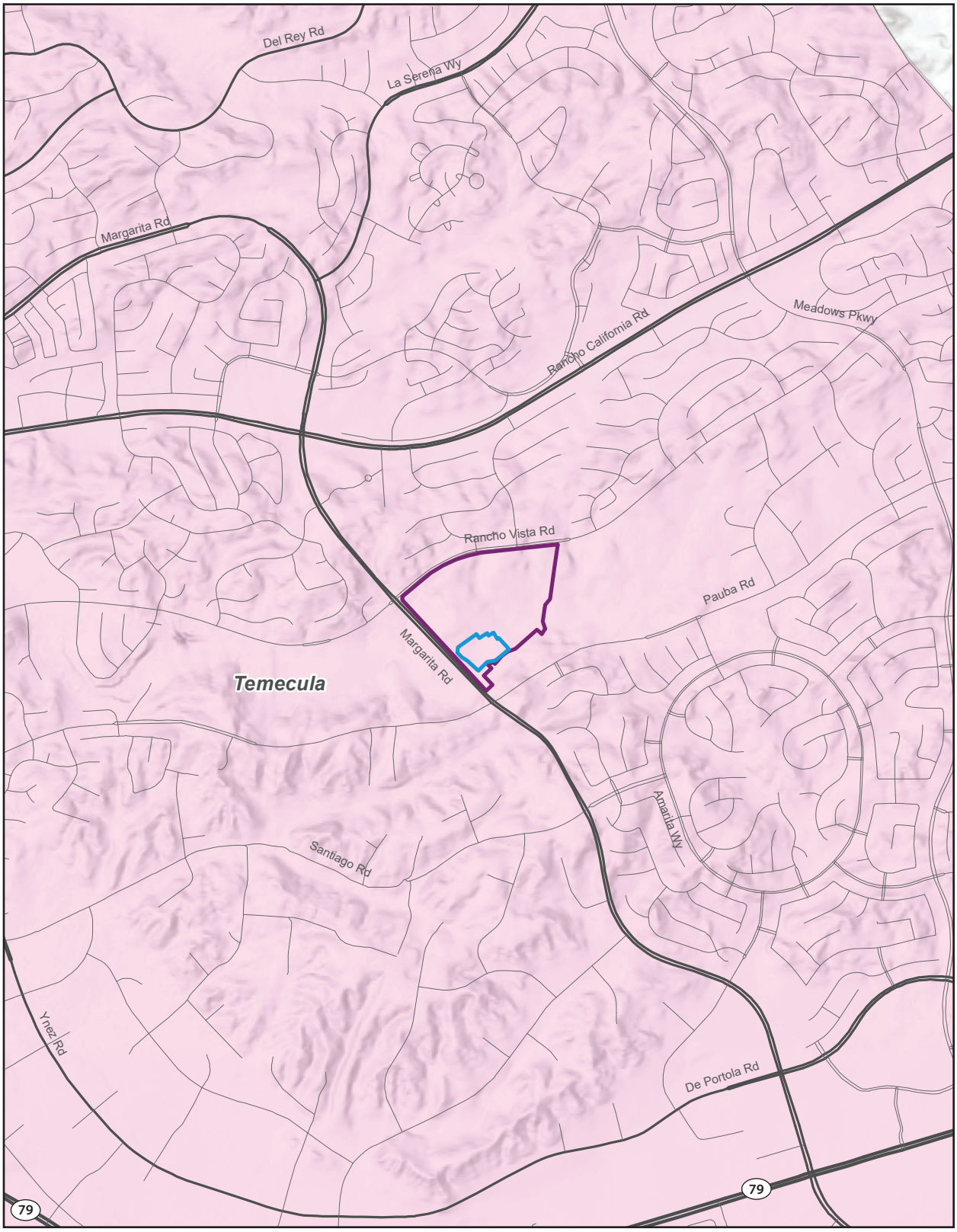


Temecula Valley High School Boundary

0 3
Scale (Miles)

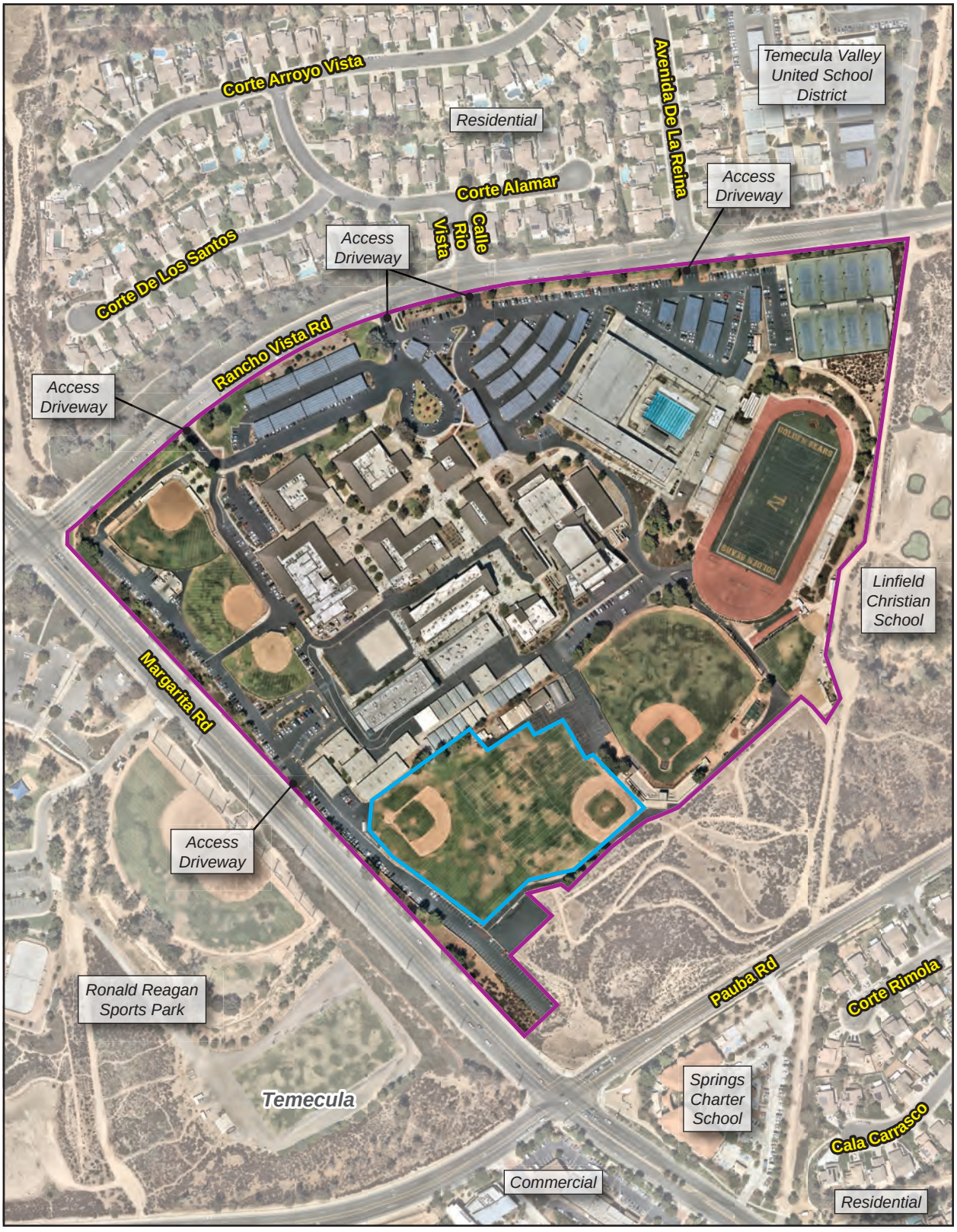
Note: Unincorporated county areas are shown in white.
Source: Generated using ArcMap, 2022.

Figure 2 - Local Vicinity



Note: Unincorporated county areas are shown in white.
Source: Generated using ArcMap, 2022.

Figure 3 - Aerial Photograph



Temecula Valley High School Boundary

Multi-use Practice Field

0 500

Scale (Feet)

Source: Nearmap Inc., 2022.

Attachment A Proposed Lighting Plan

Figure 4 - Proposed Lighting Plan

EQUIPMENT LIST FOR AREAS SHOWN

		Pole		Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	S1	90'	-	90'	TLC-LED-1500	4	4	0
1	S3	90'	-	90'	TLC-LED-1500	5	5	0
1	S4	90'	-	90'	TLC-LED-1500	4/2*	4	2
1	S5	70'	-	70'	TLC-LED-1500	4/2*	4	2
1	S6	80'	-	80'	TLC-LED-1500	4	4	0
5	TOTALS					25	21	4

GRID SUMMARY

Name:	**Grass Area**
Size:	650' x 600'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**15.41**
Maximum:	42
Minimum:	0
Avg / Min:	706.14
Max / Min:	**1943.67**
UG (adjacent pts):	4.40
CU:	0.97
No. of Points:	524

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**21**
Total Load:	30.03 kW

Temecula Valley High School Boundary Multi-use Practice Field

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

0 75
Scale (Feet)

Source: Musco Lighting, 2022.

Temecula Valley High School Multiuse Field

Temecula,CA

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
S1	90'	90'	4	TLC-LED-1500	5.72 kW	A
S3	90'	90'	5	TLC-LED-1500	7.15 kW	A
S4	90'	90'	2	FUTURE	2.86 kW	B
		90'	4	TLC-LED-1500	5.72 kW	A
S5	70'	70'	2	FUTURE	2.86 kW	B
		70'	4	TLC-LED-1500	5.72 kW	A
S6	80'	80'	4	TLC-LED-1500	5.72 kW	A
5			***25***		***35.75 kW***	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Soccer Area	30.03 kW	21
B	Amphitheater	5.72 kW	4

Fixture Type Summary

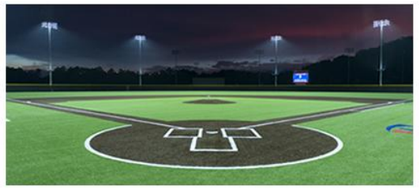
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-LED-1500	LED 5700K - 75 CRI	1430W	160,000	>120,000	>120,000	>120,000	21

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Blanket Grid	Horizontal Illuminance	0.87	0	18	16077.66		A	21
Grass Area	Horizontal Illuminance	15.4	0	42	1943.67		A	21
Property Spill	Horizontal	0	0	0	0.00		A	21
Property Spill	Max Candela (by Fixture)	183	2.08	912	438.55	88.12	A	21
Property Spill	Max Vertical Illuminance Metric	0	0	0.01	0.00		A	21
Soccer	Horizontal Illuminance	30.1	23	40	1.77	1.31	A	21

From Hometown to Professional



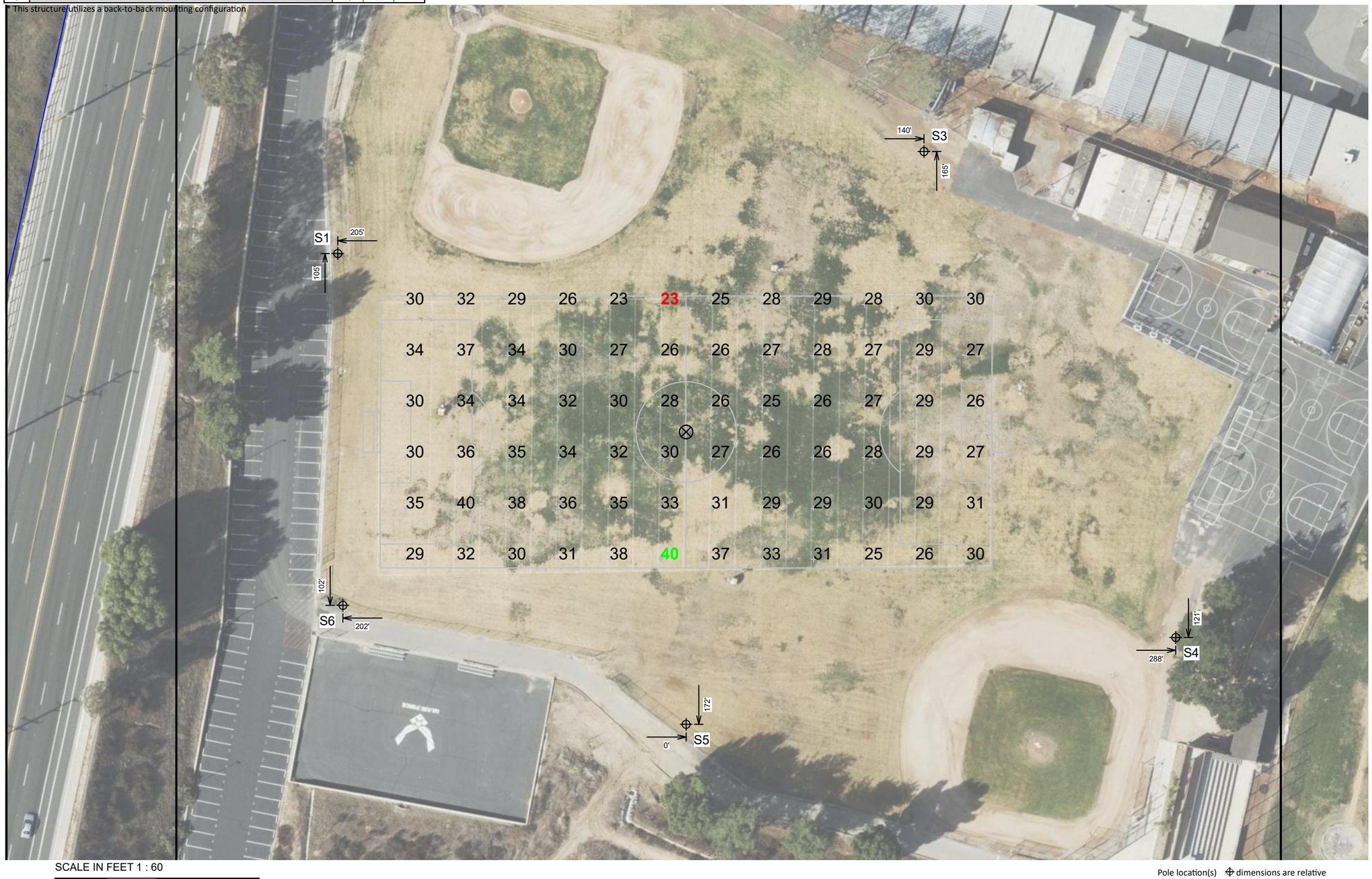
ENGINEERED DESIGN By: H.Sabers · File #219301B · 26-May-22

We Make It Happen.

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	S1	90'	-	90'	TLC-LED-1500	4	4	0
1	S3	90'	-	90'	TLC-LED-1500	5	5	0
1	S4	90'	-	90'	TLC-LED-1500	4/2*	4	2
1	S5	70'	-	70'	TLC-LED-1500	4/2*	4	2
1	S6	80'	-	80'	TLC-LED-1500	4	4	0
5	TOTALS					25	21	4

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 60

0' 60' 120'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: H.Sabers · File #219301B · 26-May-22

Temecula Valley High School Multiuse Field
Temecula,CA

GRID SUMMARY

Name:	**Soccer**
Size:	360' x 160'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**30.06**
Maximum:	40
Minimum:	23
Avg / Min:	1.33
Max / Min:	**1.77**
UG (adjacent pts):	1.27
CU:	0.59
No. of Points:	72

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**21**
Total Load:	30.03 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

We Make It Happen.

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	S1	90'	-	90'	TLC-LED-1500	4	4	0
1	S3	90'	-	90'	TLC-LED-1500	5	5	0
1	S4	90'	-	90'	TLC-LED-1500	4/2*	4	2
1	S5	70'	-	70'	TLC-LED-1500	4/2*	4	2
1	S6	80'	-	80'	TLC-LED-1500	4	4	0
5	TOTALS					25	21	4

* This structure utilizes a back-to-back mounting configuration

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: H.Sabers · File #219301B · 26-May-22

Temecula Valley High School Multiuse Field
Temecula,CA

GRID SUMMARY

Name:	**Grass Area**
Size:	650' x 600'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**15.41**
Maximum:	42
Minimum:	0
Avg / Min:	706.14
Max / Min:	**1943.67**
UG (adjacent pts):	4.40
CU:	0.97
No. of Points:	524

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**21**
Total Load:	30.03 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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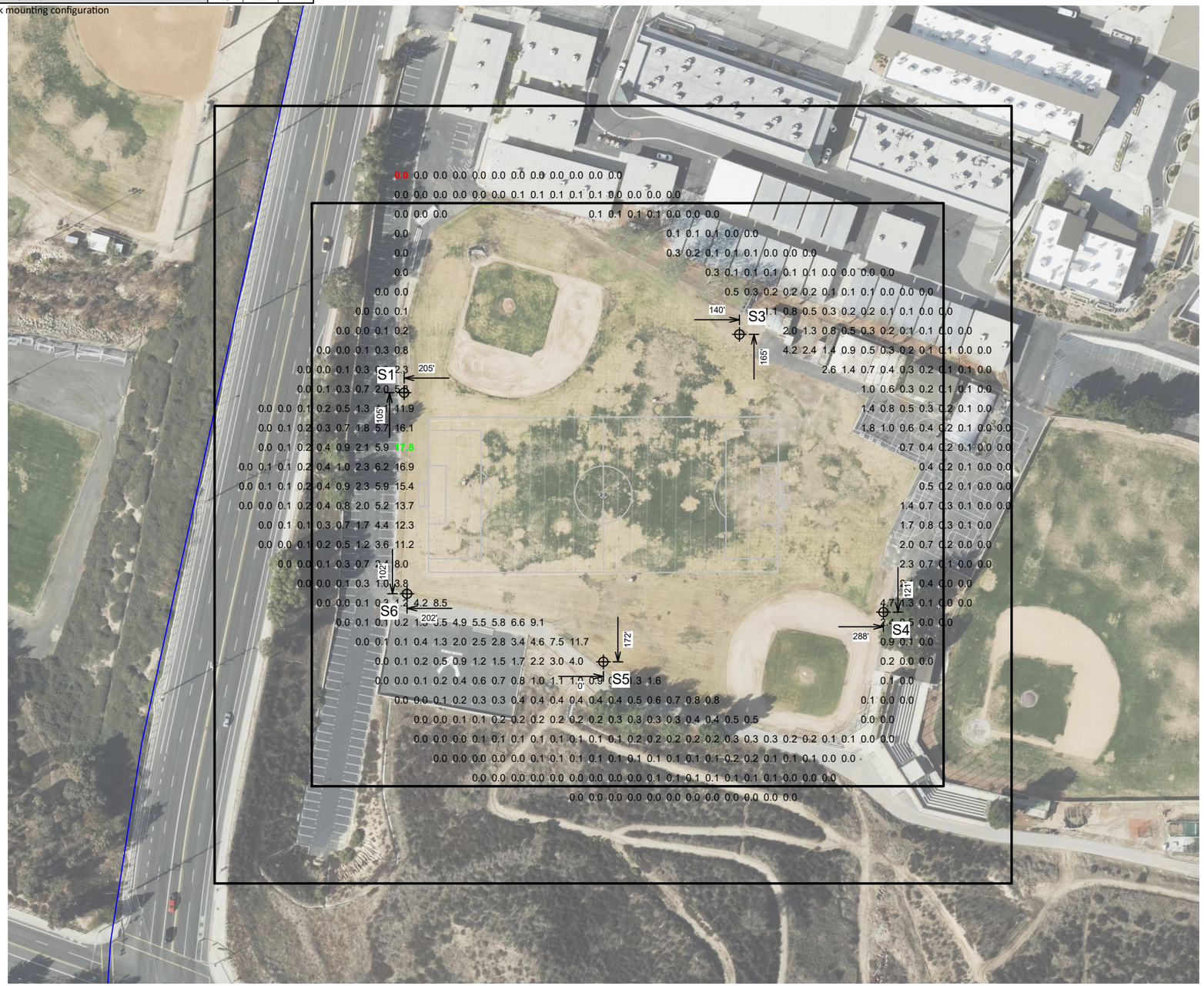
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	S1	90'	-	90'	TLC-LED-1500	4	4	0
1	S3	90'	-	90'	TLC-LED-1500	5	5	0
1	S4	90'	-	90'	TLC-LED-1500	4/2*	4	2
1	S5	70'	-	70'	TLC-LED-1500	4/2*	4	2
1	S6	80'	-	80'	TLC-LED-1500	4	4	0
5	TOTALS					25	21	4

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 120

0' 120' 240'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: H.Sabers · File #219301B · 26-May-22

Temecula Valley High School Multiuse Field
Temecula,CA

GRID SUMMARY

Name:	**Blanket Grid**
Size:	820' x 800'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.87**
Maximum:	18
Minimum:	0
Avg / Min:	783.67
Max / Min:	**16077.66**
UG (adjacent pts):	29.50
CU:	0.04
No. of Points:	474

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**21**
Total Load:	30.03 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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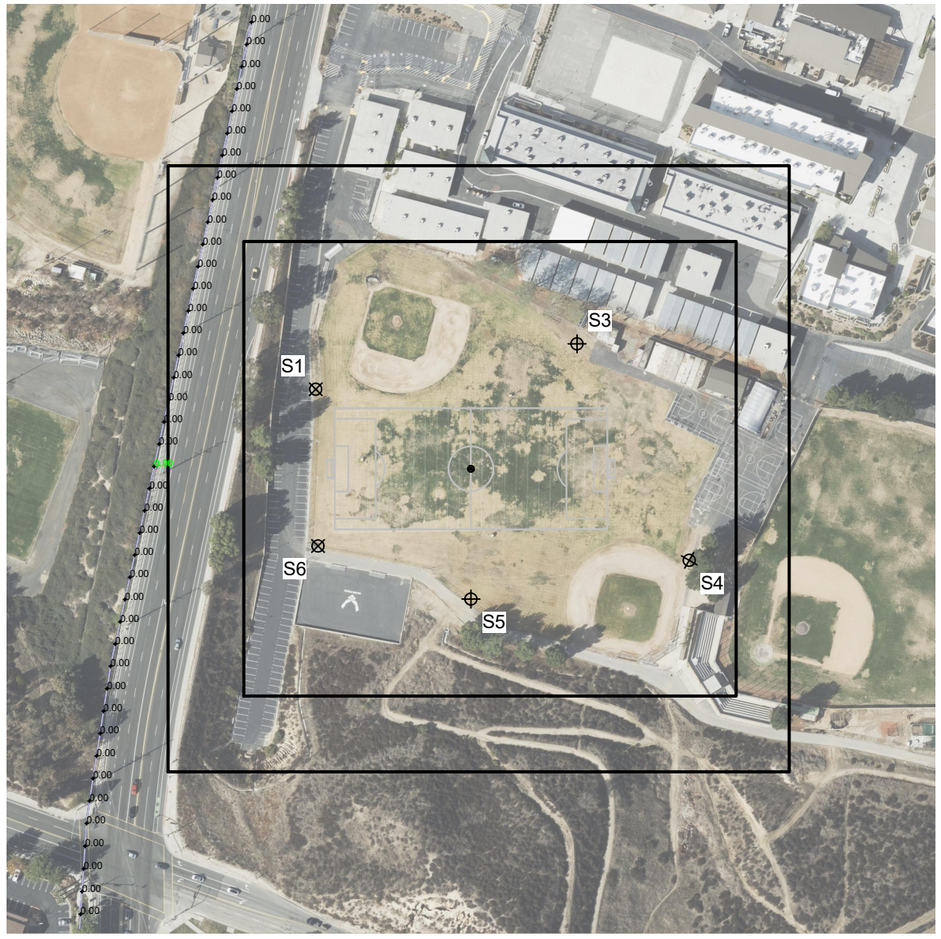
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	S1	90'	-	90'	TLC-LED-1500	4	4	0
1	S3	90'	-	90'	TLC-LED-1500	5	5	0
1	S4	90'	-	90'	TLC-LED-1500	4/2*	4	2
1	S5	70'	-	70'	TLC-LED-1500	4/2*	4	2
1	S6	80'	-	80'	TLC-LED-1500	4	4	0
5	TOTALS					25	21	4

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 200

0' 200' 400'

ENGINEERED DESIGN By: H.Sabers · File #219301B · 26-May-22

Temecula Valley High School Multiuse Field
Temecula,CA

GRID SUMMARY

Name:	**Property Spill**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	0.0006
Maximum:	0.00
Minimum:	0.00
No. of Points:	41

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**21**
Total Load:	30.03 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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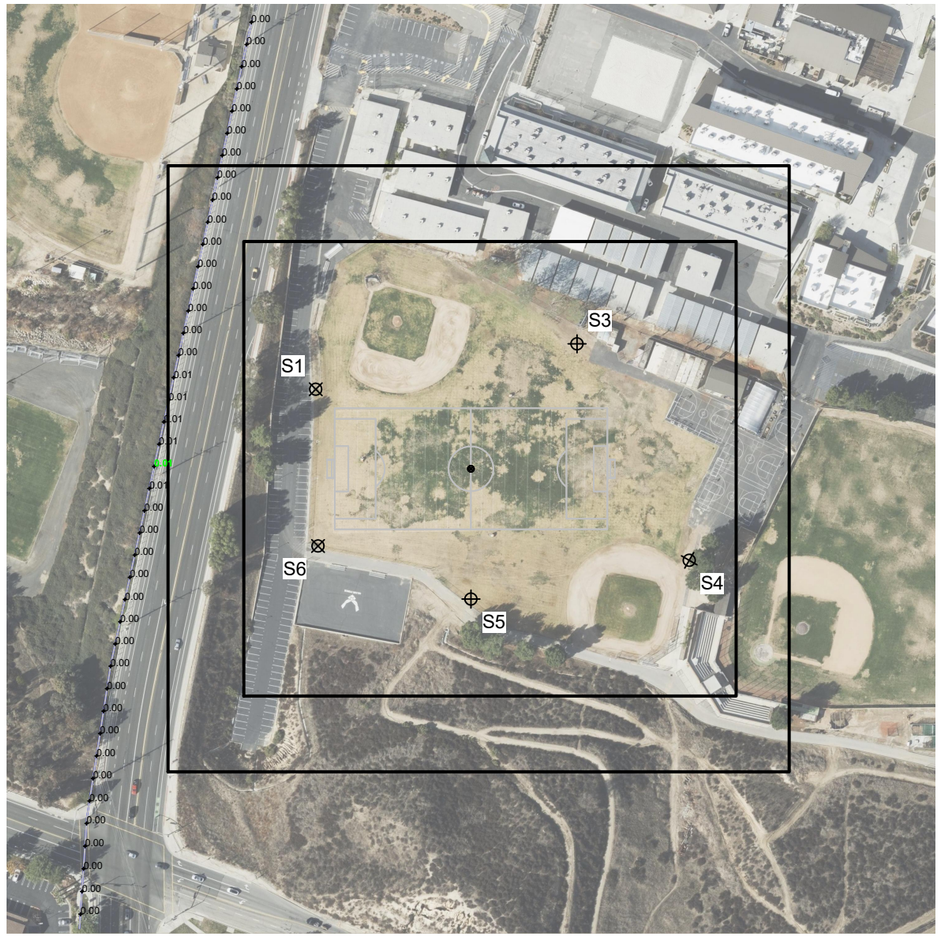
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	S1	90'	-	90'	TLC-LED-1500	4	4	0
1	S3	90'	-	90'	TLC-LED-1500	5	5	0
1	S4	90'	-	90'	TLC-LED-1500	4/2*	4	2
1	S5	70'	-	70'	TLC-LED-1500	4/2*	4	2
1	S6	80'	-	80'	TLC-LED-1500	4	4	0
5	TOTALS					25	21	4

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 200

0' 200' 400'

ENGINEERED DESIGN By: H.Sabers · File #219301B · 26-May-22

Temecula Valley High School Multiuse Field
Temecula,CA

GRID SUMMARY

Name:	**Property Spill**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	0.0021
Maximum:	0.01
Minimum:	0.00
No. of Points:	41

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**21**
Total Load:	30.03 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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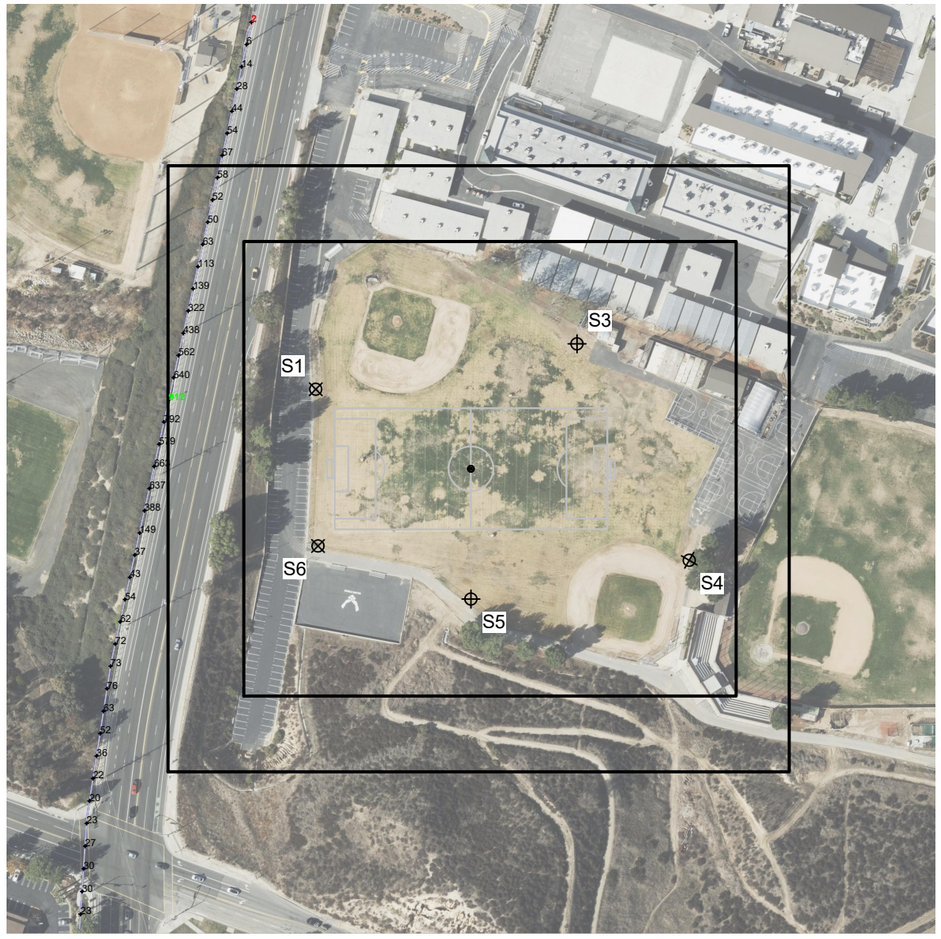
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	S1	90'	-	90'	TLC-LED-1500	4	4	0
1	S3	90'	-	90'	TLC-LED-1500	5	5	0
1	S4	90'	-	90'	TLC-LED-1500	4/2*	4	2
1	S5	70'	-	70'	TLC-LED-1500	4/2*	4	2
1	S6	80'	-	80'	TLC-LED-1500	4	4	0
5	TOTALS					25	21	4

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 200

0' 200' 400'

ENGINEERED DESIGN By: H.Sabers · File #219301B · 26-May-22

Temecula Valley High School Multiuse Field
Temecula,CA

GRID SUMMARY

Name:	**Property Spill**
Spacing:	30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

CANDELA (PER FIXTURE)

	Entire Grid
Scan Average:	183.2860
Maximum:	912.35
Minimum:	2.08
No. of Points:	41

LUMINAIRE INFORMATION

Applied Circuits:	A
No. of Luminaires:	**21**
Total Load:	30.03 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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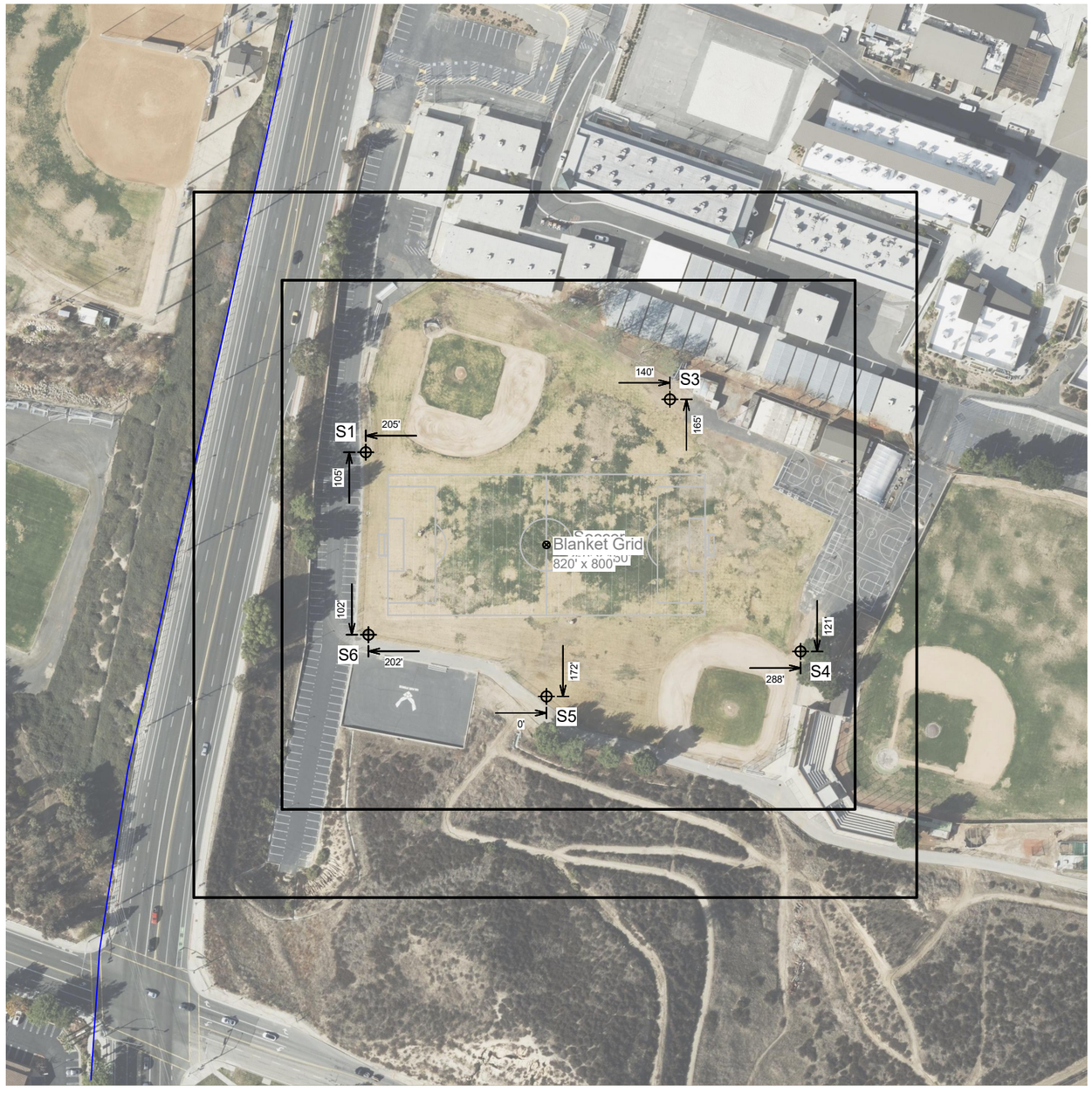
Temecula Valley High School Multiuse Field
Temecula,CA



EQUIPMENT LAYOUT

INCLUDES:
· Blanket Grid
· Grass Area
· Soccer

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE
1	S1	90'	-	90'	TLC-LED-1500	4
1	S3	90'	-	90'	TLC-LED-1500	5
1	S4	90'	-	90'	TLC-LED-1500	4/2*
1	S5	70'	-	70'	TLC-LED-1500	4/2*
1	S6	80'	-	80'	TLC-LED-1500	4
5	TOTALS					25

* This structure utilizes a back-to-back mounting configuration

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-LED-1500	8.5	8.1	7.4	6.4	5.1	4.7	3.7

SCALE IN FEET 1 : 150
0' 150' 300'

Pole location(s) ⌖ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: H.Sabers · File #219301B · 26-May-22

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Attachment B Air Quality Technical Memorandum

AIR QUALITY TECHNICAL MEMORANDUM

DATE	October 7, 2022
TO	Temecula Unified School District
ADDRESS	31350 Rancho Vista Road / Temecula, CA 92592
CONTACT	Janet Dixon | Director, Facilities Development Department
FROM	Nicole Vermilion, Principal Emily Parks, Project Planner
SUBJECT	Air Quality Technical Memorandum for the Temecula Valley High School Practice Field Lighting Project
PROJECT NUMBER	TVU-22

PlaceWorks technical staff has prepared an air quality memorandum to support the Notice of Exemption pursuant to CEQA Guidelines §§ 15300.2, 15301, 15303, 15304, and 15311 (Class 1, 3, 4, and 11 Exemptions) for the proposed new multiuse practice field lighting at Temecula Valley High School (Temecula Valley HS) (proposed project). This technical memorandum is part of the Supplement to Notice of Exemption (Supplement), and see the Supplement for additional project description details.

Thresholds of Significance

The analysis of the proposed project's air quality impacts follows the guidance and methodologies recommended in South Coast Air Quality Management District's (South Coast AQMD) *CEQA Air Quality Handbook* and the significance thresholds on South Coast AQMD's website (South Coast AQMD 1993 and 2019). The California Environmental Quality Act (CEQA) allows the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. South Coast AQMD has established thresholds of significance for regional air quality emissions for construction activities. In addition to the daily thresholds listed in Table 1 (below), projects are also subject to the ambient air quality standards (AAQS), which are addressed through the localized carbon monoxide (CO) impacts and localized significance thresholds (LSTs).

REGIONAL CONSTRUCTION SIGNIFICANCE THRESHOLDS

South Coast AQMD has adopted regional construction emissions thresholds to determine a project's cumulative impact on air quality in the South Coast Air Basin (SoCAB). Table 1, *South Coast AQMD Regional Construction Significance Thresholds*, lists thresholds that are applicable for all projects uniformly, regardless of size or scope. There is growing evidence that although ultrafine particulates (PM_{10}) contribute a very small portion of the overall atmospheric mass concentration, they represent a greater proportion of the health risk from particulate matter (PM). However, the US Environmental Protection Agency (EPA) and California Air Resources Board (CARB) have not yet adopted AAQS to regulate ultrafine particulates; therefore, South Coast AQMD has not developed thresholds for them.

Table 1 South Coast AQMD Regional Construction Significance Thresholds

Air Pollutant	Construction Phase
Reactive Organic Gases (ROGs)/ Volatile Organic Compounds (VOCs)	75 lbs/day
Nitrogen Oxides (NO_x)	100 lbs/day
Carbon Monoxide (CO)	550 lbs/day
Sulfur Oxides (SO_x)	150 lbs/day
Particulates (PM_{10})	150 lbs/day
Particulates ($PM_{2.5}$)	55 lbs/day
Lead [1]	3 lbs/day

Source: South Coast AQMD 2019.
[1] Because emissions of lead are found only in projects that are permitted by South Coast AQMD, lead is not a pollutant of concern for the project.

Projects that exceed the regional significance threshold contribute to the nonattainment designation of the SoCAB. The attainment designations are based on the AAQS, which are levels of exposure that are determined to not result in adverse health. Exposure to fine particulate pollution and ozone causes myriad health impacts, particularly to the respiratory and cardiovascular systems:

- Linked to increased cancer risk ($PM_{2.5}$, toxic air contaminants [TACs])
- Aggravates respiratory disease (O_3, $PM_{2.5}$)
- Increases bronchitis (O_3, $PM_{2.5}$)
- Causes chest discomfort, throat irritation, and increased effort to take a deep breath (O_3)
- Reduces resistance to infections and increases fatigue (O_3)
- Reduces lung growth in children ($PM_{2.5}$)
- Contributes to heart disease and heart attacks ($PM_{2.5}$)
- Contributes to premature death (O_3, $PM_{2.5}$)
- Linked to lower birth weight in newborns ($PM_{2.5}$) (South Coast AQMD 2015)

Exposure to fine particulates and ozone aggravates asthma attacks and can amplify other lung ailments such as emphysema and chronic obstructive pulmonary disease. Exposure to current levels of $PM_{2.5}$ is responsible for an estimated 4,300 cardiopulmonary-related deaths per year in the SoCAB. In addition, University of Southern California scientists responsible for a landmark children's health study found that lung growth improved as air pollution declined for children aged 11 to 15 in five communities in the SoCAB (South Coast AQMD 2015).

Mass emissions in Table 1 are not correlated with concentrations of air pollutants but contribute to the cumulative air quality impacts in the SoCAB. Therefore, regional emissions from a single project do not usually trigger a regional health impact. South Coast AQMD is the primary agency responsible for ensuring the health and welfare of individuals sensitive to elevated concentrations of air quality in the SoCAB. To achieve the health-based standards established by the EPA, South Coast AQMD prepares an air quality management plan (AQMP) that details regional programs to attain the AAQS.

CO HOTSPOTS

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard

of 9 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Hot spots are typically produced at intersections where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds. With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the SoCAB and in the state have steadily declined.

In 2007, the SoCAB was designated in attainment for CO under both the California AAQS and National AAQS. The CO hotspot analysis conducted for attainment by South Coast AQMD did not predict a violation of CO standards at the busiest intersections in Los Angeles during the peak morning and afternoon periods.[1] As identified in South Coast AQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SoCAB in previous years were a result of unusual meteorological and topographical conditions and not a result of congestion at a particular intersection (South Coast AQMD 2003). To generate a significant CO impact under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix (BAAQMD 2017).

LOCALIZED CONSTRUCTION SIGNIFICANCE THRESHOLDS

South Coast AQMD developed LSTs for emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ generated at the project site (off-site mobile-source emissions are not included in the LST analysis). LSTs represent the maximum emissions at a project site that are not expected to cause or contribute to an exceedance of the most stringent federal or state AAQS and are shown in Table 2, *South Coast AQMD Localized Construction Significance Thresholds*.

Table 2 South Coast AQMD Localized Construction Significance Thresholds

Air Pollutant (Relevant AAQS)	Concentration
1-Hour CO Standard (CAAQS)	20 ppm
8-Hour CO Standard (CAAQS)	9.0 ppm
1-Hour NO_2 Standard (CAAQS)	0.18 ppm
Annual NO_2 Standard (CAAQS)	0.03 ppm
24-Hour PM_{10} Standard – Construction (South Coast AQMD)[1]	10.4 µg/m^3
24-Hour $PM_{2.5}$ Standard – Construction (South Coast AQMD)[1]	10.4 µg/m^3
24-Hour PM_{10} Standard – Operation (South Coast AQMD)[1]	2.5 µg/m^3
24-Hour $PM_{2.5}$ Standard – Operation (South Coast AQMD)[1]	2.5 µg/m^3

Source: South Coast AQMD 2019.
ppm = parts per million; µg/m^3 = micrograms per cubic meter; CAAQS = California Air Quality Management Standards
[1] Threshold is based on South Coast AQMD Rule 403. Since the SoCAB is in nonattainment for PM_{10} and $PM_{2.5}$, the threshold is established as an allowable change in concentration. Therefore, background concentration is irrelevant.

[1] The four intersections were: Long Beach Boulevard and Imperial Highway; Wilshire Boulevard and Veteran Avenue; Sunset Boulevard and Highland Avenue; and La Cienega Boulevard and Century Boulevard. The busiest intersection evaluated (Wilshire and Veteran) had a daily traffic volume of approximately 100,000 vehicles per day, with LOS E in the morning peak hour and LOS F in the evening peak hour.

To assist lead agencies, South Coast AQMD developed screening-level LSTs to back-calculate the mass amount (lbs. per day) of emissions generated on-site that would trigger the levels shown in Table 2 for projects under 5 acres. These "screening-level" LSTs are the localized significance thresholds for all projects of 5 acres and less; however, they can be used as screening criteria for larger projects to determine whether dispersion modeling may be required in order to compare concentrations of air pollutants generated by the project to the localized concentrations shown in Table 2.

In accordance with South Coast AQMD's LST methodology, the screening-level construction LSTs are based on the acreage disturbed per day by equipment use. The screening-level construction LSTs for the project site in Source Receptor Area 26 (SRA 26), Temecula Valley, are shown in Table 3, *South Coast AQMD Screening-Level Construction Localized Significance Thresholds*.

Table 3 South Coast AQMD Screening-Level Construction Localized Significance Thresholds

	Threshold (lbs/day)[1]			
Acreage Disturbed	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Coarse Particulates (PM_{10})	Fine Particulates ($PM_{2.5}$)
≤1.00 Acres Disturbed Per Day	162	750	4.00	3.00

Source: South Coast AQMD 2008 and 2011.

Notes: In accordance with South Coast AQMD methodology, only on-site stationary sources and mobile equipment are included in the analysis. Screening level LSTs are based on duration of exposure. As a result, LSTs are based on sensitive and nonsensitive receptors who would be onsite for 8 hours or less within 82 ft (25 meters) for NO_x and CO and sensitive receptors who would be onsite for 24-hours within 82 ft (25 meters) for PM_{10}, and $PM_{2.5}$ in SRA 26.

[1] Based on preliminary information provided by the District. Where specific information for project-related construction activities or processes was not available, modeling was based on CalEEMod defaults. These defaults are based on construction surveys conducted by the South Coast AQMD.

Environmental Impacts

The Air Quality section addresses the impacts of the proposed project on ambient air quality and the exposure of people, especially sensitive individuals, to unhealthful pollutant concentrations.

The primary air pollutants of concern for which the AAQS have been established are ozone (O_3), carbon monoxide (CO), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). Areas are classified under the federal and California Clean Air Act as either in attainment or nonattainment for each criteria pollutant based on whether the AAQS have been achieved. The SoCAB, which is managed by the South Coast AQMD, is designated nonattainment for O_3 and $PM_{2.5}$ under the California and National AAQS, nonattainment for PM_{10} under the California AAQS, and nonattainment for lead (Los Angeles County only) under the National AAQS (CARB 2022).

The following describes project-related regional, localized, and odor impacts from short-term construction activities.

REGIONAL SHORT-TERM CONSTRUCTION IMPACTS

Construction activities would result in the generation of air pollutants. These emissions would primarily be 1) exhaust from off-road diesel-powered construction equipment; 2) dust generated by construction activities; 3) exhaust from on-road vehicles; and 4) off-gassing of volatile organic compounds (VOCs) from paints and asphalt.

Construction activities for the proposed project are anticipated to disturb approximately 6,000 square feet (0.14 acres) on the existing high school campus and would involve installation of five field lighting poles. Construction is anticipated to start in November 2022 and finish in December 2022 (approximately 6 weeks). Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod v.2020.4) and are based on the preliminary construction duration and equipment mix provided by the Temecula

Unified School District (District). Construction emissions modeling in Table 4, *Maximum Daily Regional Construction Emissions*, shows maximum daily emissions for NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$ from construction-related activities would be less than their respective South Coast AQMD regional significance threshold values. Therefore, project-related construction activities would not result in a cumulatively considerable net increase in criteria air pollutant emissions, and regional air quality impacts are less than significant.

Table 4 Maximum Daily Regional Construction Emissions

Construction Phase	Pollutants (lb/day)[1, 2]					
	VOC	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Year 2022						
Hardscape Demolition and Debris Haul	1	5	7	<1	<1	<1
Fine Grading and Soil Haul (Export)	<1	3	2	<1	<1	<1
Utilities Installation	<1	3	4	<1	<1	<1
Light Pole Installation	<1	4	3	<1	<1	<1
Paving	1	6	8	<1	<1	<1
Finishing and Landscaping	<1	1	2	<1	<1	<1
Maximum Daily Construction Emissions						
Maximum Daily Emissions	1	6	8	<1	<1	<1
South Coast AQMD Regional Construction Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Significant?	No	No	No	No	No	No

Source: CalEEMod v. 2020.4.

[1] Based on preliminary information provided by the District. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are derived from construction equipment surveys conducted by South Coast AQMD.

[2] Includes implementation of fugitive dust control measures required by South Coast AQMD under Rule 403, including watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

LOCALIZED SHORT-TERM CONSTRUCTION IMPACTS

The proposed project could expose sensitive receptors to elevated pollutant concentrations if it causes or significantly contributes to elevated pollutant concentration levels. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

Construction LSTs

The LSTs are based on the California AAQS, which are the most stringent AAQS to provide a margin of safety in the protection of public health and welfare. They are designed to protect sensitive receptors most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. The screening-level construction LSTs are based on the size of the project site, distance to the nearest sensitive receptor, and SRA. The nearest off-site sensitive receptors are the residences and Springs Charter Schools along Pauba Road to the south and Ronald Reagan Sports Park along Margarita Road to the west. The nearest on-site sensitive receptors include the Temecula Valley HS students. However, a worst-case distance of 82 feet (25 meters) was used to conservatively estimate the screening level LSTs for this proposed project.

Air pollutant emissions generated by construction activities would cause temporary increases in air pollutant concentrations. Table 5, *Localized Construction Emissions*, shows that the maximum daily on-site construction emissions (pounds per day) for NO_x, CO, PM_{10}, and $PM_{2.5}$ construction emissions would be less

than their respective South Coast AQMD screening-level LSTs. Therefore, project-related construction activities would not expose sensitive receptors to substantial criteria air pollutant concentrations, and localized air quality impacts would be less than significant.

Table 5 Localized Construction Emissions

Construction Activity	Pollutants(lbs/day)[1]			
	NO_X	CO	PM_{10}[2]	$PM_{2.5}$[2]
South Coast AQMD ≤1.00 Acre LST	162	750	4.00	3.00
Hardscape Demolition and Debris Haul	5	6	0.31	0.25
Fine Grading and Soil Haul (Export)	1	1	0.07	0.06
Utilities Installation	3	4	0.18	0.16
Light Pole Installation	4	3	0.22	0.20
Paving	6	7	0.30	0.28
Finishing and Landscaping	1	2	0.07	0.06
Exceeds LST?	No	No	No	No

Source: CalEEMod v. 2020.4; SCAQMD 2008 and 2011.

Notes: In accordance with South Coast AQMD methodology, only on-site stationary sources and mobile equipment are included in the analysis. Screening level LSTs are based duration of exposure. As a result, LSTs are based on sensitive and nonsensitive receptors who would be onsite for 8 hours or less within 82 ft (25 meters) for NO_x and CO and sensitive receptors who would be onsite for 24-hours within 82 ft (25 meters) for PM_{10}, and $PM_{2.5}$ in SRA 26.

[1] Based on preliminary information provided by the District. Where specific information for project-related construction activities or processes was not available, modeling was based on CalEEMod defaults. These defaults are derived from construction surveys conducted by the South Coast AQMD.

[2] Includes fugitive dust control measures required by South Coast AQMD under Rule 403, such as watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Construction Health Risk

South Coast AQMD currently does not require health risk assessments for short-term emissions from construction equipment. Emissions from construction equipment primarily consist of diesel particulate matter (DPM). In March 2015, the Office of Environmental Health Hazards Assessment (OEHHA) adopted guidance for preparation of health risk assessments, which included the development of a cancer risk factor and noncancer chronic reference exposure level for DPM over a 30-year time frame (OEHHA 2015). No short-term, acute exposure levels have been developed for DPM. South Coast AQMD currently does not require the evaluation of long-term excess cancer risk or chronic health impacts for a short-term project.

The proposed project is anticipated to be completed in approximately four weeks, which would limit the exposure to onsite and offsite receptors. Furthermore, exhaust emissions from off-road vehicles associated with project-related construction activities would not exceed the screening-level construction LSTs. Thus, construction emissions would not pose a health risk to sensitive receptors, and project-related construction health impacts would be less than significant.

CO Hotspots

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9.0 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to AAQS is typically demonstrated through an analysis of localized CO concentrations, typically produced at intersections where vehicles queue for longer periods and are subject to reduced speeds. The SoCAB has been designated as attainment under both the national and

California AAQS for CO. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact (BAAQMD 2017).

Operation of the proposed project would not generate any additional sports programs that would increase spectators and there would be no net increase in peak hour vehicle trips during the weekday. Therefore, development and operation of the proposed project would not produce the volume of traffic required (i.e., 24,000 to 44,000 peak hour vehicle trips) to generate a CO hotspot at nearby intersections.

ODORS

Operational Phase Odors

The proposed project would not result in objectionable odors. The threshold for odor is if a project creates an odor nuisance pursuant to South Coast AQMD Rule 402, Nuisance, which states:

> A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

The type of facilities that are considered to have objectionable odors include wastewater treatments plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. The proposed project does not include any of these uses and school uses typically are not associated with foul odors that constitute a public nuisance. Therefore, odor impacts would be less than significant.

Construction Phase Odors

Emissions from construction equipment, such as diesel exhaust, and volatile organic compounds from architectural coatings and paving activities may generate odors. However, these odors would be low in concentration, temporary, and would not affect a substantial number of people. Odor impacts would be less than significant.

References

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California Air Pollution Control Officers Association (CAPCOA). 2021. California Emissions Estimator Model (CalEEMod). Version 2020.4. Prepared by: BREEZE Software, A Division of Trinity Consultants in collaboration with South Coast Air Quality Management District and the California Air Districts.

California Air Resources Board (CARB). 2022, Area Designations Maps/State and National. Accessed September 7, 2022. https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations.

Office of Environmental Health Hazard Assessment (OEHHA). 2015, February. Air Toxics Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments. http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf.

South Coast Air Quality Management District (South Coast AQMD). 1993. *California Environmental Quality Act Air Quality Handbook*.

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———. 2011. Fact Sheet for Applying CalEEMod to Localized Significance Thresholds. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2.

———. 2015, Health Effects of Air Pollution. http://www.aqmd.gov/docs/default-source/publications/brochures/the-health-effects-of-air-pollution-brochure.pdf.

———. 2019, April. South Coast AQMD Air Quality Significance Thresholds. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf.

Attachments – Air Quality and Greenhouse Gas Modeling

Assumptions Worksheet

CalEEMod Inputs - Temecula Valley Unified School District Lighting Projects (3), Construction

Name:	Temecula Valley Unified School District Field Lighting Project
Project Number:	TVU-22
Project Location:	Temecula Valley, CA
County/Air Basin:	Riverside-South Coast
Climate Zone:	10
Land Use Setting:	Urban
Operational Year:	2022
Electric Utility:	Southern California Edison (SCE)
Gas Utility:	Southern California Gas Company (SoCalGas)
Air Basin:	South Coast Air Basin
Air District:	South Coast AQMD
SRA:	26

Proiect Site Acreage	50
Disturbed Site Acreage	0.14

Project Components

Demolition	***SQFT***	***Tons***
Hardscape Demoltion[1]	800	11.85
New Construction	***SQFT***	**ACRES**
New Surface Areas	5,944	0.14

Notes:

[1] SQFT of concrete demolition amount provided by the District.

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Parking	Other Non-Asphalt Surfaces	5.94	1000 sqft	0.14	5,944
				0.14	

Demolition

Component	Amount to be Demolished (Tons)	Haul Truck Capacity (Tons)[1]	Haul Distance (miles)[1]	Total Trip Ends	Duration (days)	Trip Ends/Day
Hardscape Demolition Debris Haul	11.85	20	20	2	2	1
Total	11.85			2		

Notes:

[1] CalEEMod default used.

Soil Haul [1]

Construction Activities	Volume (CY)[1]	Haul Truck Capacity (cy)[2]	Haul Distance (miles)[2]	Total Trip Ends	Total Days	Trip Ends/Day
Fine Grading soil haul (Export)	251	16	20	32	2	16

Notes:

[1] Haul volume of 183 CY of soil export provided by the District. In addition, haul includes grass removal of 3,661 SQFT with an assumption of half a foot depth for 67.80 CY of grass removal.

[2] CalEEMod default used.

Construction Mitigation

SCAQMD Rule 403

Replace Ground Cover	PM10:	5	% Reduction
	PM2.5:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph
SCAQMD Rule 1186	Clean Paved Road	9	% PM Reduction

Southern California Edison Carbon Intensity Factors[1]

	lbs/MWH
CO_2:	390.98
CH_4:	0.033
N_2O:	0.004

Notes:

[1] CalEEMod default used.

Pavement Volume to Weight Conversion

Component	Total SF of Area[1]	Assumed Thickness (foot)[2]	Debris Volume (cu. ft)	Weight of Crushed Asphalt (lbs/cf)[3]	AC Mass (lbs)	AC Mass (tons)
Asphalt Demo	800	0.333	267	89	23,704	11.85
Asphalt Demo		0.333	0	89	-	0.00
Total	800					11.85

Notes:

[1] Based on information provided by applicant.

[2] Pavements and Surface Materials. Nonpoint Education for Municipal Officials, Technical Paper Number 8. University of Connecticut Cooperative Extension System, 1999.

[3] https://www.calrecycle.ca.gov/swfacilities/cdi/Tools/Calculations

Construction Activities and Schedule Assumptions: Temecula Valley Unified School District Lighting Projects (3)

*based on overall construction duration provided by the Applicant

New Construction Schedule (CalEEMod)

Construction Activities	Start Date	End Date	CalEEMod Duration (Workday)
Hardscape Demolition	11/19/2022	11/22/2022	2
Hardscape Demolition Debris Haul	11/19/2022	11/22/2022	2
Fine Grading	11/23/2022	11/24/2022	2
Fine Grading Soil Haul	11/23/2022	11/24/2022	2
Utilities Installation	11/25/2022	12/6/2022	8
Light Pole Installation	12/7/2022	12/8/2022	2
Paving	12/9/2022	12/9/2022	1
Finishing and Landscaping	12/10/2022	12/14/2022	3

CalEEMod Construction Off-Road Equipment Inputs

Equipment Mix provided by the District

**Used CalEEMod default equipment.*

General Construction Hours: btwn 7:00 AM to 4:00 PM (with 1 hr break), Mon-Fri

Water Truck Vendor Trip Calculation

Amount of Water (gal/acre/day)[1]	Water Truck Capacity (gallons)[2]
10,000	4,000

Notes:

[1] *Based on data provided in Guidance for Application for Dust Control Permit*

Maricopa County Air Quality Department. 2005, June. Guidance for Application of Dust Control Permit. https://www.epa.gov/sites/default/files/2019-04/documents/mr_guidanceforapplicationfordustcontrolpermit.pdf)

[2] *Based on standard water truck capacity:*
McLellan Industries. 2022, January (access). Water Trucks. https://www.mclellanindustries.com/trucks/water-trucks/

[3] *Assumes that dozers, tractors/loaders/backhoes, and graders can disturb 0.50 acres per day and scrapers can disturb 1 acre per day.*

Construction Equipment Details							
Equipment Given	**CalEEMod Equipment**	**# of Equipment**	**hr/day**	**Days Equipment Onsite**	**hp**	**load factor**	**total trips/Day**
Hardscape Demolition							
Concrete Saw	Concrete/Industrial Saws	1	8	1	81	0.73	
Bob Cat T650	Tractors/Loaders/Backhoes	2	6	2	74.3	0.37	
Worker Trips/Day							8
Vendor Trips							0
Water Trucks				Acres Disturbe	1		6
Hauling Trips (TOTAL TRIPS)							0
Hardscape Demolition Debris Haul							
No additional equipment required for Asphalt Demo Debris Haul							
Worker Trips							0
Vendor Trips							0
Hauling Trips (TOTAL TRIPS)							2
Fine Grading							
Bob Cat T650	Tractors/Loaders/Backhoes	1	7	2	74.3	0.37	
Worker Trips							3
Vendor Trips							0
Water Trucks				Acres Disturbe	0.5		4
Hauling Trips (TOTAL TRIPS)							0
Fine Grading Soil Haul							
No additional equipment required for Asphalt Demo Debris Haul							
Worker Trips							0
Vendor Trips							0
Hauling Trips (TOTAL TRIPS)							32
Utilities Installation							
Backhoe - John Deere 310L	Tractors/Loaders/Backhoes	1	8	8	100	0.37	
Forklift - Skytrack 8042	Forklift	1	8	8	110	0.2	
Worker Trips							5
Vendor Trips							0
Hauling Trips (TOTAL TRIPS)							0
Light Pole Installation							
Forklift - Skytrack 8042	Forklift	2	6	4	110	0.2	
Small Crane	Crane	1	4	2	231	0.29	
Worker Trips							3
Vendor Trips							1
Hauling Trips (TOTAL TRIPS)							0

Paving[1]								
	Not Given	Cement & Mortar Mixers	4	6	1	9	0.56	
	Not Given	Pavers	1	7	1	130	0.42	
	Not Given	Rollers	1	7	1	80	0.38	
	Not Given	Tractors/Loaders/Backhoes	1	7	1	97	0.37	
	Worker Trips							18
	Vendor Trips							2
	Hauling Trips (TOTAL TRIPS)							0
Finishing and Landscaping								
	Bob Cat T650	Tractors/Loaders/Backhoes	1	8	3	74.3	0.37	
	Worker Trips							3
	Vendor Trips							0
	Hauling Trips (TOTAL TRIPS)							0

Notes:

[1] Equipment not given by District for this phase, used CalEEMod defaults. Included vendor truck trips for concrete truck.

Construction Trips Worksheet

Phase Name	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends	Total Haul Truck Trip Ends	Start Date	End Date	Workdays
Hardscape Demolition	8	6	0	0	11/19/2022	11/22/2022	2
Hardscape Demolition Debris Haul	0	0	1	2	11/19/2022	11/22/2022	2
Fine Grading	3	4	0	0	11/23/2022	11/24/2022	2
Fine Grading Soil Haul	0	0	16	32	11/23/2022	11/24/2022	2
Utilities Installation	5	0	0	0	11/25/2022	12/6/2022	8
Light Pole Installation	3	1	0	0	12/7/2022	12/8/2022	2
Paving	18	2	0	0	12/9/2022	12/9/2022	1
Finishing and Landscaping	3	0	0	0	12/10/2022	12/14/2022	3

Emissions Worksheet

Regional Construction Emissions Worksheet:

3.2 Demolition (2022)				[2]		
	ROG	NOx	CO	SO	PM10 Total	PM2.5Total
Onsite						
Off-Road Equipment	0.55	4.72	6.23	0.01	0.25	0.25
Total	**0.55**	**4.72**	**6.23**	**0.01**	**0.25**	**0.25**
Offsite						
Hauling	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.27	0.09	0.00	0.04	0.01
Worker	0.03	0.02	0.26	0.00	0.08	0.02
Total	**0.04**	**0.29**	**0.35**	**0.00**	**0.12**	**0.04**
TOTAL	***0.59***	***5.01***	***6.58***	***0.01***	***0.38***	***0.28***

3.3 Demolition Debris Haul (2022)						
	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite						
Fugitive Dust					0.05	0.01
Off-road Equipment	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.05**	**0.01**
Offsite						
Hauling	0.00	0.13	0.03	0.00	0.02	0.01
Vendor	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.13**	**0.03**	**0.00**	**0.02**	**0.01**
TOTAL	***0.00***	***0.13***	***0.03***	***0.00***	***0.07***	***0.01***

3.4 Fine Grading (2022)						
	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite						
Fugitive Dust					0.00	0.00
Off-road Equipment	0.11	1.12	1.49	0.00	0.06	0.06
Total	**0.11**	**1.12**	**1.49**	**0.00**	**0.06**	**0.06**
Offsite						
Hauling	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.18	0.06	0.00	0.03	0.01
Worker	0.01	0.01	0.10	0.00	0.03	0.01
Total	**0.02**	**0.19**	**0.16**	**0.00**	**0.06**	**0.02**
TOTAL	***0.13***	***1.30***	***1.65***	***0.00***	***0.12***	***0.07***

3.5 Fine Grading Soil Haul (2022)						
	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite						
Fugitive Dust					0.01	0.00
Off-road Equipment	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**
Offsite						
Hauling	0.05	2.16	0.47	0.01	0.28	0.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.05**	**2.16**	**0.47**	**0.01**	**0.28**	**0.09**
TOTAL	***0.05***	***2.16***	***0.47***	***0.01***	***0.29***	***0.10***

3.6 Utilities Installation (2022)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite						
Off-Road Equipment	0.31	3.03	3.73	0.01	0.18	0.16
Total	**0.31**	**3.03**	**3.73**	**0.01**	**0.18**	**0.16**
Offsite						
Hauling	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.01	0.16	0.00	0.05	0.01
Total	**0.02**	**0.01**	**0.16**	**0.00**	**0.05**	**0.01**
TOTAL	***0.33***	***3.04***	***3.89***	***0.01***	***0.23***	***0.18***

3.7 Light Pole Installation (2022)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite						
Off-Road Equipment	0.40	4.05	3.09	0.01	0.22	0.20
Total	**0.40**	**4.05**	**3.09**	**0.01**	**0.22**	**0.20**
Offsite						
Hauling	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.04	0.02	0.00	0.01	0.00
Worker	0.01	0.01	0.10	0.00	0.03	0.01
Total	**0.01**	**0.05**	**0.11**	**0.00**	**0.04**	**0.01**
TOTAL	***0.41***	***4.10***	***3.20***	***0.01***	***0.25***	***0.21***

3.18 Paving (2022)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite						
Off-Road Equipment	0.65	5.92	7.03	0.01	0.30	0.28
Paving	0.00				0.00	0.00
Total	**0.65**	**5.92**	**7.03**	**0.01**	**0.30**	**0.28**
Offsite						
Hauling	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.09	0.03	0.00	0.01	0.00
Worker	0.07	0.05	0.58	0.00	0.19	0.05
Total	**0.07**	**0.14**	**0.61**	**0.00**	**0.20**	**0.06**
TOTAL	***0.72***	***6.05***	***7.65***	***0.01***	***0.50***	***0.33***

3.9 Finishing and Landscaping (2022)

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Onsite						
Off-Road Equipment	0.13	1.28	1.71	0.00	0.07	0.06
Total	**0.13**	**1.28**	**1.71**	**0.00**	**0.07**	**0.06**
Offsite						
Hauling	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.10	0.00	0.03	0.01
Total	**0.01**	**0.01**	**0.10**	**0.00**	**0.03**	**0.01**
TOTAL	***0.14***	***1.29***	***1.80***	***0.00***	***0.10***	***0.07***

	ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Hardscape Demolition Debris and Debris Haul	***1***	***5***	***7***	***0***	***0.45***	***0.30***
Fine Grading and Soil Haul	***0***	***3***	***2***	***0***	***0.41***	***0.17***
Utilities Installation	***0***	***3***	***4***	***0***	***0.23***	***0.18***
Light Pole Installation	***0***	***4***	***3***	***0***	***0.25***	***0.21***
Paving	***1***	***6***	***8***	***0***	***0.50***	***0.33***
Finishing and Landscaping	***0***	***1***	***2***	***0***	***0.10***	***0.07***
MAX DAILY	**1**	**6**	**8**	**0**	**0.50**	**0.33**
Regional Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?	No	No	No	No	No	No

Construction LST Worksheet:

3.2 Demolition (2022)	NOx	CO	PM10 Total	PM2.5Total
Onsite				
Off-Road Equipment	4.72	6.23	0.25	0.25
Total	**4.72**	**6.23**	**0.25**	**0.25**
Offsite				
Hauling				
Vendor				
Worker				
Total				
TOTAL	***4.72***	***6.23***	***0.25***	***0.25***

3.3 Demolition Debris Haul (2022)	NOx	CO	PM10 Total	PM2.5 Total
Onsite				
Fugitive Dust			0.05	0.01
Off-road Equipment	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.05**	**0.01**
Offsite				
Hauling				
Vendor				
Worker				
Total				
TOTAL	***0.00***	***0.00***	***0.05***	***0.01***

3.4 Fine Grading (2022)	NOx	CO	PM10 Total	PM2.5 Total
Onsite				
Fugitive Dust			0.00	0.00
Off-road Equipment	1.12	1.49	0.06	0.06
Total	**1.12**	**1.49**	**0.06**	**0.06**
Offsite				
Hauling				
Vendor				
Worker				
Total				
TOTAL	***1.12***	***1.49***	***0.06***	***0.06***

3.5 Fine Grading Soil Haul (2022)	NOx	CO	PM10 Total	PM2.5 Total
Onsite				
Fugitive Dust			0.01	0.00
Off-road Equipment	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.01**	**0.00**
Offsite				
Hauling				
Vendor				
Worker				
Total				
TOTAL	***0.00***	***0.00***	***0.01***	***0.00***

3.6 Utilities Installation (2022)					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite					
	Off-Road Equipment	3.03	3.73	0.18	0.16
	Total	**3.03**	**3.73**	**0.18**	**0.16**
Offsite					
	Hauling				
	Vendor				
	Worker				
	Total				
TOTAL		***3.03***	***3.73***	***0.18***	***0.16***

3.7 Light Pole Installation (2022)					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite					
	Off-Road Equipment	4.05	3.09	0.22	0.20
	Total	**4.05**	**3.09**	**0.22**	**0.20**
Offsite					
	Hauling				
	Vendor				
	Worker				
	Total				
TOTAL		***4.05***	***3.09***	***0.22***	***0.20***

3.18 Paving (2022)					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite					
	Off-Road Equipment	5.92	7.03	0.30	0.28
	Paving			0.00	0.00
	Total	**5.92**	**7.03**	**0.30**	**0.28**
Offsite					
	Hauling				
	Vendor				
	Worker				
	Total				
TOTAL		***5.92***	***7.03***	***0.30***	***0.28***

3.9 Finishing and Landscaping (2022)					
		NOx	CO	PM10 Total	PM2.5 Total
Onsite					
	Off-Road Equipment	1.28	1.71	0.07	0.06
	Total	**1.28**	**1.71**	**0.07**	**0.06**
Offsite					
	Hauling				
	Vendor				
	Worker				
	Total				
TOTAL		***1.28***	***1.71***	***0.07***	***0.06***

	NOx	CO	PM10 Total	PM2.5 Total
Hardscape Demolition Debris and Debris Haul	*5*	*6*	*0.31*	*0.25*
≤1.00 Acre LST	*162*	*750*	*4.00*	*3.00*
Exceeds LST?	*no*	*no*	*no*	*no*
Fine Grading and Soil Haul	*1*	*1*	*0.07*	*0.06*
≤1.00 Acre LST	*162*	*750*	*4.00*	*3.00*
Exceeds LST?	*no*	*no*	*no*	*no*
Utilities Installation	*3*	*4*	*0.18*	*0.16*
≤1.00 Acre LST	*162*	*750*	*4.00*	*3.00*
Exceeds LST?	*no*	*no*	*no*	*no*
Lighting Pole Installation	*4*	*3*	*0.22*	*0.20*
≤1.00 Acre LST	*162*	*750*	*4.00*	*3.00*
Exceeds LST?	*no*	*no*	*no*	*no*
Paving	*6*	*7*	*0.30*	*0.28*
≤1.00 Acre LST	*162*	*750*	*4.00*	*3.00*
Exceeds LST?	*no*	*no*	*no*	*no*
Finishing and Landscaping	*1*	*2*	*0.07*	*0.06*
≤1.00 Acre LST	*162*	*750*	*4.00*	*3.00*
Exceeds LST?	*no*	*no*	*no*	*no*

CalEEMod Construction Model

TVU-22 Construction - Riverside-South Coast County, Winter

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

TVU-22 Construction

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	5.94	1000sqft	0.14	5,944.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.983	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on 2022 forecasted factors from CalEEMod v 2022.1

Land Use - Based on information from District, see assumptions file

Construction Phase - Based on applicant info., see assumptions file

Off-road Equipment - Based on applicant info., see assumptions file

Off-road Equipment - No additional equipment required for hauling phase

Off-road Equipment - Based on applicant info., see assumptions file

Off-road Equipment - No additional equipment required for hauling phase

Off-road Equipment - Based on information provided by applicant, see assumptions file

Off-road Equipment - Based on applicant info., see assumptions file

Off-road Equipment -

TVU-22 Construction - Riverside-South Coast County, Winter

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

Off-road Equipment - Based on applicant info., see assumptions file

Trips and VMT - Added water truck trips to vendor trips, added vendor truck trips for concrete truck to paving phase, see assumptions file

Demolition - Based on applicant info., see assumptions file

Grading - Haul volume provided by applicant, also includes grass removal of 3,661 SQFT with an assumption of half a foot depth for 67.80 CY of grass removal, see assumptions file

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 and Rule 1186

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	2.00
tblConstructionPhase	NumDays	10.00	2.00
tblConstructionPhase	NumDays	100.00	2.00
tblConstructionPhase	NumDays	5.00	1.00
tblGrading	MaterialExported	0.00	251.00
tblLandUse	LandUseSquareFeet	5,940.00	5,944.00
tblOffRoadEquipment	HorsePower	89.00	110.00
tblOffRoadEquipment	HorsePower	97.00	74.30
tblOffRoadEquipment	HorsePower	97.00	74.30
tblOffRoadEquipment	HorsePower	89.00	110.00
tblOffRoadEquipment	HorsePower	97.00	100.00
tblOffRoadEquipment	HorsePower	97.00	74.30
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

TVU-22 Construction - Riverside-South Coast County, Winter

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

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	390.98	390.983
tblTripsAndVMT	HaulingTripNumber	1.00	2.00
tblTripsAndVMT	HaulingTripNumber	31.00	32.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

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					
2022	0.7163	6.0542	7.6461	0.0133	0.3551	0.2983	0.5313	0.0955	0.2779	0.3350	0.0000	1,288.3641	1,288.3641	0.3067	0.1670	1,340.1117
Maximum	**0.7163**	**6.0542**	**7.6461**	**0.0133**	**0.3551**	**0.2983**	**0.5313**	**0.0955**	**0.2779**	**0.3350**	**0.0000**	**1,288.3641**	**1,288.3641**	**0.3067**	**0.1670**	**1,340.1117**

TVU-22 Construction - Riverside-South Coast County, Winter

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

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.7163	6.0542	7.6461	0.0133	0.3227	0.2983	0.4958	0.0884	0.2779	0.3309	0.0000	1,288.3641	1,288.3641	0.3067	0.1670	1,340.1117
Maximum	**0.7163**	**6.0542**	**7.6461**	**0.0133**	**0.3227**	**0.2983**	**0.4958**	**0.0884**	**0.2779**	**0.3309**	**0.0000**	**1,288.3641**	**1,288.3641**	**0.3067**	**0.1670**	**1,340.1117**

	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**	**9.12**	**0.00**	**6.69**	**7.45**	**0.00**	**1.21**	**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	11/19/2022	11/22/2022	5	2	a
2	Demolition Debris Haul	Demolition	11/19/2022	11/22/2022	5	2	b
3	Fine Grading	Grading	11/23/2022	11/24/2022	5	2	c
4	Fine Grading Soil Haul	Grading	11/23/2022	11/24/2022	5	2	d
5	Utilities Installation	Trenching	11/25/2022	12/6/2022	5	8	e
6	Light Pole Installation	Building Construction	12/7/2022	12/8/2022	5	2	f

TVU-22 Construction - Riverside-South Coast County, Winter

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

7	Paving	Paving	12/9/2022	12/9/2022	5	1	g
8	Finishing and Landscaping	Trenching	12/10/2022	12/14/2022	5	3	h

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.14

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

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	0	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	74.3	0.37
Demolition Debris Haul	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition Debris Haul	Rubber Tired Dozers	0	1.00	247	0.40
Demolition Debris Haul	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Fine Grading	Graders	0	6.00	187	0.41
Fine Grading	Rubber Tired Dozers	0	6.00	247	0.40
Fine Grading	Tractors/Loaders/Backhoes	1	7.00	74.3	0.37
Fine Grading Soil Haul	Graders	0	6.00	187	0.41
Fine Grading Soil Haul	Rubber Tired Dozers	0	6.00	247	0.40
Fine Grading Soil Haul	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Utilities Installation	Forklifts	1	8.00	110	0.20
Utilities Installation	Tractors/Loaders/Backhoes	1	8.00	100	0.37
Light Pole Installation	Cranes	1	4.00	231	0.29
Light Pole Installation	Forklifts	2	6.00	110	0.20
Light Pole Installation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

TVU-22 Construction - Riverside-South Coast County, Winter

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

Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Finishing and Landscaping	Tractors/Loaders/Backhoes	1	8.00	74.3	0.37

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	3	8.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition Debris Haul	0	0.00	0.00	2.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Fine Grading	1	3.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Fine Grading Soil Haul	0	0.00	0.00	32.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Utilities Installation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Light Pole Installation	3	3.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Finishing and Landscaping	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

TVU-22 Construction - Riverside-South Coast County, Winter

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

3.2 Demolition - 2022

Unmitigated Construction 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	0.5462	4.7187	6.2256	9.8200e-003		0.2533	0.2533		0.2451	0.2451		937.3814	937.3814	0.1438		940.9768
Total	**0.5462**	**4.7187**	**6.2256**	**9.8200e-003**		**0.2533**	**0.2533**		**0.2451**	**0.2451**		**937.3814**	**937.3814**	**0.1438**		**940.9768**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.3500e-003	0.2673	0.0916	1.0900e-003	0.0384	3.6700e-003	0.0421	0.0111	3.5100e-003	0.0146		115.8935	115.8935	1.2100e-003	0.0172	121.0492
Worker	0.0294	0.0212	0.2581	7.4000e-004	0.0894	4.4000e-004	0.0899	0.0237	4.1000e-004	0.0241		74.4126	74.4126	2.0300e-003	2.0800e-003	75.0838
Total	**0.0388**	**0.2885**	**0.3497**	**1.8300e-003**	**0.1279**	**4.1100e-003**	**0.1320**	**0.0348**	**3.9200e-003**	**0.0387**		**190.3061**	**190.3061**	**3.2400e-003**	**0.0193**	**196.1331**

Mitigated Construction On-Site

TVU-22 Construction - Riverside-South Coast County, Winter

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5462	4.7187	6.2256	9.8200e-003		0.2533	0.2533		0.2451	0.2451	0.0000	937.3814	937.3814	0.1438		940.9768
Total	**0.5462**	**4.7187**	**6.2256**	**9.8200e-003**		**0.2533**	**0.2533**		**0.2451**	**0.2451**	**0.0000**	**937.3814**	**937.3814**	**0.1438**		**940.9768**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.3500e-003	0.2673	0.0916	1.0900e-003	0.0360	3.6700e-003	0.0396	0.0105	3.5100e-003	0.0140		115.8935	115.8935	1.2100e-003	0.0172	121.0492
Worker	0.0294	0.0212	0.2581	7.4000e-004	0.0824	4.4000e-004	0.0829	0.0220	4.1000e-004	0.0224		74.4126	74.4126	2.0300e-003	2.0800e-003	75.0838
Total	**0.0388**	**0.2885**	**0.3497**	**1.8300e-003**	**0.1184**	**4.1100e-003**	**0.1225**	**0.0325**	**3.9200e-003**	**0.0364**		**190.3061**	**190.3061**	**3.2400e-003**	**0.0193**	**196.1331**

TVU-22 Construction - Riverside-South Coast County, Winter

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

3.3 Demolition Debris Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1270	0.0000	0.1270	0.0192	0.0000	0.0192			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.1270**	**0.0000**	**0.1270**	**0.0192**	**0.0000**	**0.0192**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	3.0100e-003	0.1347	0.0292	5.8000e-004	0.0175	1.4900e-003	0.0190	4.8000e-003	1.4200e-003	6.2200e-003		61.3820	61.3820	8.2000e-004	9.6700e-003	64.2841
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.0100e-003**	**0.1347**	**0.0292**	**5.8000e-004**	**0.0175**	**1.4900e-003**	**0.0190**	**4.8000e-003**	**1.4200e-003**	**6.2200e-003**		**61.3820**	**61.3820**	**8.2000e-004**	**9.6700e-003**	**64.2841**

TVU-22 Construction - Riverside-South Coast County, Winter

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

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					0.0543	0.0000	0.0543	8.2200e-003	0.0000	8.2200e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0543**	**0.0000**	**0.0543**	**8.2200e-003**	**0.0000**	**8.2200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	3.0100e-003	0.1347	0.0292	5.8000e-004	0.0163	1.4900e-003	0.0178	4.5100e-003	1.4200e-003	5.9300e-003		61.3820	61.3820	8.2000e-004	9.6700e-003	64.2841
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.0100e-003**	**0.1347**	**0.0292**	**5.8000e-004**	**0.0163**	**1.4900e-003**	**0.0178**	**4.5100e-003**	**1.4200e-003**	**5.9300e-003**		**61.3820**	**61.3820**	**8.2000e-004**	**9.6700e-003**	**64.2841**

TVU-22 Construction - Riverside-South Coast County, Winter

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

3.4 Fine Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.1100	1.1185	1.4939	2.0800e-003		0.0602	0.0602		0.0553	0.0553		201.0848	201.0848	0.0650		202.7106
Total	**0.1100**	**1.1185**	**1.4939**	**2.0800e-003**	**0.0000**	**0.0602**	**0.0602**	**0.0000**	**0.0553**	**0.0553**		**201.0848**	**201.0848**	**0.0650**		**202.7106**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2300e-003	0.1782	0.0611	7.3000e-004	0.0256	2.4400e-003	0.0281	7.3800e-003	2.3400e-003	9.7200e-003		77.2623	77.2623	8.0000e-004	0.0115	80.6995
Worker	0.0110	7.9500e-003	0.0968	2.8000e-004	0.0335	1.7000e-004	0.0337	8.8900e-003	1.5000e-004	9.0500e-003		27.9047	27.9047	7.6000e-004	7.8000e-004	28.1564
Total	**0.0173**	**0.1862**	**0.1579**	**1.0100e-003**	**0.0592**	**2.6100e-003**	**0.0618**	**0.0163**	**2.4900e-003**	**0.0188**		**105.1670**	**105.1670**	**1.5600e-003**	**0.0123**	**108.8559**

TVU-22 Construction - Riverside-South Coast County, Winter

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

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.1100	1.1185	1.4939	2.0800e-003		0.0602	0.0602		0.0553	0.0553	0.0000	201.0848	201.0848	0.0650		202.7106
Total	**0.1100**	**1.1185**	**1.4939**	**2.0800e-003**	**0.0000**	**0.0602**	**0.0602**	**0.0000**	**0.0553**	**0.0553**	**0.0000**	**201.0848**	**201.0848**	**0.0650**		**202.7106**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2300e-003	0.1782	0.0611	7.3000e-004	0.0240	2.4400e-003	0.0264	6.9700e-003	2.3400e-003	9.3100e-003		77.2623	77.2623	8.0000e-004	0.0115	80.6995
Worker	0.0110	7.9500e-003	0.0968	2.8000e-004	0.0309	1.7000e-004	0.0311	8.2500e-003	1.5000e-004	8.4000e-003		27.9047	27.9047	7.6000e-004	7.8000e-004	28.1564
Total	**0.0173**	**0.1862**	**0.1579**	**1.0100e-003**	**0.0549**	**2.6100e-003**	**0.0575**	**0.0152**	**2.4900e-003**	**0.0177**		**105.1670**	**105.1670**	**1.5600e-003**	**0.0123**	**108.8559**

TVU-22 Construction - Riverside-South Coast County, Winter

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

3.5 Fine Grading Soil Haul - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0159	0.0000	0.0159	2.4100e-003	0.0000	2.4100e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0159**	**0.0000**	**0.0159**	**2.4100e-003**	**0.0000**	**2.4100e-003**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0482	2.1554	0.4669	9.2100e-003	0.2800	0.0238	0.3038	0.0768	0.0228	0.0995		982.1123	982.1123	0.0132	0.1547	1,028.5451
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0482**	**2.1554**	**0.4669**	**9.2100e-003**	**0.2800**	**0.0238**	**0.3038**	**0.0768**	**0.0228**	**0.0995**		**982.1123**	**982.1123**	**0.0132**	**0.1547**	**1,028.5451**

TVU-22 Construction - Riverside-South Coast County, Winter

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

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.7900e-003	0.0000	6.7900e-003	1.0300e-003	0.0000	1.0300e-003			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**6.7900e-003**	**0.0000**	**6.7900e-003**	**1.0300e-003**	**0.0000**	**1.0300e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.0482	2.1554	0.4669	9.2100e-003	0.2610	0.0238	0.2848	0.0721	0.0228	0.0949		982.1123	982.1123	0.0132	0.1547	1,028.5451
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0482**	**2.1554**	**0.4669**	**9.2100e-003**	**0.2610**	**0.0238**	**0.2848**	**0.0721**	**0.0228**	**0.0949**		**982.1123**	**982.1123**	**0.0132**	**0.1547**	**1,028.5451**

TVU-22 Construction - Riverside-South Coast County, Winter

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

3.6 Utilities Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3102	3.0313	3.7331	5.1000e-003		0.1793	0.1793		0.1649	0.1649		493.5151	493.5151	0.1596		497.5054
Total	**0.3102**	**3.0313**	**3.7331**	**5.1000e-003**		**0.1793**	**0.1793**		**0.1649**	**0.1649**		**493.5151**	**493.5151**	**0.1596**		**497.5054**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0184	0.0133	0.1613	4.6000e-004	0.0559	2.8000e-004	0.0562	0.0148	2.6000e-004	0.0151		46.5079	46.5079	1.2700e-003	1.3000e-003	46.9274
Total	**0.0184**	**0.0133**	**0.1613**	**4.6000e-004**	**0.0559**	**2.8000e-004**	**0.0562**	**0.0148**	**2.6000e-004**	**0.0151**		**46.5079**	**46.5079**	**1.2700e-003**	**1.3000e-003**	**46.9274**

TVU-22 Construction - Riverside-South Coast County, Winter

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

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	0.3102	3.0313	3.7331	5.1000e-003		0.1793	0.1793		0.1649	0.1649	0.0000	493.5151	493.5151	0.1596		497.5054
Total	**0.3102**	**3.0313**	**3.7331**	**5.1000e-003**		**0.1793**	**0.1793**		**0.1649**	**0.1649**	**0.0000**	**493.5151**	**493.5151**	**0.1596**		**497.5054**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0184	0.0133	0.1613	4.6000e-004	0.0515	2.8000e-004	0.0518	0.0138	2.6000e-004	0.0140		46.5079	46.5079	1.2700e-003	1.3000e-003	46.9274
Total	**0.0184**	**0.0133**	**0.1613**	**4.6000e-004**	**0.0515**	**2.8000e-004**	**0.0518**	**0.0138**	**2.6000e-004**	**0.0140**		**46.5079**	**46.5079**	**1.2700e-003**	**1.3000e-003**	**46.9274**

3.7 Light Pole Installation - 2022

Unmitigated Construction On-Site

TVU-22 Construction - Riverside-South Coast County, Winter

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3971	4.0479	3.0851	5.7200e-003		0.2164	0.2164		0.1991	0.1991		553.8544	553.8544	0.1791		558.3326
Total	**0.3971**	**4.0479**	**3.0851**	**5.7200e-003**		**0.2164**	**0.2164**		**0.1991**	**0.1991**		**553.8544**	**553.8544**	**0.1791**		**558.3326**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5600e-003	0.0446	0.0153	1.8000e-004	6.4100e-003	6.1000e-004	7.0200e-003	1.8400e-003	5.8000e-004	2.4300e-003		19.3156	19.3156	2.0000e-004	2.8700e-003	20.1749
Worker	0.0110	7.9500e-003	0.0968	2.8000e-004	0.0335	1.7000e-004	0.0337	8.8900e-003	1.5000e-004	9.0500e-003		27.9047	27.9047	7.6000e-004	7.8000e-004	28.1564
Total	**0.0126**	**0.0525**	**0.1121**	**4.6000e-004**	**0.0399**	**7.8000e-004**	**0.0407**	**0.0107**	**7.3000e-004**	**0.0115**		**47.2203**	**47.2203**	**9.6000e-004**	**3.6500e-003**	**48.3313**

Mitigated Construction On-Site

TVU-22 Construction - Riverside-South Coast County, Winter

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3971	4.0479	3.0851	5.7200e-003		0.2164	0.2164		0.1991	0.1991	0.0000	553.8544	553.8544	0.1791		558.3326
Total	**0.3971**	**4.0479**	**3.0851**	**5.7200e-003**		**0.2164**	**0.2164**		**0.1991**	**0.1991**	**0.0000**	**553.8544**	**553.8544**	**0.1791**		**558.3326**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5600e-003	0.0446	0.0153	1.8000e-004	5.9900e-003	6.1000e-004	6.6100e-003	1.7400e-003	5.8000e-004	2.3300e-003		19.3156	19.3156	2.0000e-004	2.8700e-003	20.1749
Worker	0.0110	7.9500e-003	0.0968	2.8000e-004	0.0309	1.7000e-004	0.0311	8.2500e-003	1.5000e-004	8.4000e-003		27.9047	27.9047	7.6000e-004	7.8000e-004	28.1564
Total	**0.0126**	**0.0525**	**0.1121**	**4.6000e-004**	**0.0369**	**7.8000e-004**	**0.0377**	**9.9900e-003**	**7.3000e-004**	**0.0107**		**47.2203**	**47.2203**	**9.6000e-004**	**3.6500e-003**	**48.3313**

3.8 Paving - 2022

Unmitigated Construction On-Site

TVU-22 Construction - Riverside-South Coast County, Winter

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6469	5.9174	7.0348	0.0113		0.2961	0.2961		0.2758	0.2758		1,035.8246	1,035.8246	0.3017		1,043.3677
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6469**	**5.9174**	**7.0348**	**0.0113**		**0.2961**	**0.2961**		**0.2758**	**0.2758**		**1,035.8246**	**1,035.8246**	**0.3017**		**1,043.3677**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1200e-003	0.0891	0.0305	3.6000e-004	0.0128	1.2200e-003	0.0140	3.6900e-003	1.1700e-003	4.8600e-003		38.6312	38.6312	4.0000e-004	5.7300e-003	40.3497
Worker	0.0662	0.0477	0.5807	1.6600e-003	0.2012	1.0000e-003	0.2022	0.0534	9.2000e-004	0.0543		167.4284	167.4284	4.5800e-003	4.6800e-003	168.9386
Total	**0.0694**	**0.1368**	**0.6113**	**2.0200e-003**	**0.2140**	**2.2200e-003**	**0.2162**	**0.0571**	**2.0900e-003**	**0.0591**		**206.0595**	**206.0595**	**4.9800e-003**	**0.0104**	**209.2884**

Mitigated Construction On-Site

TVU-22 Construction - Riverside-South Coast County, Winter

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6469	5.9174	7.0348	0.0113		0.2961	0.2961		0.2758	0.2758	0.0000	1,035.8246	1,035.8246	0.3017		1,043.3677
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6469**	**5.9174**	**7.0348**	**0.0113**		**0.2961**	**0.2961**		**0.2758**	**0.2758**	**0.0000**	**1,035.8246**	**1,035.8246**	**0.3017**		**1,043.3677**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1200e-003	0.0891	0.0305	3.6000e-004	0.0120	1.2200e-003	0.0132	3.4900e-003	1.1700e-003	4.6600e-003		38.6312	38.6312	4.0000e-004	5.7300e-003	40.3497
Worker	0.0662	0.0477	0.5807	1.6600e-003	0.1855	1.0000e-003	0.1865	0.0495	9.2000e-004	0.0504		167.4284	167.4284	4.5800e-003	4.6800e-003	168.9386
Total	**0.0694**	**0.1368**	**0.6113**	**2.0200e-003**	**0.1975**	**2.2200e-003**	**0.1997**	**0.0530**	**2.0900e-003**	**0.0551**		**206.0595**	**206.0595**	**4.9800e-003**	**0.0104**	**209.2884**

3.9 Finishing and Landscaping - 2022

TVU-22 Construction - Riverside-South Coast County, Winter

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

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	0.1257	1.2783	1.7073	2.3700e-003		0.0688	0.0688		0.0633	0.0633		229.8112	229.8112	0.0743		231.6693
Total	**0.1257**	**1.2783**	**1.7073**	**2.3700e-003**		**0.0688**	**0.0688**		**0.0633**	**0.0633**		**229.8112**	**229.8112**	**0.0743**		**231.6693**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0110	7.9500e-003	0.0968	2.8000e-004	0.0335	1.7000e-004	0.0337	8.8900e-003	1.5000e-004	9.0500e-003		27.9047	27.9047	7.6000e-004	7.8000e-004	28.1564
Total	**0.0110**	**7.9500e-003**	**0.0968**	**2.8000e-004**	**0.0335**	**1.7000e-004**	**0.0337**	**8.8900e-003**	**1.5000e-004**	**9.0500e-003**		**27.9047**	**27.9047**	**7.6000e-004**	**7.8000e-004**	**28.1564**

Mitigated Construction On-Site

TVU-22 Construction - Riverside-South Coast County, Winter

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1257	1.2783	1.7073	2.3700e-003		0.0688	0.0688		0.0633	0.0633	0.0000	229.8112	229.8112	0.0743		231.6693
Total	**0.1257**	**1.2783**	**1.7073**	**2.3700e-003**		**0.0688**	**0.0688**		**0.0633**	**0.0633**	**0.0000**	**229.8112**	**229.8112**	**0.0743**		**231.6693**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0110	7.9500e-003	0.0968	2.8000e-004	0.0309	1.7000e-004	0.0311	8.2500e-003	1.5000e-004	8.4000e-003		27.9047	27.9047	7.6000e-004	7.8000e-004	28.1564
Total	**0.0110**	**7.9500e-003**	**0.0968**	**2.8000e-004**	**0.0309**	**1.7000e-004**	**0.0311**	**8.2500e-003**	**1.5000e-004**	**8.4000e-003**		**27.9047**	**27.9047**	**7.6000e-004**	**7.8000e-004**	**28.1564**

LST Worksheets

Construction Localized Significance Thresholds: Worst-case Scenario

		NOx & CO		*PM10 & PM2.5*		
SRA No.	Acres	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Source Receptor Distance (meters)	Source Receptor Distance (Feet)	Construction / Project Site Size (Acres)
26	0.00	25	82	25	82	0.14

Source Receptor	**Temecula Valley**	**Equipment**	**Acres/8-hr Day**		**Daily hours**	**Equipment Used**	**Acres**
Distance (meters)	25						
NOx	**162**	Tractors	0.5	0.0625			0
CO	**750**	Graders	0.5	0.0625			0
PM10	**4.00**	Dozers	0.5	0.0625			0
PM2.5	**3.00**	Scrapers	1	0.125			0
						Acres	0.00

	Acres	**25**	**50**	**100**	**200**	**500**
NOx	1	162	203	292	460	896
	1	162	203	292	460	896
		162	203	292	460	896
CO	1	750	1105	2176	5501	23866
	1	750	1105	2176	5501	23866
		750	1105	2176	5501	23866
PM10	1	4	12	30	67	178
	1	4	12	30	67	178
		4	12	30	67	178
PM2.5	1	3	4	8	20	86
	1	3	4	8	20	86
		3	4	8	20	86

Temecula Valley

0.00 Acres

	25	**50**	**100**	**200**	**500**
NOx	162	203	292	460	896
CO	750	1105	2176	5501	23866
PM10	4	12	30	67	178
PM2.5	3	4	8	20	86

Acre Below		**Acre Above**	
SRA No.	Acres	SRA No.	Acres
26	1	26	1
Distance Increment Below			
25			
Distance Increment Above			
25			

Updated: 10/21/2009 - Table C-1. 2006 – 2008

Attachment C Noise Technical Memorandum

NOISE TECHNICAL MEMORANDUM

DATE	October 7, 2022
TO	Temecula Valley Unified School District
ADDRESS	31350 Rancho Vista Road / Temecula, CA 92592
CONTACT	Janet Dixon | Director, Facilities Development Department
FROM	Alejandro Garcia, INCE-USA | Senior Associate, Noise and Vibration Emily Parks | Project Planner
SUBJECT	Noise Technical Memorandum for the Temecula Valley High School Practice Field Lighting Project
PROJECT NUMBER	TVU-22

This noise technical memorandum provides a community noise assessment of the proposed field lighting for a multiuse practice field at Temecula Valley High School at 31555 Rancho Vista Road in Temecula, as described in the Notice of Exemption and the Supplement to support a Notice of Exemption, pursuant to CEQA Guidelines Section 15300.2, Exceptions, for any characteristics or circumstances that might invalidate findings that the proposed project is exempt from further CEQA analysis. This analysis evaluates construction and operational noise and vibration with implementation of the project for compliance with the City of Temecula Municipal Code noise standards to substantiate that there is no reasonable possibility that the activity will have a significant effect on the environment related to noise due to unusual circumstances. Figure 3, *Aerial Photograph*, of the Supplement to Notice of the Exemption (Supplement), shows the project location. Figure 4, *Proposed Lighting Plan*, shows the proposed site plan and proposed locations of light poles. Noise fundamentals and common definitions are included in Attachment A to this Noise Technical Memorandum.

Project Location and Description

The project applicant is proposing the installation of five light poles surrounding the existing 4.6-acre practice field at Temecula Valley High School. Project construction is anticipated to take about six weeks and is scheduled to start in November 2022. The high school campus is surrounded by various types of receptors. To the north across Rancho Vista Road are existing residential uses, to the south are the Springs Charter School and residential uses, to the west is the Ronald Reagan Sports Park, and to the east is Linfield Christian School.

Applicable Standards

CITY OF TEMECULA NOISE STANDARDS

Exterior Noise Standards

The City of Temecula Municipal Code Section 9.20.040, *General Sound Level Standards*, provides maximum interior and exterior noise standards for various land use designations. Table 1, *City of Temecula Residential Exterior Noise Standards*, summarizes the maximum exterior noise levels at the receiving property lines of residences.

Table 1 City of Temecula Residential Exterior Noise Standards

Land Use Designation	Exterior Noise Level, dBA L_{max}
Hillside, Rural, Very Low, Low, Low Medium	65
Medium	65/70[1]
High	70

Source: City of Temecula Municipal Code, Section 9.20.040, General sound level standards
[1] Maximum exterior noise levels up to 70 dBA are allowed for multiple-family housing.

Special Provisions

Under Section 9.20.060, Special sound sources standards, and Section 9.20.030, Exemptions, the following activities are exempt from the municipal code exterior noise standards:

- Noise associated with construction activity that does not take place between the hours of 6:30 p.m. and 7:00 a.m. Monday through Friday, 6:30 p.m. to 7:00 a.m. Saturdays, or any time on Sunday or a national holiday (unless exempted by Section 9.20.070 of the Temecula Municipal Code).
- Noise associated with operation of any power tools or equipment shall not take place between the hours of 10:00 p.m. and 7:00 a.m.
- Noise from public or private schools and school-sponsored activities.

Federal Transit Administration

The City of Temecula does not have quantified limits for vibration. Therefore, to determine impact significance, the following Federal Transit Administration (FTA) criterion is used in this analysis.

A construction-related vibration impact would occur if:

- Vibration levels would exceed 0.20 inches/second (in/sec) peak particle velocity (PPV) at the façade of a non-engineered structure (e.g., wood-frame residential).

Sensitive Receptors

The closest off-site sensitive receptors are the Ronald Reagan Sports Park to the west and residences and Springs Charter Schools to the south. Ronald Reagan Sports Park is approximately 250 feet west of the project

site across Margarita Road. The Springs Charter School and single-family homes are approximately 540 feet and 720 feet to the south along Pauba Road, respectively, from the practice field behind the slopes. The nearest on-site sensitive receptors are the classrooms buildings approximately 180 feet northwest of the practice field.

Existing Noise Conditions

The project site is outside the 65 dBA CNEL noise contour according to the City of Temecula General Plan Noise Element's Future (2025) Noise Contour (Figure N-2). The noise environment in the project vicinity is primarily characterized by traffic from major roadways, such as Margarita Road and Pauba Road. Noise from surrounding residential uses and existing school activities also contribute to the overall noise environment in the project vicinity.

Environmental Impacts

The following describes short-term construction, long-term operational, and construction and operational vibration impacts from project implementation.

PROJECT CONSTRUCTION NOISE IMPACTS

Two types of short-term noise impacts could occur during construction: (1) mobile-source noise from transport of workers, material deliveries, and debris and soil haul and (2) stationary-source noise from use of construction equipment. Existing uses surrounding the project site would be exposed to construction noise.

Construction Vehicles

The transport of workers and materials to and from the construction site would incrementally increase noise levels along access roadways in the project vicinity. Individual construction vehicle pass-bys and haul trucks may create momentary noise levels of up to 85 dBA (L_{max}) at 50 feet from the vehicle. However, due to the limited scope of construction activity, daily construction trips associated with the installation of light poles would be minimal and would not result in a substantial nor prolonged noise increase above existing traffic noise conditions. Impacts would be less than significant.

Construction Equipment

Existing uses surrounding the project site would be exposed to temporary construction noise. Construction equipment for the installation of light poles typically includes a crane, backhoe, concrete saw/jackhammer, tractor, forklift/main lift, and a drill rig. A concrete saw or jackhammer would not be used at every proposed pole location, but on an as-needed basis, such as where softscape, hardscape, or concrete would have to be removed to install a light pole. Neither blasting nor pile-driving techniques would be required.

Noise generated during construction is based on the type of equipment used, the location of the equipment relative to sensitive receptors, and the timing and duration of the noise-generating activities. Noise levels from construction activities are dominated by the loudest piece of construction equipment. The dominant noise source is typically the engine, although work piece noise (such as dropping of materials) can also be noticeable.

The noise produced at each activity is dominated by the loudest piece of equipment needed for light pole installation. Construction noise quite often exhibits a high degree of variability because factors such as noise

attenuation due to distance, type of equipment, and the load and power requirements to accomplish tasks result in different noise levels at a given sensitive receptor. Some heavy-duty equipment can have maximum, short-duration noise levels of 85 dBA at 50 feet. Construction noise impacts at sensitive receptors are determined based on loudness and noise exposure duration at a sensitive receptor.

OFF-SITE RECEPTORS

Based on PlaceWorks' experience with previous lighting projects, the installation of a single light pole takes approximately one week to complete. Initially, workers drill at the proposed light pole location and set the concrete pole bases on the first day. The cement base sits for approximately four days to cure, and workers return to install the light pole with the use of a crane. Most of the noise generated would occur during the first and last day of this process. It is assumed that workers will drill and set the base of other light pole locations while cement cures.

The anticipated construction equipment (auger drill rig, backhoe, concrete saw, manlift/forklift, tractor, and a crane) were modeled using the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). RCNM modeling indicates that the loudest piece of equipment (concrete saw) would be up to 83 dBA L_{eq} at a distance of 50 feet. The second loudest piece of equipment (tractor) would be up to 80 dBA L_{eq} at a distance of 50 feet. The closest off-site, sensitive receptors to project construction activities (light pole installation) are the Springs Charter School approximately 540 feet south of the project site and the Ronald Reagan Sports Park is approximately 250 feet west of the project site (along Margarita Road). At these distances, the nearest sensitive receptors would be exposed to attenuated noise levels of up to 69 dBA L_{eq} for approximately a two-day (nonconsecutive) period during drilling and installation. Provided that construction noise would be limited to a two-day period, the project would not expose sensitive receptors to substantial construction noise, and therefore, impacts would be less than significant.

ON-SITE RECEPTORS

At times, construction could occur while school is in session. As mentioned above, the loudest pieces of equipment would be between 80 and 83 dBA L_{eq} at 50 feet. The nearest proposed light pole is within 180 feet of existing school buildings to the north. At that distance, construction noise would attenuate to 71 dBA or less. In addition, typical exterior to interior noise attenuation with windows open is approximately 10 dBA. Conservatively, interior classroom levels would be 61 dBA or less. However, with windows closed, exterior to interior noise attenuation would at least double, reducing noise by 20 dBA. Though construction noise would temporarily elevate interior noise levels at the nearest classrooms, elevated noise levels would be limited to the first and last day of light pole installation. Therefore, temporary construction noise would not substantially interfere with the learning environment. On-site construction noise impacts would be less than significant.

PROJECT STATIONARY OPERATIONAL NOISE IMPACTS

Outdoor Playfields

The proposed practice field lighting would operate 5 days a week from 3:30 p.m. to 9:00 p.m. for school use, and 8:00 a.m. to 6:00 p.m. on weekends for community use (see Table 1, *Existing and Proposed Practice Field Use Schedule*, in the Supplement). All field activities are proposed to end by 9:00 p.m. on weekdays and by 6 p.m. on weekends. Shifting the start times of existing activities is prompted by a later school start time and would not result in an increase in the number of participants or spectators. However, the shifting of the school schedule could result in an ambient noise increase, when the light poles would be used after dark as late as 9:00 p.m. No installation of a public address system or speakers is proposed. Operational noise would be from the sport or community activities occurring on the practice field.

PlaceWorks staff have collected noise measurement data at various sports fields (soccer, tennis, softball, and baseball). The multiuse practice field would primarily be used for soccer practices, and Table 2, *Project-Related Recreational Noise*, shows the measured reference noise levels for soccer activities. The nearest noise-sensitive receptor to the playfield with proposed lighting is the Ronald Reagan Sports Park, approximately 250 feet west of the project site. Other further receptors are residential uses to the south. As shown in Table 2, noise levels would not exceed the City of Temecula exterior noise standard of 65 dBA L_{max} at the nearest sensitive receptor. In addition, Section 9.20.030, Exemptions, of the Temecula Municipal Code, exempts noise from public schools and school-sponsored activities. Therefore, noise from after-school field activities would be less than significant.

Table 2 Project-Related Recreational Noise

Noise Source	Noise Level at 50 Feet, dBA L_{max}	Nearest Receptors (Ronald Reagan Sports Park)	Attenuated Noise Level at Receptors, dBA L_{max}
Soccer [1]	70	250 feet to west	56

[1] Attenuated noise level for a soccer field was evaluated since the multiuse practice field includes a soccer field.

PROJECT TRAFFIC NOISE

The proposed lighting project would not result in an increase in participants and spectators, therefore, would not generate new vehicle trips. It is anticipated that existing trips associated with the school practices and games would shift into the evening hours and spread out over a longer period since the field use does not need to be restricted to daylight hours. It is also anticipated that many of the weekday arrival participants would already be at the high school campus, not generating arrival trips. Thus, there would be no significant change in traffic noise compared to existing conditions, and impacts would be less than significant.

CONSTRUCTION VIBRATION IMPACTS

Potential vibration impacts associated with development projects are usually related to the use of heavy construction equipment during the demolition and grading phases of construction. Construction can generate varying degrees of ground vibration depending on the construction procedures and equipment. Construction equipment generates vibration that spreads through the ground and diminishes with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor-building construction. The effects from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures

For reference, a peak particle velocity of 0.20 in/sec PPV is used as the limit for nonengineered timber and masonry buildings, which would apply to the off-site surrounding structures (FTA 2018). Table 3, *Vibration Levels for Typical Construction Equipment*, shows typical construction equipment vibration levels at a refence distance of 25 feet and estimated vibration levels at the nearest offsite sensitive receptors, public restroom building, to the west at approximately 250 feet. At 250 feet, construction vibration levels would be up to 0.003 in/sec PPV, which would not exceed the vibration thresholds as state below. Therefore, construction vibration impacts would be less than significant.

Table 3 Vibration Levels for Typical Construction Equipment

Equipment	Reference Levels at 25 feet (in/sec PPV)	Public Restroom Buildings at 250 feet west (in/sec PPV)
Large Bulldozer	0.089	0.003
Caisson Drilling	0.089	0.003
Loaded Trucks	0.076	0.002
Jackhammer	0.035	0.001
Small Bulldozer	0.003	0.000

Source: FTA, 2018. Transit Noise and Vibration Impact Assessment, September.
In/sec PPV = inches per second peak particle velocity

OPERATIONAL VIBRATION IMPACTS

The operation of the proposed project would not include any substantial long-term vibration sources. Thus, no significant vibration effects from operations sources would occur.

References

Federal Transit Administration (FTA). 2018, September. Transit Noise and Vibration Impact Assessment.

Federal Highway Administration. 2006, August. Construction Noise Handbook.

Federal Highway Administration. 2018, June. Techniques for Reviewing Noise Analyses and Associated Noise Reports. Federal Highway Administration. 2006, August. Construction Noise Handbook.

Temecula, City of. 2022, September. Temecula Municipal Code. https://library.qcode.us/lib/temecula_ca/pub/municipal_code.

Attachment A Noise Fundamentals and Common Noise Definitions

Fundamentals of Noise

NOISE

Noise is most often defined as unwanted sound; whether it is loud, unpleasant, unexpected, or otherwise undesirable. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

Noise Descriptors

The following are brief definitions of terminology used in this chapter:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- **Decibel (dB).** A unitless measure of sound, expressed on a logarithmic scale and with respect to a defined reference sound pressure. The standard reference pressure is 20 micropascals (20 μPa).

- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

- **Equivalent Continuous Noise Level (L_{eq}); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the L_{eq} metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.

- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."

- **Maximum Sound Level (L_{max})**. The highest RMS sound level measured during the measurement period.
- **Root Mean Square Sound Level (RMS).** The square root of the average of the square of the sound pressure over the measurement period.

- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.

- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added from 7:00 PM to 10:00 PM and 10 dB from 10:00 PM to 7:00 AM. NOTE: For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB (with the CNEL being only slightly more restrictive – that is, higher than the L_{dn} value). As a matter of practice, L_{dn} and CNEL values are interchangeable and are treated as equivalent in this assessment.

- **Peak Particle Velocity (PPV).** The peak rate of speed at which soil particles move (e.g., inches per second) due to ground vibration.

- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.

Characteristics of Sound

When an object vibrates, it radiates part of its energy in the form of a pressure wave. Sound is that pressure wave transmitted through the air. Technically, airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure that creates sound waves.

Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). Loudness or amplitude is measured in dB, frequency or pitch is measured in Hertz [Hz] or cycles per second, and duration or time variations is measured in seconds or minutes.

Amplitude

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 1 presents the subjective effect of changes in sound pressure levels. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable under quiet, controlled conditions, and changes of less than 1 dB are usually not discernible (even under ideal conditions). A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dB change is perceived as a doubling (or halving) of the sound.

Table 1 Noise Perceptibility

Change in dB	Noise Level
± 3 dB	Barely perceptible increase
± 5 dB	Readily perceptible increase
± 10 dB	Twice or half as loud
± 20 dB	Four times or one-quarter as loud

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Frequency

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all, but are "felt" more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz.

When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to approximate the response of the human ear. The A-weighted noise level has been found to correlate well with people's judgments of the "noisiness" of different sounds and has been used for many years as a measure of community and industrial noise. Although the A-weighted scale and the energy-equivalent metric are commonly used to quantify the range of human response to individual events or general community sound levels, the degree of annoyance or other response also depends on several other perceptibility factors, including:

- Ambient (background) sound level
- General nature of the existing conditions (e.g., quiet rural or busy urban)
- Difference between the magnitude of the sound event level and the ambient condition
- Duration of the sound event
- Number of event occurrences and their repetitiveness
- Time of day that the event occurs

Duration

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time; half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour, respectively. These "n" values are typically used to demonstrate compliance for stationary noise sources with many cities' noise ordinances. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period, respectively.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment (or "penalty") of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00 PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher). The CNEL or L_{dn} metrics are commonly applied to the assessment of roadway and airport-related noise sources.

Sound Propagation

Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single-point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source (conservatively neglecting ground attenuation effects, air absorption factors, and barrier shielding). For example, if a backhoe at 50 feet generates 84 dBA, at 100 feet the noise level would be 79 dBA, and at 200 feet it would be 73 dBA. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance over a reflective ("hard site") surface such as concrete or asphalt. Line source noise in a relatively flat environment with ground-level absorptive vegetation decreases by an additional 1.5 dB for each doubling of distance.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA results in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. For community environments, the ambient or background noise problem is widespread, through generally worse in urban areas than in outlying, less-developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level number means. To help relate noise level values to common experience, Table 2 shows typical noise levels from familiar sources.

Table 2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. As with noise, vibration can be described by both its amplitude and frequency. Vibration displacement is the distance that a point on a surface moves away from its original static position; velocity is the instantaneous speed that a point on a surface moves; and acceleration is the rate of change of the speed. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the

square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage and RMS is typically more suitable for evaluating human response.

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 3 displays the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

Table 3 Human Reaction to Typical Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2020, April. *Transportation and Construction Vibration Guidance Manual*. Prepared by ICF International.

CONSTRUCTION NOISE MODELING

Temecula Valley HS - Construction Noise Attenuation

Levels in dBA Leq

Phase	RCNM Reference Noise Level	Residences to South	Springs Charter School to South	Classrooms to Northwest	Ronald Reagan Sports Park to West
Distance in feet	*50*	*720*	*540*	*180*	*250*
Drill Rig	77	54	57	66	63
Concrete Saw	83	59	62	71	69
Backhoe	74	50	53	62	60
Crane	73	49	52	61	59
Tractor	80	57	59	69	66
Mainlift	68	45	47	57	54

Attenuation calculated through Inverse Square Law: Lp(R2) = Lp(R1) - 20Log(R2/R1)

Temecula Valley HS - Vibration Damage Attenuation Calculations

Levels in in/sec PPV

Distance in feet	**Vibration Reference Level at *25 feet***	**Residences to South** *720*	**Springs Charter School to South** *540*	**Public Restrooms to West** *250*
Large Bulldozer	0.089	0.001	0.001	0.003
Caisson Drilling	0.089	0.001	0.001	0.003
Loaded Trucks	0.076	0.000	0.001	0.002
Jackhammer	0.035	0.000	0.000	0.001
Small Bulldozer	0.003	0.000	0.000	0.000

STATIONARY NOISE MODELING

Temecula Valley HS - Stationary Noise Attenuation Calculations

	Reference Levels, Distances, and Receptor (Ronald Reagan Sports Park) Distance
	Soccer Fields
Reference Distance in feet	*70*
Reference Levels, dBA Lmax	67
Distance and Direction to	250 to W
Distance Only	250

	Soccer Fields
	Attenuated Noise Levels
Attenuated Levels at Receptors	56

Attenuation calculated through Inverse Square Law: Lp(R2) = Lp(R1) - 20Log(R2/R1)

Normalized Levels and Distances

	Soccer
	67.4
Reference Distance	**70**
Normalized Distance	*50*
Normalized Level dBA Lmax	*70*

Soccer reference nosie based on onsite visit in 9/22 for PYL-05, El Dorado High School