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SECTION 5.0 ALTERNATIVES

5.1 EVALUATION CRITERIA

The overall objective of the LBFG was to provide the most reliable and flexible backup generating system to support the Lafayette Data Center (LDC) clients. Digital Realty's mission is to provide data centers that provide the highest quality uninterruptible power supply. With this overall objective, Digital Realty conducted an alternative analysis and used the following criteria as a means of evaluating and ranking alternatives:

- **Commercial Availability and Feasibility.** The selected alternative must currently be in use and proven as an accepted industry standard for technology. It must be operational within a reasonable timeframe where permits and approvals are required.
- **Technical Feasibility.** The selected alternative must utilize technology systems that are compatible with one another.
- **Reliability.** The selected alternative must utilize technology that is reliable in the case of an emergency.
- **Industry Standard.** The selected alternative must be considered industry standard or best practice. The customers of Digital Realty are informed consumers and will request Digital Realty are informed consumers and will request Digital Realty to provide a detailed description of the type of backup generation that Digital Realty provides as part of the customer's due diligence. If the alternative does not meet the customer's requirements they will not put their servers in the LDC.

As part of the development of the LDC and the LBFG, Digital Realty considered alternatives to the backup generators as proposed. As discussed more fully below, Digital Realty considered a smaller capacity system as well as alternative generation technologies. For completeness purposes, a discussion of the No Project Alternative is also included.

5.2 REDUCED CAPACITY SYSTEM

Digital Realty considered a backup generating system with less emergency generators but like the No Project Alternative discussed below, any generating capacity less than the total demand of the data center at maximum occupancy would not allow Digital Realty to provide the critical electricity that would be needed during an emergency. It is important to note that in addition to the electricity that is directly consumed by the servers themselves, the largest load of the data center is related to cooling the rooms where the servers are located. In order for the servers to reliably function, they must be kept within temperature tolerance ranges. The industry standard is to design and operate a building that can meet those ranges even during a loss of electricity provided by the existing electrical service provider. Therefore, in order for Digital Realty to provide the reliability required by its clients it was necessary to provide a backup generating system that could meet the maximum load during full occupancy and include redundancy as described in Section 2.2.3. A reduced capacity system would not fulfill the basic objectives of the LBGF.

5.3 ALTERNATIVE GENERATING TECHNOLOGIES

Digital Realty considering using three alternative technologies: gas-fired turbines; flywheel; and batteries. None of the three alternatives considered could meet the overall project objective because they were commercially or technically infeasible and/or were not reliable during an emergency.

5.4 FLYWHEEL

Digital Realty considered the use of a flywheel alternative but concluded them to not be a viable option for the following reasons: The Flywheel alternative does not perform within the required reliability levels of Digital Realty and is prone to system failure. The Flywheel alternative also requires an extensive amount of maintenance to keep them functioning. Finally, the flywheel system still requires back up generation to maintain the electrical load.

5.5 GAS FIRED ENGINES

Digital Realty considered using natural gas-fired engines instead of diesel generators to supply the backup generation for the LDC. This alternative was rejected because it was not technically feasible. The highly-efficient rotary UPS systems described in Section 2.3 require back up generation that starts very quickly, and natural gas engines are too slow to start. In addition, storage of sufficient natural gas on site to maintain electricity service to the high critical loads during an outage was not tenable given the volume of natural gas fuel required. A natural gas pipeline would be required. Loss of natural gas delivery capabilities such as broken pipe or loss of supply is a reasonable and foreseeable emergency that could be the reason SVP could not deliver electricity to the site. Storing fuel on-site and having the ability to have it delivered to the site during an emergency is a critical component of the diesel fired generators. Finally, natural gas-fired engines are not considered industry standard for Data Centers.

5.6 BATTERY STORAGE

The primary reason batteries alone were rejected by Digital Realty was one of duration. Batteries can provide power quickly and that is why Digital Realty has incorporated them into its overall electricity protection scheme. As described in Section 2.3, batteries would be initiated at the first sign of electricity interruption. However, the current state of battery technology does not allow for very long durations of discharge at building loads as high as planned for the LDC. Once the standalone batteries are completely discharged, the only way they can be recharged without onsite generation is if the electrical system is capable of delivering electricity to the site. In which case, the batteries would no longer be needed. Since it is not possible to predict the duration of an electricity outage, historical losses of electricity exceeding days have been experienced. With the emergency generators, it is possible to refill the diesel tanks to allow the emergency generators to operate as long as they have available fuel. Therefore, because battery storage cannot provide the duration that may be necessary during an emergency, it was rejected as technically and commercially infeasible.

5.7 NO PROJECT ALTERNATIVE

Consumer demand for data storage has grown substantially in recent years. The LDC, including the LBGF, is proposed in response to this heightened demand. The “No Project” Alternative would leave the LDC exposed to the electricity outages. Simply put, Digital Realty’s clients would not locate their servers in the LDC without a highly reliable backup generating facility to support it.

SECTION 6.0 REFERENCES

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SECTION 7.0 AGENCY CONTACTS AND LIST OF CONSULTANTS

7.1 AGENCY CONTACTS

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7.2 CONSULTANTS

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Julie Wright, Senior Project Manager
Maria Kisyova, Assistant Project Manager
Ryan Osako, Graphic Artist

Atmospheric Dynamics, Inc.
Air Quality Consultants

Gregory Darvin, Principal

Holman & Associates
Archaeological Consultants

Sunshine Psota, M.A., RPA, Senior Associate

Illingworth & Rodkin, Inc
Acoustical Consultants

Dana M. Lodico, PE, INCE Bd. Cert

SECTION 8.0 NOTIFICATION LIST

8.1 ADDRESSES WITHIN 1,000 FEET

The following list of addresses of properties within 1,000 feet of the project site was provided by the City of Santa Clara for noticing purposes.

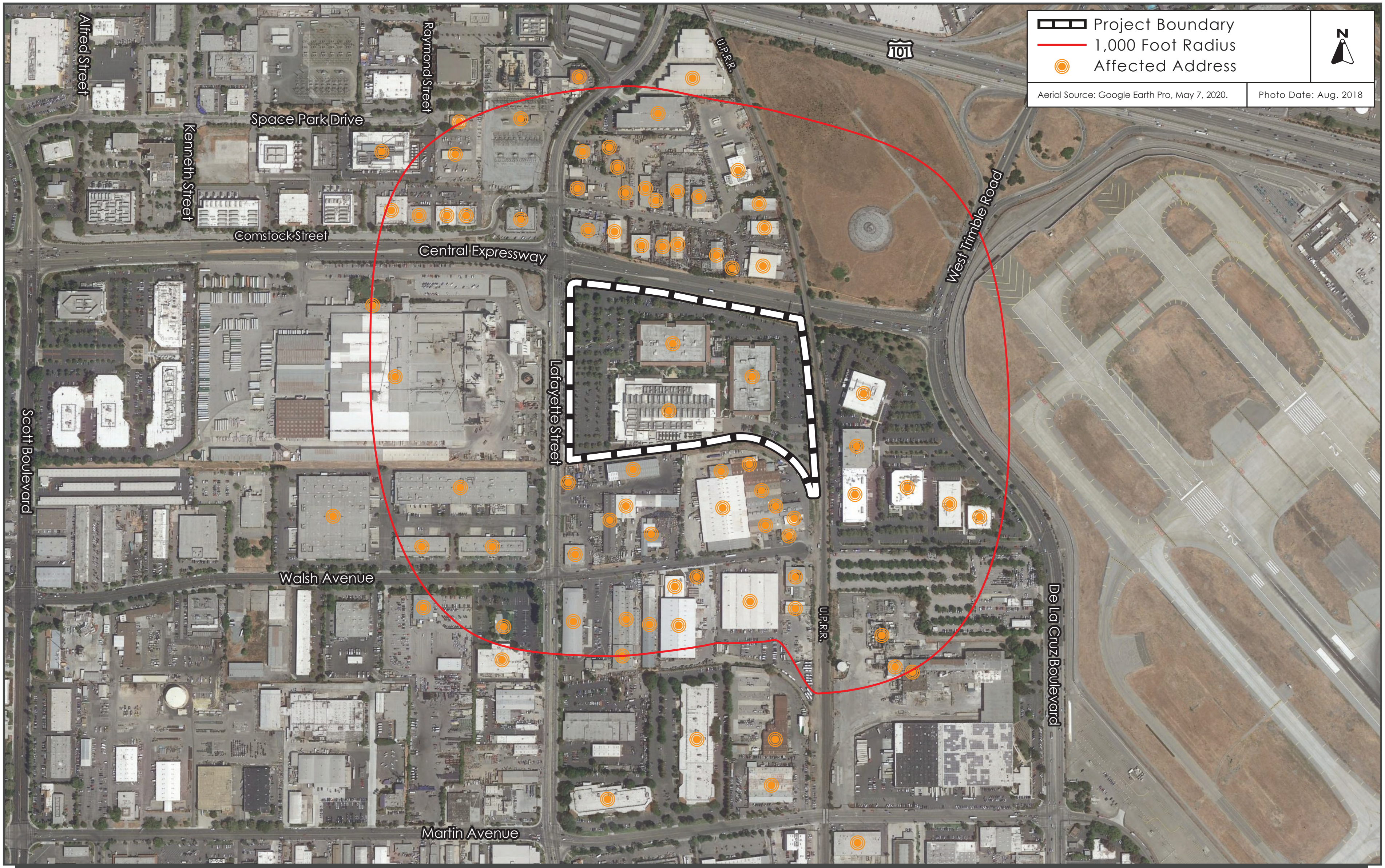
Table 8.1-1: Properties Within 1,000 Feet of Project Site

Address	City	State	Zip Code
750 Walsh Avenue	Santa Clara	CA	95050
2981 Lafayette Street	Santa Clara	CA	95054
938 Walsh Avenue	Santa Clara	CA	95050
1035 Walsh Avenue	Santa Clara	CA	95050
2709 Lafayette Street	Santa Clara	CA	95050
850 Comstock Street	Santa Clara	CA	95054
2910 Lafayette Street	Santa Clara	CA	95054
711 Walsh Avenue	Santa Clara	CA	95050
2906 Lafayette Street	Santa Clara	CA	95054
651 Martin Avenue	Santa Clara	CA	95050
775 Comstock Street	Santa Clara	CA	95054
870 Comstock Street	Santa Clara	CA	95054
810 Walsh Avenue	Santa Clara	CA	95050
2985 Lafayette Street	Santa Clara	CA	95054
1235 Walsh Avenue	Santa Clara	CA	95050
3033 Lafayette Street	Santa Clara	CA	95054
614 Walsh Avenue	Santa Clara	CA	95050
631 Martin Avenue	Santa Clara	CA	95050
860 Walsh Avenue	Santa Clara	CA	95050
715 Comstock Street	Santa Clara	CA	95054
2858 De La Cruz Boulevard	Santa Clara	CA	95050
627 Walsh Avenue	Santa Clara	CA	95050
705 Walsh Avenue	Santa Clara	CA	95050
2605 Lafayette Street	Santa Clara	CA	95050
815 Comstock Street	Santa Clara	CA	95054
651 Walsh Avenue	Santa Clara	CA	95050
2904 Lafayette Street	Santa Clara	CA	95054
2755 Lafayette Street	Santa Clara	CA	95050
668 Walsh Avenue	Santa Clara	CA	95050
2765 Lafayette Street	Santa Clara	CA	95050
2979 Lafayette Street	Santa Clara	CA	95054
691 Walsh Avenue	Santa Clara	CA	95050
1285 Walsh Avenue	Santa Clara	CA	95050
701 Walsh Avenue	Santa Clara	CA	95050
2930 Lafayette Street	Santa Clara	CA	95054
785 Walsh Avenue	Santa Clara	CA	95050
664 Walsh Avenue	Santa Clara	CA	95050
890 Comstock Street	Santa Clara	CA	95054
980 Central Expressway	Santa Clara	CA	95050
799 Comstock Street	Santa Clara	CA	95054

Table 8.1-1: Properties Within 1,000 Feet of Project Site			
Address	**City**	**State**	**Zip Code**
1245 Walsh Avenue	Santa Clara	CA	95050
680 Walsh Avenue	Santa Clara	CA	95050
890 Walsh Avenue	Santa Clara	CA	95050
2725 Lafayette Street	Santa Clara	CA	95050
661 Walsh Avenue	Santa Clara	CA	95050
2715 Lafayette Street	Santa Clara	CA	95050
2902 Lafayette Street	Santa Clara	CA	95054
790 Comstock Street	Santa Clara	CA	95054
630 Walsh Avenue	Santa Clara	CA	95050
960 Central Expressway	Santa Clara	CA	95050
975 Comstock Street	Santa Clara	CA	95054
2920 Lafayette Street	Santa Clara	CA	95054
925 Walsh Avenue	Santa Clara	CA	95050
2860 De La Cruz Boulevard	Santa Clara	CA	95050
2908 Lafayette Street	Santa Clara	CA	95054
688 Walsh Avenue	Santa Clara	CA	95050
780 Comstock Street	Santa Clara	CA	95054
1000 Walsh Avenue	Santa Clara	CA	95050
1015 Walsh Avenue	Santa Clara	CA	95050
986 Walsh Avenue	Santa Clara	CA	95050
1025 Walsh Avenue	Santa Clara	CA	95050
621 Walsh Avenue	Santa Clara	CA	95050
631 Walsh Avenue	Santa Clara	CA	95050
720 Comstock Street	Santa Clara	CA	95054
860 Comstock Street	Santa Clara	CA	95054
900 Central Expressway	Santa Clara	CA	95050
2983 Lafayette Street	Santa Clara	CA	95054
988 Walsh Avenue	Santa Clara	CA	95050
795 Comstock Street	Santa Clara	CA	95054
2770 De La Cruz Boulevard	Santa Clara	CA	95050
840 Comstock Street	Santa Clara	CA	95054
1075 Comstock Street	Santa Clara	CA	95054
1065 Comstock Street	Santa Clara	CA	95054
800 Comstock Street	Santa Clara	CA	95054
880 Walsh Avenue	Santa Clara	CA	95050
725 Comstock Street	Santa Clara	CA	95054
672 Walsh Avenue	Santa Clara	CA	95050
792 Comstock Street	Santa Clara	CA	95054
625 Walsh Avenue	Santa Clara	CA	95050
3025 Raymond Street	Santa Clara	CA	95054
2900 Lafayette Street	Santa Clara	CA	95054
850 Walsh Avenue	Santa Clara	CA	95050
676 Walsh Avenue	Santa Clara	CA	95050
684 Walsh Avenue	Santa Clara	CA	95050
601 Walsh Avenue	Santa Clara	CA	95050
3011 Lafayette Street	Santa Clara	CA	95050
1135 Walsh Avenue	Santa Clara	CA	95050

Table 8.1-1: Properties Within 1,000 Feet of Project Site			
Address	**City**	**State**	**Zip Code**
2800 De La Cruz Boulevard	Santa Clara	CA	95050
717 Comstock Street	Santa Clara	CA	95054
805 Comstock Street	Santa Clara	CA	95054
2707 Lafayette Street	Santa Clara	CA	95050
1101 Comstock Street	Santa Clara	CA	95054
1025 Comstock Street	Santa Clara	CA	95054
2705 Lafayette Street	Santa Clara	CA	95050
982 Walsh Avenue	Santa Clara	CA	95050
915 Walsh Avenue	Santa Clara	CA	95050
1111 Comstock Street	Santa Clara	CA	95054
686 Walsh Avenue	Santa Clara	CA	95050
2830 De La Cruz Boulevard	Santa Clara	CA	95050
696 Walsh Avenue	Santa Clara	CA	95050
2752 De La Cruz Boulevard	Santa Clara	CA	95050
2880 De La Cruz Boulevard	Santa Clara	CA	95050
2890 De La Cruz Boulevard	Santa Clara	CA	95050
2750 De La Cruz Boulevard	Santa Clara	CA	95050
2975 Lafayette Street	Santa Clara	CA	95054
660 Walsh Avenue	Santa Clara	CA	95050
950 Comstock Street	Santa Clara	CA	95054
670 Walsh Avenue	Santa Clara	CA	95050
2965 Lafayette Street	Santa Clara	CA	95054
940 Comstock Street	Santa Clara	CA	95054
2600 Lafayette Street	Santa Clara	CA	95050
2825 Lafayette Street	Santa Clara	CA	95050
801 Martin Avenue	Santa Clara	CA	95050
881 Martin Avenue	Santa Clara	CA	95050
2845 Lafayette Street	Santa Clara	CA	95050
851 Martin Avenue	Santa Clara	CA	95050
821 Martin Avenue	Santa Clara	CA	95050
750 Comstock Street	Santa Clara	CA	95054
1115 Walsh Avenue	Santa Clara	CA	95050
3035 Lafayette Street	Santa Clara	CA	95054
2970 Lafayette Street	Santa Clara	CA	95054
984 Walsh Avenue	Santa Clara	CA	95050
2962 Lafayette Street	Santa Clara	CA	95054
998 Walsh Avenue	Santa Clara	CA	95050
850 Duane Avenue	Santa Clara	CA	95054
980 Walsh Avenue	Santa Clara	CA	95050
901 Comstock Street	Santa Clara	CA	95054
1131 Comstock Street	Santa Clara	CA	95054
2977 Lafayette Street	Santa Clara	CA	95054
2655 Lafayette Street	Santa Clara	CA	95050
702 Central Expressway	Santa Clara	CA	95050
1215 Walsh Avenue	Santa Clara	CA	95050
611 Walsh Avenue	Santa Clara	CA	95050
1056 Walsh Avenue	Santa Clara	CA	95050

Table 8.1-1: Properties Within 1,000 Feet of Project Site			
Address	**City**	**State**	**Zip Code**
598 Martin Avenue	Santa Clara	CA	95050
798 Comstock Street	Santa Clara	CA	95054
2650 Lafayette Street	Santa Clara	CA	95050
2777 De La Cruz Boulevard	Santa Clara	CA	95050
870 Walsh Avenue	Santa Clara	CA	95050
1100 Space Park Drive	Santa Clara	CA	95054
1121 Comstock Street	Santa Clara	CA	95054
2960 Lafayette Street	Santa Clara	CA	95054
2850 Lafayette Street	Santa Clara	CA	95050
2670 Lafayette Street	Santa Clara	CA	95050
2850 De La Cruz Boulevard	Santa Clara	CA	95050
858 Walsh Avenue	Santa Clara	CA	95050
2711 Lafayette Street	Santa Clara	CA	95050
599 Reed Street	Santa Clara	CA	95050
812 Walsh Avenue	Santa Clara	CA	95050
764 Walsh Avenue	Santa Clara	CA	95050
760 Walsh Avenue	Santa Clara	CA	95050
2710 Lafayette Street	Santa Clara	CA	95050
2775 Lafayette Street	Santa Clara	CA	95050
655 Martin Avenue	Santa Clara	CA	95050
3037 Lafayette Street	Santa Clara	CA	95054
901 Walsh Avenue	Santa Clara	CA	95050
820 Comstock Street	Santa Clara	CA	95054
700 Comstock Street	Santa Clara	CA	95054
701 Comstock Street	Santa Clara	CA	95054
705 Comstock Street	Santa Clara	CA	95054
810 Comstock Street	Santa Clara	CA	95054



ADDRESSES WITHIN 1,000 FEET

FIGURE 8.1-1

SECTION 9.0 ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ABAG	Association of Bay Area Governments
AFY	Acre-feet per year
AIA	Airport Influence Area
ALUC	Airport Land Use Commission
ACM	Asbestos containing material
amsl	above mean sea level
ATCM	Air Toxics Control Measure
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
BASMAA	Bay Area Stormwater Management Agencies Association
BES	Bulk Electric System
bgs	below ground surface
BPIP-PRIME	Building Profile Input Program – Plume Rise Model Enhancements
BMPs	Best Management Practices
Btu	British thermal units
CAA	Clean Air Act
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
Cal/OSHA	California Division of Occupational Safety and Health
CAP	City of Santa Clara Climate Action Plan
CARB	California Air Resources Board
CAAQS	California Ambient Air Quality Standards
CBC	California Building Standards Code
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CGS	California Geologic Survey
CH_4	Methane

CHRIS	California Historical Resources Information System
CLUP	Comprehensive Land Use Plan
CMP	Congestion Management Program
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalents
CNEL	Community Noise Equivalent Level
CUPA	Certified Unified Program Agency
dBA	A-weighted decibels
DNL	Day-Night Average Sound Level
DPF	Diesel particulate filters
DPM	Diesel particulate matter
DTSC	Department of Toxic Substances Control
EJ	Environmental justice
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	Floor area ratio
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
g/bhp-hr	grams/brake horse-power hour
GHGs	Greenhouse gas emissions
GPM	Gallons per minute
GWh	Gigawatt hours
H_2S	Hydrogen sulfide
HAPs	Hazardous Air Pollutants
HFCs	Hydrofluorocarbons
HRA	Health risk assessment
HREC	Historical recognized environmental conditions
ISZ	Inner Safety Zone
km	Kilometer
L_{max}	Maximum A-weighted noise level

LBGF	Lafayette Backup Generating Facility
LDC	Lafayette Data Center
LID	Low Impact Development
LOS	Level of service
MBTA	Migratory Bird Treaty Act
MEIR	Maximum exposed individual residential receptor
MEIS	Maximum exposed individual sensitive receptor
MEIW	Maximum exposed individual worker receptor
MGD	million gallons per day
$MMTCO_2e$	Million metric tons of carbon dioxide equivalents
MND	Mitigated Negative Declaration
mpg	Miles per gallon
MPO	Metropolitan Planning Organizations
MRP	Municipal Regional Permit
msl	mean sea level
MTC	Metropolitan Transportation Commission
MVA	megavolt amps
MW	Megawatts
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAD83	North American Datum of 1983
NAHC	Native American Heritage Commission
NED	National Elevation Dataset
NFIP	National Flood Insurance Program
NISL	Newby Island Sanitary Landfill
NO_2	Nitrogen dioxide
NOD	Notice of Determination
NOI	Notice of Intent
NO_x	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NWIC	Northwest Information Center
O_3	Ozone

OEHHA	California Office of Environmental Health Hazard Assessment
OPR	Governor’s Office of Planning and Research
Pb	Lead
PCBs	Polychlorinated biphenyls
PDAs	Priority Development Areas
PFCs	Perfluorocarbons
PG&E	Pacific Gas and Electric
$PM_{2.5}$	Sub 2.5-micron particulate matter
PM_{10}	Sub 10-micron particulate matter
PMI	Point of maximum impact
PMVMRM	Plume Molar Volume Molar Ratio Method
POC	Precursor organic compounds
ppm	parts per million
PPV	Peak Particle Velocity
PUE	Power Usage Effectiveness
PV	Photovoltaics
RECs	Recognized environmental conditions
REL	Reference Exposure Level
RHNA	Regional Housing Need Allocation
ROG	Reactive organic
RPS	Renewable Portfolio Standard
RWF	Santa Clara Regional Wastewater Facility
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCCDEH	Santa Clara County Department of Environmental Health
SCFD	City of Santa Clara Fire Department
SCPD	City of Santa Clara Police Department
SCS	Sustainable Communities Strategy
SVCWD	Santa Clara Valley Water District
SFBAAB	San Francisco Bay Area Basin
SFHA	Special Flood Hazard Areas
SHMA	Seismic Hazards Mapping Act
SF_6	Sulfur hexafluoride

SMARA	Surface Mining and Reclamation Act
SMP	Site Management Plan
SO_x	Sulfur oxides
SO_2	Sulfur dioxide
SPPE	Small Power Plant Exemption
SVP	Silicon Valley Power
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	Toxic air contaminants
TCRs	Tribal Cultural Resources
TDM	Transportation Demand Management
TMDLs	Total maximum daily loads
TPZ	Traffic Pattern Zone
TSZ	Turning Safety Zone
USFWS	United States Fish and Wildlife Service
UTM	Universal Transverse Mercator
UWMP	Urban Water Management Plan
VMT	vehicle miles traveled
VOC	Volatile organic compounds
VRP	Visibility reducing particulate
VSD	Virtually safe dose
WSA	Water Supply Assessment

Appendix A

Air Quality Analysis Technical Appendices (AQ 1 through AQ 5)

1.0 AIR QUALITY

This section presents the evaluation of emissions and impacts resulting from the construction and operation of Lafayette Backup Generating Facility (LBGF) which supports the Lafayette Data Center (LDC), as well as the proposed mitigation measures to be used to minimize emissions and limit impacts to below established significance thresholds. This section is based upon an analysis prepared by Atmospheric Dynamics, Inc. in accordance with the California Energy Commission (CEC) application requirements for a Small Power Plant Exemption (SPPE) pursuant to the power plant siting regulations, and the rules and regulations of the Bay Area Air Quality Management District (BAAQMD or District). This analysis is but one part of a larger analysis, which seeks an SPPE Decision from the CEC and an Authority to Construct from the BAAQMD.

The following Appendices contain support data for the Air Quality and Public Health analyses.

Appendix AQ 1 – Engine Emissions Data for Criteria and Toxic Pollutants
Appendix AQ 2 – Engine Specification Brochures and Certification Information
Appendix AQ 3 – Modeling Support Data
Appendix AQ 4 – CalEEMod file for Construction and Miscellaneous Operational Emissions
Appendix AQ 5 – Risk Assessment Support Data

1.1.1 Environmental Setting

Air quality in the San Francisco Bay Area Air Basin (SFBAAB) is typically better than most other areas of the state, due to its proximity to the Pacific Ocean and the weather patterns that dominate the region. The summer climate of the west coast and the Bay Area region is dominated by a semi-permanent high centered over the northeastern Pacific Ocean. Because this high-pressure cell is quite persistent, storms rarely affect the California coast during the summer. Thus, the conditions that persist along the coast of California during summer are a northwest air flow and negligible precipitation. A thermal low-pressure area from the Sonoran-Mojave Desert also causes air to flow onshore over the San Francisco Bay Area much of the summer.

The steady northwesterly flow around the eastern edge of the Pacific high-pressure cell exerts a stress on the ocean surface along the west coast. This induces upwelling of cold water from below. Upwelling produces a band of cold water that is approximately 80 miles wide off San Francisco. During July the surface waters off San Francisco are 30°F cooler than those off Vancouver, more than 700 miles farther north.

Air approaching the California coast, already cool and moisture-laden from its long trajectory over the Pacific, is further cooled as it flows across this cold bank of water near the coast, thus accentuating the temperature contrast across the coastline. This cooling is often sufficient to produce a high incidence of fog and stratus clouds along the Northern California coast in summer.

In winter, the Pacific High weakens and shifts southward, upwelling ceases, and winter storms become frequent. Almost all of the Bay Area’s annual precipitation takes place in the November through April period. During the winter rainy periods, inversions are weak or nonexistent, winds are often moderate and air pollution potential is very low. During winter periods when the Pacific high becomes dominant, inversions become strong and often are surface-based; winds are light and pollution potential is high. These periods are characterized by winds that flow out of the Central Valley into the Bay Area and often include Tule fog.

Air quality is determined by measuring ambient concentrations of criteria pollutants at various locations through a defined region. Degradation, or lack thereof, of air quality is determined by comparing past air concentrations to the current ambient air quality standards and establishing trends for the area in question. Toxic air contaminants (TACs) have no ambient air quality standards, and a health risk assessment (HRA) is typically conducted to evaluate whether risks of exposure to TACs will create an adverse impact.

1.1.1.1 *Existing Air Quality*

In 1970, the United States Congress instructed the US EPA to establish standards for air pollutants, which were of nationwide concern. This directive resulted from the concern of the effects of air pollutants on the health and welfare of the public. The resulting Clean Air Act (CAA) set forth air quality standards to protect the health and welfare of the public. Two levels of standards were promulgated – primary standards and secondary standards. Primary national ambient air quality standards (NAAQS) are "those which, in the judgment of the administrator [of the US EPA], based on air quality criteria and allowing an adequate margin of safety, are requisite to protect the public health (state of general health of community or population)." The secondary NAAQS are "those which in the judgment of the administrator [of the US EPA], based on air quality criteria, are requisite to protect the public welfare and ecosystems associated with the presence of air pollutants in the ambient air." To date, NAAQS have been established for seven criteria pollutants as follows: sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sub 10-micron particulate matter (PM10), sub 2.5-micron particulate matter (PM2.5), and lead (Pb).

The criteria pollutants are those that have been demonstrated historically to be widespread and have a potential for adverse health impacts. US EPA developed comprehensive documents detailing the basis of, or criteria for, the standards that limit the ambient concentrations of these pollutants. The State of California has also established ambient air quality standards (AAQS) that further limit the allowable concentrations of certain criteria pollutants. Review of the established air quality standards are undertaken by both US EPA and the State of California on a periodic basis. As a result of the periodic reviews, the standards have been updated, i.e., amended, additions, and deletions, over the ensuing years to the present.

Each federal or state ambient air quality standard is comprised of two basic elements: (1) a numerical limit expressed as an allowable concentration, and (2) an averaging time which specifies the period over which the concentration value is to be measured. Table 4.3-1 presents the current federal and state ambient quality standards.

Table 4.3-1: California and National Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards Concentration	National Standards Concentration
Ozone	1 hour	0.09 ppm (180 $\mu g/m^3$)	-
	8 hours	0.070 ppm (137 $\mu g/m^3$)	0.070 ppm (137 $\mu g/m^3$)
Carbon monoxide (CO)	8 hours	9.0 ppm (10,000 $\mu g/m^3$)	9 ppm (10,000 ug/m^3)
	1 hour	20 ppm (23,000 $\mu g/m^3$)	35 ppm (40,000 ug/m^3)
Nitrogen dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)	0.053 ppm (100 $\mu g/m^3$)
	1 hour	0.18 ppm (339 $\mu g/m^3$)	100 ppb (188 $\mu g/m^3$)
Sulfur dioxide (SO_2)	Annual Arithmetic Mean	-	0.030 ppm (80 $\mu g/m^3$)
	24 hours	0.04 ppm (105 $\mu g/m^3$)	0.14 ppm (365 $\mu g/m^3$)
	3 hours	-	0.5 ppm (1300 $\mu g/m^3$)
	1 hour	0.25 ppm (655 $\mu g/m^3$)	75 ppb (196 $\mu g/m^3$)
Suspended particulate matter or PM10 (10 micron)	24 hours	50 $\mu g/m^3$	150 $\mu g/m^3$
	Annual Arithmetic Mean	20 $\mu g/m^3$	-
Suspended particulate matter or PM2.5 (2.5 micron)	Annual Arithmetic Mean	12 $\mu g/m^3$	12.0 $\mu g/m^3$ (3-year average)
	24 hours	-	35 $\mu g/m^3$
Sulfates	24 hours	25 $\mu g/m^3$	-
Lead (Pb)	30 days	1.5 $\mu g/m^3$	-
	Calendar Quarter	-	1.5 $\mu g/m^3$
	Rolling 3-month Average	-	0.15 $\mu g/m^3$

ppm = parts per million, ppb=parts per billion, $\mu g/m^3$ = micrograms per cubic meter (CARB 2016)

Brief descriptions of health effects for the main criteria pollutants are as follows.

Ozone

Ozone is a reactive pollutant, which is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving precursor organic compounds (POC) and oxides of nitrogen (NO_x). POC and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of POC and NO_x under the influence of wind and sunlight. Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide

Carbon monoxide is a non-reactive pollutant that is a product of incomplete combustion. Ambient carbon monoxide concentrations generally follow the spatial and temporal distributions of vehicular traffic and are also influenced by meteorological factors such as wind speed and atmospheric mixing. Under inversion conditions, carbon monoxide concentrations may be distributed more uniformly over an area out to some distance from vehicular sources. When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease or anemia, as well as fetuses.

Particulate Matter (PM10 and PM2.5)

PM10 consists of particulate matter that is 10 microns or less in diameter (a micron is one- millionth of a meter), and fine particulate matter, PM2.5, which consists of particulate matter 2.5 microns or less in diameter. Both PM10 and PM2.5 represent fractions of particulate matter, which can be inhaled into the air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, combustion, and atmospheric photochemical reactions. Some of these operations, such as demolition and construction activities, contribute to increases in local PM10 and PM2.5 concentrations, while others, such as stationary source emissions, vehicular traffic, etc. affect regional PM10 and PM2.5 concentrations.

Nitrogen Dioxide and Sulfur Dioxide

Nitrogen dioxide (NO_2) and sulfur dioxide (SO_2) are two gaseous compounds within a larger group of compounds, NO_x and sulfur oxides (SO_x), respectively, which are products of the combustion of fuel. NO_x and SO_x emission sources can elevate local NO_2 and SO_2 concentrations, and both are regional precursor compounds to particulate matter. As described above, NO_x is also an ozone precursor compound and can affect regional visibility. (Nitrogen dioxide is the “whiskey brown” colored gas readily visible during periods of heavy air pollution.) Elevated concentrations of these compounds are associated with increased risk of acute and chronic respiratory disease. Additionally, sulfur dioxide and nitrogen oxides emissions can be oxidized in the atmosphere to eventually form sulfates and nitrates, which contribute to acid rain.

Lead

Gasoline-powered automobile engines used to be the major source of airborne lead in urban areas. Excessive exposure to lead concentrations can result in gastrointestinal disturbances, anemia, kidney disease, and in severe cases of neuromuscular and neurological dysfunction. The use of lead additives in motor vehicle fuel has been eliminated in California, and lead concentrations have declined substantially as a result.

Hydrogen Sulfide

Hydrogen sulfide (H_2S) is a naturally occurring gas contained, as a for-instance, in geothermal steam from the Geysers. H_2S has a “rotten egg” odor at concentration levels as low as 0.005 parts per million (ppm). The state 1-hour standard of 0.03 ppm is set to reduce the potential for substantial odor complaints. At concentrations of approximately 10 ppm, exposure to H_2S can lead to health effects such as eye irritation.

Toxic/Hazardous Air Contaminants

"Toxic air contaminants" (TACs) are air pollutants that are believed to have carcinogenic or adverse non-carcinogenic effects but do not have a corresponding ambient air quality standard. There are hundreds of different types of toxic air contaminants, with varying degrees of toxicity. Sources of toxic air contaminants include industrial processes such as petroleum refining, electric utility and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust.

Toxic air contaminants are regulated under both state and federal laws. Federal laws use the term "Hazardous Air Pollutants" (HAPs) to refer to the same types of compounds referred to as TACs under state law. Both terms generally encompass the same compounds. For the sake of consistency, this analysis will use TACs when referring to these compounds rather than HAPs. Under the Clean Air Act Amendments of 1990, approximately 190 substances are designated as TACs. Appendix AQ1 presents the annual emissions of the TACs in Table AQ1-1 and AQ1-2. Tables in the emissions section below present the emissions from the diesel engines at the LBGF facility. TAC emissions are well below the major source thresholds; therefore, the facility is not a major source subject to MACT.

Attainment Status. The EPA designates the attainment status of regional areas with respect to federal air quality standards, while the CARB designates the attainment status of regional areas of California with respect to state air quality standards. Local air districts in California play a vital role is such designations at both levels. These classifications depend on whether the monitored ambient air quality data shows compliance, or non-compliance with the ambient air quality standards, respectively. The LBGF and LDC site is located within Santa Clara County, under the jurisdiction of the BAAQMD. Table 4.3-2 summarizes the attainment status for each of the criteria pollutants in the BAAQMD with regards to both the federal and state standards.

Table 4.3-2: Attainment Status for the San Francisco Bay Area Air Basin

Pollutant	Averaging Time	Federal Designation	State Designation
Ozone	1 Hour 8 Hour	Marginal Non Attainment Non Attainment	Non Attainment Non Attainment
CO	1 Hour 8 Hour	Maintenance Maintenance	Attainment Attainment
NO_2	1 Hour Annual AM	Attainment Attainment	Attainment Attainment
SO_2	1 Hour 3 Hour 24 Hour Annual AM	Attainment Attainment Attainment Attainment	Attainment Attainment - -
PM10	24 Hour Annual AM	Attainment -	Non Attainment Non Attainment
PM2.5	24 Hour Annual AM	Attainment Attainment	- Non Attainment
Lead	30 day Avg Calendar Qtr. Rolling 3 Month Avg	Attainment Attainment -	Attainment - -
Visibility Reducing PM (VRP)	8 Hour	-	Unclassified
Sulfates	24 Hour	-	Attainment
H2S	1 Hour	-	Unclassified
Vinyl Chloride	24 Hour	-	No info

Source: BAAQMD website, 2020. (BAAQMD, 2017a)

The LBGF is not expected to emit lead, visibility reducing particulate (VRP), sulfates, hydrogen sulfide, or vinyl chloride. Therefore, these pollutants are not analyzed further in this report.

Existing Conditions. The existing air quality conditions in the project area are summarized in Tables 4.3-3 and 4.3-4, which provide the background ambient air concentrations of criteria pollutants for the previous three (3) years as measured at certified monitoring stations near the project site. To evaluate the potential for air quality degradation as a result of the project, modeled project air concentrations are combined with the respective background concentrations as presented in Table 4.3-4 and used for comparison to the NAAQS and CAAQS.

Table 4.3-3: Measured Ambient Air Quality Concentrations by Year

Pollutant	Units	AvgTime	Basis of Yearly/Design Concentrations	2016	2017	2018
Ozone	ppb	1-Hr	CAAQS-1st Highs/3-yr Max	87	121	78
Ozone	ppb	8-Hr	CAAQS-1st Highs/3-yr Max	66	98	61
Ozone	ppb	8-Hr	NAAQS-4th Highs/3-yr Avg	61	75	53
NO_2	ppb	1-Hr	CAAQS-1st Highs/3-yr Max	51	68	86
NO_2	ppb	1-Hr	NAAQS-98th%s/3-yr Avg	42	50	59
NO_2	ppb	Annual	CAAQS/NAAQS-AAM/3-yr Max	11	12	13
CO	ppm	1-Hr	CAAQS-1st Highs/3-yr Max	2.0	2.1	2.5
			NAAQS-2nd Highs/3-yr Max	1.9	2.0	2.4
CO	ppm	8-Hr	CAAQS-1st Highs/3-yr Max	1.4	1.8	2.1
			NAAQS-2nd Highs/3-yr Max	1.3	1.7	2.0
SO_2	ppb	1-Hr	CAAQS-1st Highs/3-yr Max	1.8	3.6	6.9
			NAAQS-99th%s/3-yr Avg	2	3	3
		24-Hr	CAAQS-1st Highs/3-yr Max	0.8	1.1	1.1
			NAAQS-2nd Highs/3-yr Max	0.8	1.0	1.1
		Annual	CAAQS/NAAQS-AAM/3-yr Max	0.19	0.20	0.21
PM10	µg/m³	24-Hr	CAAQS-1st Highs/3-yr Max	41	70	122
			NAAQS-2nd Highs/3-yr 4th High	35	67	111
		Annual	CAAQS-AAM/3-yr Max	18.5	21.6	23.1
PM2.5	µg/m³	24-Hr	NAAQS-98th%/3-yr Avg	19	34	73
		Annual	CAAQS –AAM/3-yr Max	8.4	9.5	12.8
			NAAQS-AAM/3-yr Avg			10.2

Notes: Values for 158 East Jackson Street, San Jose, CA, the nearest BAAQMD monitoring site (all applicable pollutants measured)
Data sources: BAAQMD website Air Pollution Summaries for CAAQS (10/22/19) and USEPA AIRS website for NAAQS (10/22/19) (CARB 2019) and (EPA 2019)

Table 4.3-4: Background Air Quality Data Summary

Pollutant and Averaging Time	Background Value (µg/m³)
Ozone – 1-hour Maximum CAAQS	238
Ozone – 8-hour Maximum CAAQS/ 3-year average 4th High NAAQS	192/124
PM10 – 24-hour Maximum CAAQS/ 24-hour 3-year 4th High NAAQS	122/98
PM10 – Annual Maximum CAAQS	23.1
PM2.5 – 3-Year Average of Annual 24-hour 98th Percentiles NAAQS	42
PM2.5 – Annual Maximum CAAQS/ 3-Year Average of Annual Values NAAQS	12.8/10.2
CO – 1-hour Maximum CAAQS/ 1-hour High, 2nd High NAAQS	2,863/2,748
CO – 8-hour Maximum CAAQS/ 8-hour High, 2nd High NAAQS	2,405/2,290
NO_2 – 1-hour Maximum CAAQS/ 3-Year Average of Annual 98th Percentile 1-hour Daily Maxima NAAQS	162/95
NO_2 – Annual Maximum CAAQS/NAAQS	24.5

SO$_2$ – 1-hour Maximum CAAQS/ 3-Year Average of Annual 99th Percentile 1-hour Daily Maxima NAAQS	18.1/7.1
SO$_2$ – 3-hour Maximum NAAQS (Not Available - Used 1-hour Maxima)	18.1
SO$_2$ – 24-hour Maximum CAAQS 24-hour High, 2nd High NAAQS	2.9/2.9
SO$_2$ – Annual Maximum NAAQS	0.5
Values for 158 East Jackson Street, San Jose, CA, the nearest BAAQMD monitoring site (all applicable pollutants measured) Conversion of ppm/ppb measurements to µg/m^3 concentrations based on: µg/m^3 = ppm x 40.9 x MW, where MW = 48, 28, 46, and 64 for ozone, CO, NO$_2$, and SO$_2$, respectively.	

1.1.1.2 *Regulatory Background*

Federal, state, and regional agencies regulate air quality within the BAAQMD, where the project site is located.

Federal. At the federal level, EPA is responsible for overseeing implementation of the federal Clean Air Act and its subsequent amendments (CAA). As required by the federal CAA, NAAQS have been established for the criteria pollutants described above.

New Source Performance Standards

The LBGF will be subject to the applicable New Source Performance Standards (NSPS) standards that are identified below. A description of the applicant's compliance plan to meet each standard is included.

40 CFR Part 60, Subpart IIII

Standards of Performance for Stationary Compression Ignition Internal Combustion Engines became effective July 11, 2006. The diesel engines are subject to Subpart IIII. The proposed engines are EPA Tier 2 rated and will comply with these regulations.

Compression Ignition (CI) Diesel Engines Emission Standards

Based on 40 CFR 60.4202, emergency CI engines rated at > 560 kW are subject to the emissions standards in 40 CFR 89.112, Table 1, as follows:

- Tier 2 – NO$_x$+NMHC 6.4 g/kw-hr = 4.8 g/bhp-hr
- Tier 2 – CO 3.5 g/kw-hr = 2.6 g/bhp-hr
- Tier 2 – PM 0.20 g/kw-hr = 0.15 g/bhp-hr

Using the recommended CARB procedure for breaking out the NO$_x$+NMHC value, the applicable standard for NO$_x$ would be 4.5 g/bhp-hr, and the applicable standard for NMHC (VOC) would be 0.3 g/bhp-hr.

The proposed diesel-fired engines will satisfy these requirements based upon data supplied by the manufacturer as certified by EPA. In addition, the proposed engines will utilize a diesel particulate filter which will reduce the PM emissions to less than or equal to 0.01 g/bhp-hr.

40 CFR Part 60 Subpart ZZZZ

The proposed CI engines are exempt from the requirements of Subpart ZZZZ (63.6590 (c)(1)) if the engines comply with the emissions limitations specified in 40 CFR 60 Subpart IIII. See discussion above.

BAAQMD Air Quality Standards and Regulations

The section briefly describes the regulations which would apply to the LBGF as set forth in the BAAQMD Rules and Regulations.

Regulation 2 Rule 2 – New Source Review (NSR)

This rule applies to all new or modified sources requiring a Permit to Operate for any new source with actual or potential emissions above the rule trigger limit. The rule also specifies when BACT is required, when offsets are required and the offset ratios, as well the requirements for the required impact analyses, etc.

BACT Requirements

A review of BACT for CI-Stationary Emergency Standby engines rated at greater than 50 BHP (BAAQMD Document 96.1.3, Revision 7, 12/22/2010) indicates that BACT for the proposed engines would be as follows:

• PM	0.15 g/bhp-hr
• NMHC+NO_x	4.8 g/bhp-hr
• CO	2.6 g/bhp-hr
• SO_2	fuel sulfur content not to exceed 15 ppmw

The engines proposed for the LBGF meet these requirements, so BACT is satisfied.

Additionally, the use of diesel particulate filters on both engines will reduce the PM emissions to less than or equal to 0.01 g/bhp-hr.

NSR Offset Requirements

Required emissions offsets as identified in this application will be obtained in compliance with the Regulation 2 Rule 2 NSR rule provisions in Section 302. These provisions are discussed as follows:

- Pursuant to the BAAQMD NSR Rule (Regulation 2 Rule 2), section 2-2-302, offsets must be provided for NO_x or POC (VOC is used in this application), for any source with potential emissions greater than 10 tons/yr. For sources which emit NOx or VOC in excess of 10 tpy but less than 35 tpy, these offsets can be provided by either of the two methods outlined in subsections 302.1.1 or 302.1.2 as follows; (1) the APCO must provide the required offsets from the Small Facility Bank Account, or (2) if the Small Facility Bank Account is exhausted then it is the responsibility of the Applicant to provide the required offsets to mitigate the proposed emissions net increase. VOC emissions from the proposed facility are less than 10 tpy, so VOC offsets are not required under the District NSR rule. NOx emissions are greater than 35 tpy, and as such, the applicant must secure NOx offsets at a ratio of 1.15:1 for any un-offset cumulative increase in emissions. The NOx offsets cannot be acquired from the Small Facility Offset Bank.

- Offset mitigation for PM10, PM2.5, and sulfur dioxide emissions is addressed in Section 2-2-303. This section specifies that offsets are only required if the source has the potential to emit any of these pollutants in excess of 100 tons per year. The Applicant notes that the worst case PM10, PM2.5, and SO2 emissions from the LBGF are 0.161, 0.161, and 0.05 tons per year respectively. The Applicant believes that mitigation for emissions at these low emissions levels is not warranted, and such mitigation is not required under Regulation 2 Rule 2.

Regulation 9 Rule 8 – NO_x and CO from Stationary Internal Combustion Engines

- Section 9-8-304 requires that emergency CI engines rated at greater than 175 bhp meet the following limits (at 15% O_2 dry basis): NO_x 110 ppm and CO 310 ppm. But, Section 9-8-110.5 exempts “emergency standby engines” from this requirement.
- Section 9-8-330 requires that the affected engine be limited to non-emergency operations of less than or equal to 50 hours per year.
- Section 9-8-530 requires that each engine be equipped with a non-resettable totalizing meter, and the following must be logged and reported to the AQMD:
  a. Total hours run each year
  b. Total hours of emergency operation per year
  c. Specify the nature of each emergency operation

The proposed engine models will comply with the above requirements.

BAAQMD Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants

This rule provides for the review of new and modified sources of TAC emissions to evaluate potential public exposure and health risk. The rule also specifies when toxics-BACT is required, trigger limits for further analysis based on substance specific emissions levels (both short and long term), risk assessment procedures, etc.

State. CARB is the state agency that retains authority to regulate mobile sources throughout the state and oversees implementation of the state air quality laws and regulations, including the California Clean Air Act. The CARB also establishes and revises the CAAQS.

TACs are primarily regulated through state and local risk management programs, which are designed to eliminate, avoid, or minimize the risk of adverse health effects from exposures to TACs. In the BAAQMD, the two most prominent TAC regulatory programs are the Toxics New Source Review (Regulation 2, Rule 5) rules and the AB2588 Air Toxics Hot Spots Program.

Regional. BAAQMD is the primary regional agency responsible for attaining and maintaining air quality conditions in the SFBAAB through a comprehensive program of planning, regulation, and enforcement. Examples of the BAAQMD’s primary air plans and regulations are described below.

BAAQMD Clean Air Plan. The 2017 Bay Area Clean Air Plan was adopted by the BAAQMD on April 19, 2017, and provides a regional strategy to protect public health and protect the climate. The 2017 Bay Area Clean Air Plan updates the most recent Bay Area ozone plan, the 2010 Clean Air Plan, and is a multi-pollutant air quality plan addressing four categories of air pollutants (BAAQMD, 2017b):

1) ozone and the primary ozone precursor pollutants (VOCs and NO_x)
2) Particulate matter (PM10 and PM2.5), as well as their precursors
3) TACs/HAPs
4) Greenhouse gases

1.1.2 Impact Discussion

The following presents the impact determinations for the general CEQA areas related to air quality and public health. Each of these general determinations are discussed in greater detail in the analysis which follows.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
1) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
2) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
3) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
4) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Note to reader: Where the following analysis applies to both the LBGF and the LDC, the word “project” is used to collectively refer to both facilities. Where impacts associated with each facility differ, they are referred to individually as the “LBGF” or the “LDC”.

1.1.2.1 *Significance Criteria*

The project analysis is based upon the general methodologies in the most recent BAAQMD CEQA Guidelines (BAAQMD,2017c) and significance thresholds for the SFBAAB, including the criteria pollutant thresholds listed in Table 4.3-5.

Table 4.3-5: **BAAQMD CEQA Thresholds of Significance**

Pollutant	Construction Thresholds	Operational Thresholds

	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Annual Average Emissions (tons/year)
Criteria Air Pollutants			
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
CO	None	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards for New Sources			
Excess Cancer Risk	10 per one million	10 per one million	
Chronic or Acute Hazard Index	1.0	1.0	
Incremental annual average $PM_{2.5}$	0.3 $\mu g/m^3$	0.3 $\mu g/m^3$	
GHGs – Stationary Source Projects			
CO_2e	None	10,000 MT/yr (11,023 short tons)	
Health Risks and Hazards for Sensitive Receptors (Cumulative from All Sources within 1,000-Foot Zone of Influence) and Cumulative Thresholds for New Sources			
Excess Cancer Risk	100 per 1 million		
Chronic Hazard Index	10.0		
Annual Average $PM_{2.5}$	0.8 $\mu g/m^3$		

Source: BAAQMD CEQA Guidelines, May 2017.

1.1.2.2 *Impact Summary*

The conclusions of the air quality analysis are summarized below as responses to CEQA checklist questions. A full discussion of the air quality analysis underlying these conclusions is presented in the following section.

Impact AIR-1: The project would not conflict with or obstruct implementation of the applicable air quality plan. **(Less than Significant Impact)]**

The LBGF and the LDC project would not conflict with or obstruct the implementation of the applicable air quality plan due to the following:

- The LBGF will comply with all applicable rules and regulations of the BAAQMD regarding emissions of criteria pollutants.
- The LBGF will comply with all applicable rules and regulations of the BAAQMD regarding emissions of toxic pollutants.
- The proposed engines at the LBGF will comply with the applicable federal Tier 2 emissions

standards for emergency standby electrical generation CI engines.
- The LBGF will comply with all applicable provisions of the applicable 2017 BAAQMD Air Quality Implementation Plan.
- The LBGF will obtain and maintain all required air quality related permits from the BAAQMD, and requirements imposed by the California Energy Commission.

Impact AIR-2: The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard. **(Less Than Significant Impact)**

The LBGF project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard, due to the following:

- The use of best management practices during the construction phase will ensure that the emissions do not result in a cumulative considerable net increase of any non-attainment pollutants. These emissions are generally short term in nature and vary widely from day to day.
- See offset mitigation requirements under the NSR discussion above.

Impact AIR-3: The project would not expose sensitive receptors to substantial pollutant concentrations. **(Less than Significant Impact)**

The LBGF project would not expose sensitive receptors to substantial pollutant concentrations due to the following:

- The air quality impact analysis presented herein shows that the LBGF will not cause or contribute to a violation of any state or federal ambient air quality standard.
- The construction and operational health risk assessments presented herein indicate that the emissions of toxic air contaminants from the LBGF processes will not cause a significant risk to any sensitive or non-sensitive receptor with respect to cancer or chronic impacts.

Impact AIR-4: The project would not result in substantial emissions (such as odors) adversely affecting a substantial number of people. **(Less than Significant Impact)**

The LBGF project would not result in other emissions or odors that would adversely affect a substantial number of people due to the following:

- Similar facilities, both larger and smaller in scale, have not been identified as sources of odors that would adversely affect offsite receptors.
- The LBGF and LDC are not one of the project types listed in the BAAQMD CEQA guidelines as producing odors that may affect offsite receptors.

- The applicant has not identified any operational or construction practices, that are planned for use at the project site, that would generate substantial amounts of odors that would affect offsite receptors.

1.1.2.3 *Project Emissions, Air Quality Impact Analysis, and Health Risk Assessment*

PROJECT EMISSIONS

Construction. Project construction emissions of CO, VOCs, NO_x, SO_2, PM10, and PM2.5 were evaluated. Detailed construction emission calculations are presented in Appendix AQ4. Onsite construction emissions from construction of the LBGF will result from demolition activities, site preparation and grading activities, building erection and parking lot construction activities, "finish" construction activities, and the use of onsite construction equipment. Construction emissions from the LBGF are negligible but are included in the emission calculations for the LBGF. Offsite construction emissions will be derived primarily from materials transport to and from the site, and worker travel. Emissions from the 24-month construction period were estimated using the CalEEMod program. Estimated criteria pollutant construction emissions for the project are summarized in Table 4.3-6. Construction support data and the CalEEMod analysis output are presented in Appendix AQ-4.

The BAAQMD CEQA Air Quality Guidelines considers exposure of sensitive receptors to air pollutant levels that result in an unacceptable cancer risk or hazard to be significant. BAAQMD recommends a 1,000-foot zone of influence around project boundaries. Since construction activities are temporary and would occur well over 1,000 feet from the nearest sensitive receptor, community risk impacts from construction activities would be *less than significant*.

Table 4.3-6: Criteria Pollutant Emissions from Construction Activities

Scenario	**NO_x**	**CO**	**VOC**	**SO_x**	**PM10**	**PM2.5**	**CO_2e**
Avg. Daily Emissions, LBS	11.1	10.6	13.6	0.031	0.371 exhaust	0.371 exhaust	NA
Max Project Emissions, Tons/Period	3.03	2.89	3.69	0.008	0.101 exhaust 0.46 fugitives	0.101 exhaust 0.16 fugitives	762
BAAQMD Thresholds, Lbs/day	54	NA	54	NA	82	54	NA
Exceeds Thresholds	No	NA	No	NA	No	No	NA

Notes: PM10 and PM2.5 thresholds are exhaust only.
Construction schedule is approximately 24 months, or ~544 work days.
Source: ADI CalEEMod analysis, March 2020.

As shown in Table 4.3-6, construction of the project would not generate VOCs, NO_x, SO_x, PM10 and PM2.5 emissions in excess of BAAQMD's numeric thresholds. The BAAQMD's CEQA Guidelines consider fugitive dust impacts to be less than significant through the application of best management practices (BMPs).

Mitigation Incorporated into the Construction Phase and Project Design:

To ensure that fugitive dust impacts are less than significant, the project will implement the BAAQMD's recommended BMPs during the construction phase. These BMPs are incorporated into the design of the project and will include:

- All exposed surfaces (soil piles, graded areas, and unpaved access roads) shall be watered at least two times per day.
- All haul trucks transporting material offsite shall be covered.
- All track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day.
- All vehicle speeds on unpaved surfaces shall be limited to 15 miles per hour.
- All roadways, driveways, and sidewalks shall be paved as soon as possible. Building pads shall be completed as soon as possible after grading unless seeding or soil binders are used.
- Equipment idling times shall be minimized to 5 minutes per the Air Toxics Control Measure (ATCM). Idling time signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer specifications. All equipment shall be checked by a certified visible emissions evaluator.
- Information on who to contact, contact phone number, and how to initiate complaints about fugitive dust problems will be posted at the site.

Operation. Operational emissions of NO_x, VOCs, CO, SO_2, PM10, PM2.5, and GHGs were evaluated. Diesel particulate matter (DPM) was the only TAC considered to result from operation of the LBGF. Detailed operation emission calculations are presented in Appendix AQ1. Primary operation emissions are a result of diesel fuel combustion from the standby diesel generators, offsite vehicle trips for worker commutes and material deliveries. Secondary operational emissions from facility upkeep, such as architectural coatings, consumer product use, landscaping, water use, waste generation, natural gas use for comfort heating, and electricity use, were considered de minimus. Each of the primary emission sources are described in more detail below.

Stationary Sources. The project’s 45 standby diesel generators will be comprised of the following equipment:

44 – Cummins QSK95-G9 Diesel-fired engines, rated at 4288 HP (3000 kWe) at 100% Load
1 – Cummins QST30 Diesel-fired engine, rated at 1482 HP (1105 kWe) at 100% Load

The generators proposed for installation are made by Cummins, with a certified Tier 2 rating. These engines will be equipped with diesel particulate filters (DPF) to reduce the diesel particulates to less than or equal to 0.01 grams/brake horse-power hour (g/bhp-hr). All generators would be operated routinely to ensure they would function during an emergency event. Appendix AQ1 presents the detailed emissions calculations for the proposed engines. Appendix AQ2 contains the manufacturers specification sheets for the engines.

During routine readiness testing, criteria pollutants and TACs (as DPM) would be emitted directly from the generators. Criteria pollutant emissions from generator testing were quantified using information provided by the manufacturer, as specified in Appendix AQ1. SO2 emissions were based on the maximum sulfur content allowed in California diesel (15 parts per million by weight), and an assumed 100 percent conversion of fuel sulfur to SO_2. DPM emissions resulting from diesel stationary combustion were assumed equal to PM10/2.5 emissions. For conservative evaluation purposes, it was assumed that testing (weekly, monthly, quarterly, annual, and special testing) would occur for no more than 50 hours per year. 50 hours per year per engine is the limit specified by the Airborne Toxic Control Measure for Stationary Toxic Compression Ignition Engines (Title 17, Section 93115, CCR). However, it is the Applicant's experience that each engine will be operated for considerably less than 50 hours a year. Maintenance and readiness testing usually occurs at loads ranging from 10 to 100% load. For purposes of this application, emissions were assumed to occur at all load ranges. Tables AQ1-1 and AQ1-2 in Appendix AQ1 present a wide range of emissions based upon load points, number of engines tested, etc. The QSK95 engines were evaluated for the following emissions scenarios:

- Scenario 1 - Declared emergency operations, 100 hrs/yr, Tier 2 emissions factors, 100% load, with DPF controls. (BAAQMD Policy limit.) These emissions are not subject to NSR applicability.
- Scenario 2 - Maintenance/Readiness operations, 50 hrs/yr, Tier 2 emissions factors, 100% load, with DPF controls. (ATCM limit.)
- Scenario 3 – Declared emergency operations, 100 hrs/yr, EPA 40 CFR 89 D2 cycle weighted emissions factors, 100% load, with DPF controls. (BAAQMD Policy limit.) These emissions are not subject to NSR applicability.
- Scenario 4 - Maintenance/Readiness operations, 50 hrs/yr, EPA 40 CFR 89 D2 cycle weighted emissions factors, 100% load, with DPF controls. (ATCM limit)
- Scenario 5 - Maintenance/Readiness operations, 50 hrs/yr, EPA 40 CFR 89 D2 cycle weighted emissions factors, 10% load, with DPF controls. (ATCM limit.)
- Scenario 6 - Maintenance/Readiness operations, 50 hrs/yr, Cummins nominal performance emissions factors, 1% load, with DPF controls. (ATCM limit.)

For the small QST30 engines, only Scenarios 1-4 were evaluated.

It should be noted that although the engines will be equipped with "active DPF" controls, only PM10/2.5 were evaluated as "controlled" for purposes of emissions quantification.

The tables which follow present emissions summaries for the two engines for each of the scenarios noted above in terms of the worst case hourly, daily, and annual emissions. Maximum daily emissions are based on the assumption that only 10 of the QSK95 engines will be tested on any day (and the engines will not be run concurrently).

Table 4.3-7: Scenario 1 Emissions Summary for QSK95 and QST30 Engines

Period	NOx	CO	VOC	SO2	PM10/2.5	CO2e
QSK95-G9						

Max Hourly, lbs	1871.8	1081.5	124.8	2.1	6.24	-
Max Daily, lbs	44922.9	25955.5	2994.9	49.9	149.7	-
Max Annual, tons	93.59	54.07	6.24	0.10	0.31	10321
QST30						
Max Hourly, lbs	14.7	8.49	0.98	0.02	0.05	-
Max Daily, lbs	352.9	203.9	23.5	0.39	1.18	-
Max Annual, tons	0.74	0.42	0.05	0.0005	0.0012	82
Scenario 1 - Declared emergency operations, 100 hrs/yr, Tier 2 emissions factors, 100% load, with DPF controls. ***Emissions from Scenario 1 are NOT subject to NSR applicability*.**						

Table 4.3-8: Scenario 2 Emissions Summary for QSK95 and QST30 Engines

Period	**NOx**	**CO**	**VOC**	**SO2**	**PM10/2.5**	**CO2e**
QSK95-G9						
Max Hourly, lbs	42.54	24.58	2.84	0.047	0.142	-
Max Daily, lbs	425.41	245.8	28.36	0.473	1.42	-
Max Annual, tons	46.8	27.0	3.1	0.05	0.16	5161
QST30						
Max Hourly, lbs	14.7	8.49	0.98	0.02	0.05	-
Max Daily, lbs	14.7	8.49	0.98	0.02	0.05	-
Max Annual, tons	0.37	0.21	0.02	0.0004	0.0012	41
Scenario 2 - Maintenance/Readiness operations, 50 hrs/yr, Tier 2 emissions factors, 100% load, with DPF controls.						

Table 4.3-9: Scenario 3 Emissions Summary for QSK95 and QST30 Engines

Period	**NOx**	**CO**	**VOC**	**SO2**	**PM10/2.5**	**CO2e**
QSK95-G9						
Max Hourly, lbs	1817.7	207.98	95.7	2.1	6.24	-
Max Daily, lbs	43625.1	4991.4	2296.1	49.91	149.7	-
Max Annual, tons	90.89	10.40	4.78	0.10	0.31	10321
QST30						
Max Hourly, lbs	13.66	1.63	0.72	0.016	0.033	-
Max Daily, lbs	327.8	39.21	17.3	0.39	0.78	-

Max Annual, tons	0.68	0.08	0.04	0.0008	0.00165	82
Scenario 3 - Declared emergency operations, 100 hrs/yr, EPA D2 cycle weighted emissions factors, 100% load, with DPF controls. ***Emissions from Scenario 3 are NOT subject to NSR applicability***.						

Table 4.3-10: Scenario 4 Emissions Summary for QSK95 and QST30 Engines

Period	NOx	CO	VOC	SO2	PM10/2.5	CO2e
QSK95-G9						
Max Hourly, lbs	41.31	4.73	2.17	0.047	0.142	-
Max Daily, lbs	413.1	47.27	21.74	0.473	1.42	-
Max Annual, tons	45.44	5.20	2.39	0.05	0.156	5161
QST30						
Max Hourly, lbs	13.66	1.63	0.72	0.016	0.033	-
Max Daily, lbs	13.66	1.63	0.72	0.016	0.033	-
Max Annual, tons	0.34	0.04	0.02	0.00025	0.0008	41
Scenario 4 – Maintenance/Readiness operations, 50 hrs/yr, EPA 40 CFR 89 D2 cycle weighted emissions factors, 100% load, with DPF controls.						

Table 4.3-11 presents maximum daily and annual emissions data for the various testing scenarios in comparison to the BAAQMD CEQA significance thresholds.

Table 4.3-11: Facility Scenario Emissions and BAAQMD CEQA Significance Levels

Scenario	**Lbs/Day**					
	NO_x	**CO**	**VOC**	**SO_2**	**PM10**	**PM2.5**
BAAQMD CEQA Thresholds	54	NA	54	NA	82	54
Worst Case Daily Emissions[1]	425.4	245.8	28.4	0.473	1.42	1.42
Significance Threshold Exceeded	Yes	NA	No	NA	No	No
Scenario	**Tons/Yr**					
	NO_x	**CO**	**VOC**	**SO_2**	**PM10**	**PM2.5**
BAAQMD CEQA Thresholds	10	NA	10	NA	15	10
Worst Case Annual Emissions[2]	47.2	27.3	3.14	0.05	0.16	0.16
Significance	Yes	NA	No	NA	No	No

Threshold Exceeded						
[1] Based on the emissions from Scenario 2 for a 10 engine test day for the QSK95. [2] Based on the summation of the QSK95 and QST30 engine emissions under Scenario 2. [2] Worst case CO2e emissions are 5202 tpy.						

The following should be noted with respect to Table 4.3-13 above.

1. NO_x emissions exceed the BAAQMD CEQA significance levels on the days when the 10 engine readiness tests occur, and on a TPY basis (total emissions from all engines).
2. The emissions of NO_x will be mitigated through the participation in the BAAQMD ERC Bank, or other alternative methods as negotiated with the BAAQMD.

Table 4.3-12 presents the summation of emissions for all engines for the maximum of the scenarios noted above, i.e., Scenario 1 plus Scenario 2 to meet the 150 hours per year criteria per the BAAQMD permitting policy criteria.

Table 4.3-12 BAAQMD 150 Hour per Year Emissions Summation (tons per year)

Engines	NOx	CO	VOC	SO2	PM10/2.5	CO2e
QSK95 and QST30	137.4	15.7	7.2	0.15	0.47	15605
Summation of Scenario 3 and 4 for both engines. Based on EPA D2 cycle factors. ***These values are NOT the NSR applicability values.***						

Table 4.3-13 presents data on the DPM emissions levels (worst case) for both models of engines.

Table 4.3-13: Toxic Air Contaminant (DPM) Emissions from the Proposed Engines (per engine basis)

Scenario	QSK95	QST30
	DPM Emissions	
Maximum Annual, lbs/yr	4.75	1.65
Maximum Hourly, lbs	0.095	0.033

Notes: DPM is the approved surrogate compound for diesel fuel combustion for purposes of health risk assessment.
Annual emissions for each engine are based on the max allowed runtime of 50 hours per year.

Table 4.3-14 presents the hourly and annual fuel use values for the maximum operational scenario as outlined above.

Table 4.3-14 Engine Fuel Use Values

Scenario	QSK95	QST30
	Fuel Use, gallons (per engine basis)	
Maximum Annual, gals/yr	10,350	3,610
Maximum Hourly, gals/hr	207	72.2
Total Annual Fuel Use (All Engines)		
Annual Fuel Use, gals/yr	455,400	3,610

Miscellaneous Operational Emissions

Miscellaneous emissions from operational activities such as worker travel, deliveries, energy and fuel use for facility electrical, heating and cooling needs, periodic use of architectural coatings, landscaping, etc. were evaluated by CalEEMod. These emissions are presented in Table 4.3-15.

Table 4.3-15: Miscellaneous Operational Emissions

Scenario	**Lbs/Day**					
	NO_x	**CO**	**VOC**	**SO_2**	**PM10**	**PM2.5**
BAAQMD CEQA Thresholds	54	NA	54	NA	82	54
All Sources Lbs/avg day	0.155	0.53	2.06	0.0018	0.17	0.046
TPY						
BAAQMD CEQA Thresholds	10	NA	10	NA	15	10
All Sources Tons/yr	0.0283	0.0964	0.376	0.0003	0.031	0.0085
Exceeds Thresholds	No	NA	No	NA	No	No
Note: assumes the data center is manned 365 days/yr. All source category includes, mobile worker travel, deliveries, energy use, fuel use, waste disposal, water use, and misc area sources. Source: ADI CalEEMod analysis, March 2020.						

AIR QUALITY IMPACT ANALYSIS

The 15.45-acre project site (north parcel), located at 2825 Lafayette Avenue in the City of Santa Clara (Santa Clara County), is currently developed with two two-story office buildings and associated paved parking and loading areas (total of 326,400 sq.ft.)(APN 224-04-093). The project proposes to demolish the existing improvements on the site to construct a multi-story 576,120 square foot data center building. The LDC building would house computer servers for private clients in a secure and environmentally controlled structure. And the LBGF would be designed to provide 99 megawatts (MW) of Information Technology (IT) power.

Modeling Overview

The evaluation of the potential air quality impacts and health risks were based on the estimate of the ambient air concentrations that could result from LBGF air emission sources. This section discusses the selection of the dispersion model, the data that was used in the dispersion model (pollutants modeled with appropriate averaging times, source characterization, building downwash, terrain, and meteorology), etc.

Assessments of ambient concentrations resulting from pollutant emissions (called air quality impacts) are normally conducted using USEPA-approved air quality dispersion models. These models are based on mathematical descriptions of atmospheric diffusion and dispersion processes in which a pollutant source impact can be calculated over a given area and for a specific period of time (called averaging period). By using mathematical models, the assessment of emissions can be determined for both existing sources as well as future sources not yet in operation. Inputs required by most dispersion models, which must be specified by the user, include the following:

- Model options, such as averaging time to be calculated;
- Meteorological data, used by the model to estimate the dispersion conditions experience by the source emissions;
- Source data, such as source location and characteristics – stack emissions like those considered here are modeled as “point” sources, which require user inputs of the release height, exit temperature and velocity, and stack diameter (used by the dispersion model to estimate the mechanical and buoyant plume rise that will occur due to the release of emissions from a stack); and
- Receptor data, which are the location(s) of the given area where ambient concentrations are to be calculated by the dispersion model.

Model Selection

To estimate ambient air concentrations, the latest version (version19191) of the AERMOD dispersion model was used. AERMOD is appropriate for use in estimating ground-level short-term ambient air concentrations resulting from non-reactive buoyant emissions from sources located in simple, intermediate, and complex terrain. AERMOD is the preferred guideline model recommended by USEPA for these types of assessments and is based on conservative assumptions (i.e., the model tends to over-predict actual impacts by assuming steady state conditions, no pollutant loss through conservation of mass, no chemical reactions, etc.). AERMOD is capable of assessing impacts from a variety of source types such as point, area, line, and volume sources (as noted above, point source types are used to model stack sources like the LBGF engine emissions); downwash effects; gradual plume rise as a function of downwind distance; time-dependent exponential decay of pollutants; and can account for settling and dry deposition of particulates (all LBGF emissions were conservatively modeled as non-reactive gaseous emissions). The model is capable of estimating concentrations for a wide range of averaging times (from one hour to the entire period of meteorological data provided).

AERMOD calculates ambient concentrations in areas of simple terrain (receptor base elevations below the stack release heights), intermediate terrain (receptor base elevations between stack release and final plume height), and complex terrain (receptor base elevations above final plume height). AERMOD assesses these impacts for all meteorological conditions, including those that would limit the amount of final plume rise. Plume impaction on elevated terrain, such as on the slope of a nearby hill, can cause high ground level concentrations, especially under stable atmospheric conditions. Due to the relatively flat nature of the LBGF project terrain area, including the surrounding properties, plume impaction effects would not be expected to occur. AERMOD also considers receptors located above the receptor base elevation, called flagpole receptors.

Another dispersion condition that can cause high ground level pollutant concentrations is caused by building downwash. Building downwash can occur during high wind speeds or a building or structure is in close proximity to the emission source. This can result in building wake effects where the plume is drawn down toward the ground by the lower pressure region that exists in the lee side (downwind) of the building or structure. This AERMOD feature was also used in modeling the LBGF emission sources as described later.

Model Input Options

Model options refer to user selections that account for conditions specific to the area being modeled or to the emissions source that needs to be examined. Examples of model options selected for this analysis includes the use of multiple flagpole heights for each receptor modeled and the urban dispersion option (using a Santa Clara County population of 1,938,153). Land use in the immediate area surrounding the project site is characterized as "urban". This is based on the land uses within the area circumscribed by a three (3) km radius around the project site, which is greater than 50 percent urban. Therefore, in the modeling analyses, the urban dispersion option was selected.

AERMOD also supplies recommended defaults for the user for other model options. This analysis was conducted using AERMOD in the regulatory default mode, which includes the following additional modeling control options:

- adjusting stack heights for stack-tip downwash,
- using upper-bound concentration estimates for sources influenced by building downwash from super-squat buildings,
- incorporating the effects of elevated terrain,
- employing the USEPA-recommended calms processing routine, and
- employing the USEPA-recommended missing data processing routine.

Calculation of chemical concentrations for use in the impact and exposure analysis requires the selection of appropriate concentration averaging times. Average pollutant concentrations ranging from one (1) hour to annual based on the meteorological data were calculated for each LBGF source and the facility in total.

According to the Auer land use classification scheme, a 3 km radius boundary around the proposed site yields a predominately "urban" classification. This is consistent with the current land use and zoning designation for the site and surrounding area as "commercial, and light and heavy industrial".

Meteorological Data - Modeling Inputs

AERMOD requires a meteorological input file to characterize the transport and dispersion of pollutants in the atmosphere. Surface and upper air meteorological data inputs, along with surface parameter data describing the land use and surface characteristics near a site, are first processed using AERMET, the meteorological preprocessor to AERMOD. The output files generated by AERMET are the surface and upper air meteorological input files required by AERMOD.

AERMOD uses hourly meteorological data to characterize plume dispersion. AERMOD calculates the dispersion conditions for each hour of meteorological data for the emission sources modeled at the user-specific receptor locations. The resulting 1-hour impacts are then averaged by AERMOD for the averaging time(s) specified by the user (accounting for calm winds and missing meteorological data as specified in the model options). Meteorological data from the San Jose International Airport were provided by the BAAQMD for the five years of 2013 through 2017, inclusive. The representativeness of the meteorological data is dependent on the proximity of the meteorological monitoring site to the area under consideration; the complexity of the terrain, the exposure of the meteorological monitoring site, and the period of time during which the data are collected. The data was collected approximately three (3) kilometers from the eastern edge of the LBGF project boundary and were provided by BAAQMD as the most appropriate meteorological data for this modeling analysis. The data were processed by BAAQMD with AERMET (version 18081), AERMOD's meteorological data preprocessor module.

The BAAQMD LBGF meteorological data consists of surface measurements including wind speed, wind direction, temperature, and solar radiation, which were combined with National Weather Service upper air data from the Oakland International Airport. The USEPA-recommended 90% completeness criteria are met for all modeled parameters in the BAAQMD meteorological data.

Building and Receptors – Modeling Inputs

The effects of building downwash on facility emissions were included in the modeling assessment. The **P**lume **Ri**se **M**odel **E**nhancements to the USEPA **B**uilding **P**rofile **I**nput **P**rogram (BPIP-PRIME, version 04274) was used to determine the direction-specific building downwash parameters. The PRIME enhancements in AERMOD calculate fields of turbulence intensity, wind speed, and slopes of the mean streamlines as a function of projected building shape. Using a numerical plume rise model, the PRIME enhancements in AERMOD determine the change in plume centerline location and the rate of plume dispersion with downwind distance. Concentrations are then predicted by AERMOD in both the near and far wake regions, with the plume mass captured by the near wake treated separately from the uncaptured primary plume and re-emitted to the far wake as a volume source. There were several nearby offsite structures that were also included in BPIP-PRIME inputs. Figure AQ3-1 in Appendix AQ3 presents the building data used in the downwash analysis.

Receptor grids were generated along the fence line (≤10 meter spacing), from the fence line to 300 meters (20 meter spacing), from 300 meters to one kilometer (km) (50-meter spacing), from 1.0 to 5.0 km (200-meter spacing). If any of the maximum impacts occurred on receptors with spacing greater than 20 meters, a refined grid with 20 meter resolution would be created and extended outwards by 500 meters in all directions. All receptor and source locations are referenced in meters using the Universal Transverse Mercator (UTM) Cartesian coordinate system based on the North American Datum of 1983 (NAD83) for Zone 10.

The latest version of AERMAP (version 18081) was used to determine receptor elevations and hill-slope factors utilizing USGS's 1-degree square National Elevation Dataset (NED). NED spacings were 1/3" (~10 meters) for the fence line, 20-meter, 50-meter, and 100-meter spaced receptor grids and 1" (~30 meters) for 200-meter and 500-meter spaced receptor grids and sensitive receptors. Electronic copies of the BPIP-PRIME and AERMAP input and output files, including the NED data, are included with the application will be submitted to Staff electronically.

Source Data – Modeling Inputs

Emissions and stack parameters for the 33 Cummins diesel engines are presented in Appendix AQ-1 and AQ-3 and were used to develop the modeling inputs. Stack parameters (e.g., stack height, exit temperature, stack diameter, and stack exit velocity) were based on the parameters given by the engine manufacturer and the Applicant. Stack locations for the proposed sources were matched to show their actual location based on the proposed facility plot plan. Appendix AQ-3 presents the locations of the LBGF sources and the building outlines considered in the downwash analysis. Stack base elevations were given a common base elevation based on the range of elevations calculated with AERMAP for the stack locations.

Impact Analysis Summary

Operational characteristics of the diesel engines, such as emission rate, exit velocity, and exit temperature, vary by operating loads. The engines could be operated over a load conditions from one (1) to 100 percent. Thus, an air quality screening analysis was performed that considered these effects to determine the worst-case scenario to include in the refined modeling analyses. Based on similar projects, the 100% load case always produces the maximum ground-based concentrations. However, two load screenings were performed for loads at 1 and 100%, with a source group for each individual engine (only one engine will be tested at any one time). The engines were assumed to be tested anytime from 7 AM to 5 PM (controlled using the EMISFACT/HROFDY model option). Although the each engines will typically only be tested individually for up to one hour at any one time, each engine was assumed to operate up to 10 hours/day (7AM-5PM) to conservatively represent 10 different engines operating one hour each in any one day for 3-hour, 8-hour, and 24-hour averaging times. Thus, the worst-case stack condition and the worst-case engine location could be determined from the screening analysis. All 45 engines were assumed to be tested for annual averages, with emissions proportioned accordingly. The screening results are presented in Appendix AQ-3.

Based on the results of the screening analyses, all LBGF sources were modeled in the refined analyses for comparisons with the annual CAAQS and NAAQS and the short-term NAAQS with multi-year statistical forms (1-hour NO_2 and SO_2 and 24-hour PM2.5 and PM10). Impacts during normal testing operations were based on the worst-case screening condition. Since the engines would will each be tested far less than 100 hours/year, it the annual average emission rate was included in 1 hour NO_2 and SO_2 NAAQS modeling analyses at the annual average emission rates per EPA guidance due to the statistical nature of these standards (it was the engines were modeled at the maximum 1-hour emission rate for the CAAQS).

For the 1-hour NO_2 modeling assessments, the EPA Plume Molar Volume Molar Ratio Method (PVMRM) was used in the refined modeling analyses with an in-stack NO_2/NO_x ratio of 0.1 (10%) based on a conservative assessment of this type/size of engine in EPA's ISR database.

Hourly ozone data from the nearby 158 East Jackson Street monitoring site was used, processed as follows:

- one-two consecutive missing/invalid hours were replaced by interpolating the last/next valid hourly measurement;
- up to 12 consecutive missing/invalid hours were replaced by the maximum of either the last/next valid hourly measurement or valid measurements from the same hour of the two days before or after the missing data;
- two occurrences of 27 and 50 consecutive hours of missing data were replaced in the same way as previous, and
- one occurrence of 338 consecutive hours of missing data were replaced with the maximum of the valid measurements for that hour or the hour before or after for the 10 days before or after the missing the missing value.

After missing data were replaced as described above, no missing data remained.

NO_2 background data, also from the 158 East Jackson Street monitoring site, were calculated on a contiguous seasonal basis by hour for the last three (3) years of monitoring data (December 2014-November 2017), consistent with CAPCOA and USEPA guidance. The maximum hourly value for the season/hour were added to the modeled NO_2 concentration for the 1-hour CAAQS assessment. The three-year average of the second-highest hourly value for the season/hour were added to the modeled NO_2 concentration for the NAAQS assessment. The ozone data are input as a separate file (in PPB) while the background NO_2 data (in *u*g/m^3) are included in the AERMOD control file. Assessment with the CAAQS is based on the maximum 1-hour NO_2 concentration (with and without background). NO_2 NAAQS compliance based on the five-year average of the 98th percentile daily maximum annual 1-hour impacts with background concentration (NO_2 SIL for NAAQS compliance based on 5-year average of the annual 1-hour maximum impacts without background concentrations).

Based on the results of the screening and refined modeling analyses, the modeled concentration are presented in Table 4.3-16.

Table 4.3-16: Modeled Concentrations and Ambient Air Quality Standards

Pollutant	**Averaging Period**	**Maximum Concentration (μg/m^3)**	**Background (μg/m^3)**	**Total (μg/m^3)**	**Ambient Air Quality Standards (μg/m^3)**	
					CAAQS	**NAAQS**
3-/8-/24-Hour Maxima shown for one engine operating up to 10 hours/day (7AM-5PM)						
NO_2*	1-hour maximum (CAAQS)	N/A	N/A	198.06	339	-
	3-year average of 1-hour yearly 98th % (NAAQS)	N/A	N/A	95.65	-	188
	Annual maximum	5.00	24.5	29.5	57	100
CO	1-hour maximum	369.13	2,863		23,000	40,000
	8-hour maximum	240.20	2,405		10,000	10,000
SO_2	1-hour maximum (CAAQS)	0.66	18.1	18.8	655	-
	3-year average of 1-hour yearly 99th % (NAAQS)	0.59	7.1	7.6	-	196
	3-hour maximum	0.57	18.1	18.7	-	1,300
	24-hour maximum	0.17	2.9	3.1	105	365
	Annual maximum	0.0063	0.5	0.51	-	80
PM10	24-hour maximum (CAAQS)	0.34	122	122.3	50	-
	24-hour 6th highest over 5 years (NAAQS)	0.30	98	98.3	-	150
	Annual maximum (CAAQS)	0.014	23.1	23.1	20	-
PM2.5	3-year average of 24-hour yearly 98th %	0.173	42	42.2	-	35
	Annual maximum (CAAQS)	0.014	12.8	12.8	12	-
	3-year average of annual concentrations (NAAQS)	0.011	10.2	10.2	-	12.0

*1-hour NO_2 impacts evaluated with Plume Volume Molar Ratio Method (PVMRM), with the maximum seasonal hourly NO_2 background value already added by AERMOD. Annual NO_2 impacts evaluated with Ambient Ratio Method #2 (ARM2) with USEPA-default minimum/maximum NO_2/NOx ambient ratios of 0.5/0.9.

The air quality modeling support data will be submitted to Staff electronically.

Based on the modeling results in Table 4.3-16, the only combined modeled impacts and background concentrations greater than the standards are for the 24-hour and annual PM10 CAAQS and the 24-hour PM2.5 NAAQS and annual PM2.5 CAAQS. These exceedances are only because the background concentrations already exceed the standards. Modeled project impacts in these instances are less than significance levels. Thus, the project will not cause or contribute to an exceedance of any air quality standard for any averaging time period. Thus, and the project will comply with the CAAQS and NAAQS. Additionally, the project impacts for PM2.5 are less than the BAAQMD CEQA significant impact levels.

PUBLIC HEALTH AND HEALTH RISK ASSESSMENT

This section presents the methodology and results of a human health risk assessment performed to assess potential impacts and public exposure associated with airborne emissions from the routine operation of the LBGF project.

Air will be the dominant pathway for public exposure to chemical substances released by the project. Emissions to the air will consist primarily of combustion by-products produced by the diesel-fired emergency standby engines. Potential health risks from combustion emissions will occur almost entirely by direct inhalation. To be conservative, additional pathways were included in the health risk modeling; however, direct inhalation is considered the most likely exposure pathway. The risk assessment was conducted in accordance with guidance established by the California Office of Environmental Health Hazard Assessment (OEHHA 2015) and the California Air Resources Board.

Combustion byproducts with established CAAQS or NAAQS, including oxides of nitrogen (NOx), carbon monoxide, sulfur dioxide, and fine particulate matter were addressed in the previous Air Quality section.

Affected Environment

Sensitive receptors are defined as groups of individuals that may be more susceptible to health risks due to chemical exposure. Schools (public and private), day care facilities, convalescent homes, and hospitals are of particular concern. The nearest sensitive receptors, by type, are listed in Table 4.3-17. There are no sensitive receptors of any type within 1,000 ft. of the facility boundary. Appendix AQ5 contains support materials for the facility health risk assessment, such as; a listing of sensitive receptors within the facility regional area, etc. HAPs emissions evaluations are presented in Appendix AQ1.

Table 4.3-17: Sensitive Receptors Nearfield of the LBGF Site

Receptor Type	UTM Coordinates	Distance from Site, ft.	Elevation, AMSL ft.
Nearest Residence	593024.94, 4135677.42	3,486	56
Nearest Hospital	589321, 4136778	12,750	51
Nearest School	592005.25, 4136664.00	3,418	54
Nearest Daycare	594941, 4139336	10,200	58
Nearest College/Univ.	593425, 4138352	5,290	24
Source: Google Earth Image 12/2019			

The nearest residences are located to the north of the site at a distance of approximately 4,806 ft.

Air quality and health risk data presented by CARB in the 2013 Almanac of Emissions and Air Quality (latest version available, CARB 2013) for the state shows that over the period from the mid-1990s through 2013, the average concentrations for DPM have been substantially reduced, and the associated health risks for the state are showing a steady downward trend as well. This same trend has occurred in the BAAQMD.

Environmental Consequences

Significance Criteria

Cancer Risk

Cancer risk is the probability or chance of contracting cancer over a period of time normally defined as either 30 or 70-years depending on the project type and agency risk procedures. Carcinogens are not assumed to have a threshold below which there would be no human health impact. In other words, any exposure to a carcinogen is assumed to have some probability of causing cancer; the lower the exposure, the lower the cancer risk (i.e., a linear, no-threshold model). Under various state and local regulations, an incremental cancer risk greater than 10-in-one million due to a project is considered to be a significant impact on public health. For example, the 10-in-one-million risk level is used by the Air Toxics Hot Spots (AB 2588) program and California’s Proposition 65 as the public notification level for air toxic emissions from existing sources.

Non-Cancer Risk

Non-cancer health effects can be either chronic or acute. In determining potential non-cancer health risks (chronic and acute) from air toxics, it is assumed there is a dose of the chemical of concern below which there would be no impact on human health. The air concentration corresponding to this dose is called the Reference Exposure Level (REL). Non-cancer health risks are measured in terms of a hazard quotient, which is the calculated exposure of each contaminant divided by its REL. Hazard quotients for pollutants affecting the same target organ are typically summed with the resulting totals expressed as hazard indices for each organ system. A hazard index of less than 1.0 is considered to be an insignificant health risk. For this health risk assessment, all hazard quotients were summed regardless of target organ. This method leads to a conservative (upper bound) assessment. RELs used in the hazard index calculations were those published in the CARB/OEHHA listings dated August 2018.

Chronic toxicity is defined as adverse health effects from prolonged chemical exposure, caused by chemicals accumulating in the body. Because chemical accumulation to toxic levels typically occurs slowly, symptoms of chronic effects usually do not appear until long after exposure commences. The lowest no-effect chronic exposure level for a non-carcinogenic air toxic is the chronic REL. Below this threshold, the body is capable of eliminating or detoxifying the chemical rapidly enough to prevent its accumulation. The chronic hazard index was calculated using the hazard quotients calculated with annual concentrations.

Acute toxicity is defined as adverse health effects caused by a brief chemical exposure of no more than 24 hours. For most chemicals, the air concentration required to produce acute effects is higher than the level required to produce chronic effects because the duration of exposure is shorter. Because acute toxicity is predominantly manifested in the upper respiratory system at threshold exposures, all hazard quotients are typically summed to calculate the acute hazard index. One-hour average concentrations are divided by acute RELs to obtain a hazard index for health effects caused by relatively high, short-term exposure to air toxics. Since this assessment considers only DPM, and DPM has no acute REL, acute HI values were not calculated. The following receptor descriptors are used herein:

PMI – Point of maximum impact – this receptor represents the highest concentration and risk point on the receptor grid for the analysis under consideration.

MEIR – Maximum exposed individual residential receptor – this receptor represents the maximum impacted actual residential location on the grid for the analysis under consideration.

MEIW - Maximum exposed individual worker receptor – this receptor represents the maximum impacted actual worker location on the grid for the analysis under consideration.

MEIS - Maximum exposed individual sensitive receptor – this receptor represents the maximum impacted actual sensitive location on the grid for the analysis under consideration. This location is a non-residential sensitive receptor, i.e., school, hospital, daycare center, convalescent home, etc.

Construction Phase Impacts

The proposed project would be a source of air pollutant emissions during project construction. The BAAQMD CEQA Air Quality Guidelines considers exposure of sensitive receptors to air pollutant levels that result in an unacceptable cancer risk or hazard to be significant. BAAQMD recommends a 1,000-foot zone of influence around project boundaries. Results of the construction related health risk assessment indicate that the cancer risk at the construction PMI would be 2.65E-6. This value is well below the significance threshold for construction health risk impacts. Since construction activities are temporary and would occur well over 1,000 feet from the nearest sensitive receptor community risk impacts from construction activities would be *less than significant*.

Operational Phase Impacts

Environmental consequences potentially associated with the project are potential human exposure to chemical substances emitted into the air. The human health risks potentially associated with these chemical substances were evaluated in a health risk assessment. The chemical substance potentially emitted to the air from the proposed facility is DPM. DPM is the approved surrogate compound for diesel fuel combustion pursuant to CARB and EPA.

Emissions of criteria pollutants will adhere to NAAQS or CAAQS as discussed in the Ambient Air Quality section. The proposed facility emergency electrical backup engines will be certified as EPA Tier 2 units and as such they meet the BACT requirements of the BAAQMD. These engines are equipped with DPFs. Finally, air dispersion modeling results show that emissions will not result in concentrations of criteria pollutants in air that exceed ambient air quality standards (either NAAQS or CAAQS). These standards are intended to protect the general public with a wide margin of safety. Therefore, the project is not anticipated to have a significant impact on public health from emissions of criteria pollutants.

Potential impacts associated with emissions of toxic pollutants to the air from the proposed facility were addressed in a health risk assessment, with support data presented in Appendix AQ5. The risk assessment was prepared using guidelines developed by OEHHA and CARB, as implemented in the latest version of the HARP model (ADMRT 19121). The BAAQMD risk assessment options in HARP were used for all analyses (BAAQMD 2016).

Public Health Impact Study Methods

Emissions of toxic pollutants potentially associated with the facility were estimated using emission factors for PM10 derived from the New Source Performance Standards for compression ignited engines (40 CFR 60 Subpart IIII-EPA Tier 2 emissions standards), the EPA D2 cycle weighted emissions values, and the Caterpillar supplied emissions factors for the 10% load case.

Concentrations of these pollutants in air potentially associated with the emissions were estimated using dispersion modeling as discussed in the Air Quality section. Modeling allows the estimation of both short-term and long-term average concentrations in air for use in a risk assessment, accounting for site-specific terrain and meteorological conditions. Health risks potentially associated with the estimated concentrations of pollutants in air were characterized in terms of excess lifetime cancer risks, or comparison with reference exposure levels for non-cancer health effects. The following receptor descriptors are used herein:

> PMI – Point of maximum impact – this receptor represents the highest concentration and risk point on the receptor grid for the analysis under consideration.
>
> MEIR – Maximum exposed individual residential receptor – this receptor represents the maximum impacted actual residential location on the grid for the analysis under consideration.
>
> MEIW - Maximum exposed individual worker receptor – this receptor represents the maximum impacted actual worker location on the grid for the analysis under consideration.
>
> MEIS - Maximum exposed individual sensitive receptor – this receptor represents the maximum impacted actual sensitive location on the grid for the analysis under consideration. This location is a non-residential sensitive receptor, i.e., school, hospital, daycare center, convalescent home, etc.

Health risks potentially associated with concentrations of carcinogenic pollutants in air were calculated as estimated excess lifetime cancer risks. The excess lifetime cancer risk for a pollutant is estimated as the product of the concentration in air and a unit risk value. The unit risk value is defined as the estimated probability of a person contracting cancer as a result of constant exposure to an ambient concentration of 1 $\mu g/m^3$ over a 70-year lifetime. In other words, it represents the increased cancer risk associated with continuous exposure to a concentration in air over a pre-defined period, i.e., usually a 30 or 70-year lifetime. Evaluation of potential non-cancer health effects from exposure to short-term and long-term concentrations in air was performed by comparing modeled concentrations in air with the RELs. An REL is a concentration in air at or below which no adverse health effects are anticipated. RELs are based on the most sensitive adverse effects reported in the medical and toxicological literature. Potential non-cancer effects were evaluated by calculating a ratio of the modeled concentration in air and the REL. This ratio is referred to as a hazard quotient.

The unit risk values and RELs used to characterize health risks associated with modeled concentrations in air were obtained from the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* (CARB 9/2019) and are presented in Table 4.3-18.

Table 4.3-18: Toxicity Values Used to Characterize Health Risks

TAC	Unit Risk Factor (µg/m3)-1	Chronic Reference Exposure Level (µg/m3)	Acute Reference Exposure Level (µg/m3)
DPM	.0003	5	--
Source: CARB/OEHHA, 8/2018.			

Table 4.3-19 delineates the maximum hourly and annual emissions of the identified air toxic pollutants (DPM) from the emergency backup engines.

Table 4.3-19: Maximum LBGF Hourly, Daily, and Annual Air Toxic Emissions

Emergency Standby Engines (per engine basis)				
Engine Model	**Toxic**	**Max Hour Emissions, Lbs**	**Max Daily Emissions, Lbs**	**Max Annual Emissions Lbs**
QSK95	DPM	0.095	-	4.75
QST30	DPM	0.033	-	1.65
Note: Engines are equipped with diesel particulate filters at 0.01 g/bhp-hr				

Characterization Of Risks From Toxic Air Pollutants

The excess lifetime cancer risk associated with concentrations in air estimated for the LBGF PMI location is estimated to be 5.95E-6 or 5.95 per million. Excess lifetime cancer risks less than 10×10^{-6}, for sources with T-BACT, are unlikely to represent significant public health impacts that require additional controls of facility emissions. Risks higher than 1×10^{-6} may or may not be of concern, depending upon several factors. These include the conservatism of assumptions used in risk estimation, size of the potentially exposed population and toxicity of the risk-driving chemicals. Health effects risk thresholds are listed on Table 4.3-20. Risks associated with pollutants potentially emitted from the facility are presented in Tables 4.3-21 and 4.3-22. The chronic hazard indices for all scenarios are well below 1.0. It should be noted that DPM does not currently have an acute hazard index value, and as such, acute health effects were not evaluated in the HRA. Further description of the methodology used to calculate health risks associated with emissions to the air can be found in the HARP User's Manual dated 12/2003 and the ADMRT Manual dated 3/2015 (CARB 2015). As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the PMI. If there is no significant impact associated with concentrations in air at the PMI location, it is unlikely that there would be significant impacts in any other location in the vicinity of the facility.

Table 4.3-20: Health Risk Significance Thresholds

Risk Category	Significance Thresholds		
	BAAQMD Project Risk	**BAAQMD Net Project Risk**	**State of California**

Cancer Risk	10 in one million	10 in one million	<= 1 in a million w/o TBACT <=10 in a million w/TBACT
Chronic Hazard Index	1.0	1.0	1.0
Acute Hazard Index	1.0	1.0	1.0
Cancer (T-BACT required)	>1 in a million Chronic HI > 0.20		See above.
Cancer Burden	NA		1.0
Source: Regulation 2 Rule 5, NSR for Toxic Air Contaminants			

Table 4.3-21: LBGF Residential/Sensitive Health Risk Assessment Summary

Location	Receptor #	UTM	Cancer Risk	Chronic HI	Acute HI	Cancer Burden
PMI	51	593354.91, 4136644.49	2.56E-06	0.000865	NA	NA
MEIR	3628	593024.94, 4135677.43	3.76E-08	0.0000127	NA	NA
MEIS	4531	592005.25, 4136664.00	4.29E-08	0.0000145	NA	NA
Notes: See acronym definitions above.						

Table 4.3-22: LBGF Worker Health Risk Assessment Summary

Location	Receptor #	UTM	Cancer Risk	Chronic HI	Acute HI	Cancer Burden
PMI	51	593354.9, 4136644.49	1.12E-06	0.000865	NA	NA
MEIW	1608	593397, 4136613	1.08E-06	0.000833	NA	NA
Notes: See acronym definitions above.						

Cancer risks potentially associated with facility emissions also were not assessed in terms of cancer burden. Cancer burden is a hypothetical upper-bound estimate of the additional number of cancer cases that could be associated with emissions from the facility. Cancer burden is calculated as the worst-case product of excess lifetime cancer risk, at the 1 x 10^{-6} isopleth and the number of individuals at that risk level. Cancer burden evaluations are not required by the BAAQMD.

The chronic non-cancer hazard quotient associated with concentrations in air are shown in Table 4.3-21. The chronic non-cancer hazard quotient for all target organs fall below 1.0. As described previously, a hazard quotient less than 1.0 is unlikely to represent significant impact to public health. Since DPM does not have an acute REL, no acute hazard index or quotient was calculated. As described previously, human health risks associated with emissions from the proposed facility are unlikely to be higher at any other location than at the location of the PMI. If there is no significant impact associated with concentrations in air at the PMI location, it is unlikely that there would be significant impacts in any other location in the vicinity of the facility.

Detailed risk and hazard values are provided in the HARP output which will be submitted to Staff electronically.

The estimates of excess lifetime cancer risks and non-cancer risks associated with chronic or acute exposures fall below thresholds used for regulating emissions of toxic pollutants to the air. Historically, exposure to any level of a carcinogen has been considered to have a finite risk of inducing cancer. In other words, there is no threshold for carcinogenicity. Since risks at low levels of exposure cannot be quantified directly by either animal or epidemiological studies, mathematical models have estimated such risks by extrapolation from high to low doses. This modeling procedure is designed to provide a highly conservative estimate of cancer risks based on the most sensitive species of laboratory animal for extrapolation to humans (i.e., the assumption being that humans are as sensitive as the most sensitive animal species). Therefore, the true risk is not likely to be higher than risks estimated using unit risk factors and is most likely lower, and could even be zero (USEPA, 1986; USEPA, 1996).

An excess lifetime cancer risk of 1 x 10-6 is typically used as a screening threshold of significance for potential exposure to carcinogenic substances in air. The excess cancer risk level of 1 x 10-6, which has historically been judged to be an acceptable risk, originates from efforts by the Food and Drug Administration (FDA) to use quantitative risk assessment for regulating carcinogens in food additives in light of the zero tolerance provision of the Delany Amendment (Hutt, 1985). The associated dose, known as a “virtually safe dose” (VSD) has become a standard used by many policy makers and the lay public for evaluating cancer risks. However, a study of regulatory actions pertaining to carcinogens found that an acceptable risk level can often be determined on a case-by-case basis. This analysis of 132 regulatory decisions, found that regulatory action was not taken to control estimated risks below 1 x 10-6 (one-in-one million), which are called de minimis risks. De minimis risks are historically considered risks of no regulatory concern. Chemical exposures with risks above 4 x 10-3 (four-in-ten thousand), called de manifestis risks, were consistently regulated. De manifestis risks are typically risks of regulatory concern. The risks falling between these two extremes were regulated in some cases, but not in others (Travis et al, 1987).

The estimated lifetime cancer risks to the maximally exposed individual located at the LBGF PMI, MEIR, MEIW, and MEIS do not exceed the 10 x 10-6 significance level for T-BACT sources. These engines are EPA certified Tier 2 units equipped with diesel particulate filters, and are used only for emergency power backup, therefore BACT or T-BACT for DPM is satisfied. The chronic hazard index value is also well below the significance threshold of 1.0. These risk estimates were calculated using assumptions that are highly health conservative. Evaluation of the risks associated with the LBGF emissions should consider that the conservatism in the assumptions and methods used in risk estimation considerably over-state the risks from LBGF emissions. Based on the results of this risk assessment, there are no significant public health impacts anticipated from emissions of toxic pollutant to the air from the LBGF.

Operation Odors

The facility is not expected to produce any contaminants at concentrations that could produce objectionable odors.

Summary of Impacts

The health risk assessment for the LBGF indicates that the maximum cancer risk will be approximately 2.56E-6 (versus a significance threshold of 10 x 10^{-6} with T-BACT) at the PMI to air toxics from LBGF emissions. This risk level is considered to be not significant. Non-cancer chronic effects for all scenarios are well below the chronic hazard index significance value.

Results from an air toxics risk assessment based on emissions modeling indicate that there will be no significant incremental public health risks from the modification and operation of the LBGF. Results from criteria pollutant modeling for routine operations indicate that potential ambient concentrations of NO_2, CO, SO_2, and PM_{10} will not significantly impact air quality. Potential concentrations are below the federal and California standards established to protect public health, including the more sensitive members of the population.

Cumulative Impacts

As of March 2020, the BAAQMD is currently updating the CEQA Cumulative Modeling Impact Guidelines. LBGF will submit, under separate cover, a cumulative impact assessment once the BAAQMD provides the updated procedures.

Appendix AQ1

Emissions Support Data

Table AQ1-1 Emissions Estimates for Emergency Standby Generators

Engine Mfg: **Cummins**

Model #: **QSK95-G9**

Fuel: ULSD

# of Units: 44

Max # of Engines Tested per Day: 10

(engines are not tested concurrently)

Fuel S, %wt:	0.0015
Fuel wt, lb/gal:	7.05
Btu/gal:	139000
Lbs S/1000 gal:	0.10575
Lbs SO2/1000 gal:	0.2115
EPA Tier:	2
Turbocharged:	Yes
Aftercooled:	Yes

Engine OPs Data

											METRIC UNITs		
BHP	**kWe**	**Load %**	**RPM**	**Fuel, gph**	**Stk Ht, ft**	**Stk Diam, in**	**Stk Temp, F**	**mmbtu/hr**	**Stk ACFM**	**Stack Vel, f/s**	**Stk Diam, m**	**Stk Temp, Kelvins**	**Stk Vel, m/s**
4288	3000	100	1800	207	TBD	22	828	28.77	23299	147.1002	0.5588	715.37	44.8362
3243	2250	75	1800	160	TBD	22	712	22.24	19646	124.0367	0.5588	650.93	37.8064
2199	1500	50	1800	118	TBD	22	670	16.40	16016	101.1184	0.5588	627.59	30.8209
1154	750	25	1800	68	TBD	22	629	9.45	10020	63.2621	0.5588	604.82	19.2823
528	300	10	1800	41	TBD	22	533	5.70	7024	44.3466	0.5588	551.48	13.5169
152	30	1	1800	26	TBD	22	427	3.61	5480	34.5984	0.5588	492.59	10.5456

Stack Exit Area (sq.ft) = 2.63981

	Emissions Factor Scenarios (all values in g/bhp-hr)						CO2e
Scenarios	**Nox**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, Tier 2 Efs, 100% Load	4.5	2.6	0.3	0.005	0.15	0.15	163.052
Maint/Readiness Testing, 50 hrs/yr, Tier 2 Efs, 100% Load	4.5	2.6	0.3	0.005	0.15	0.15	163.052
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load	4.37	0.5	0.23	0.005	0.11	0.11	163.052
Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load	4.37	0.5	0.23	0.005	0.11	0.11	163.052
Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle Efs, 10% Load	4.37	0.5	0.23	0.005	0.11	0.11	163.052
Maint/Readiness Testing, 50 hrs/yr, Cummins EFs, 1% Load	15.3	14.4	4.79	0.005	1.3	1.3	163.052

Potential Site Variation *__Screening__* Emissions (g/hp-hr)				
Load %	**NOx**	**CO**	**PM**	**SO2**
100	6.80	0.40	0.01	5.000E-3
75	5.50	0.20	0.01	5.000E-3
50	4.30	0.40	0.01	5.000E-3
25	4.40	1.00	0.01	5.000E-3
10	6.20	2.80	0.01	5.000E-3
1	15.30	14.40	0.01	5.000E-3

40 CFR 89 Emissions Factors are derived from the cycle weighted load point testing per Subpart E, Appendix A for constant speed engines.
Protocol D2, ref ISO 8178-1 and ISO 8178-4.
Nominal performance data from Cummins memo dated 9-17-19, Standby rating, per ISO 8178-1.

APC Installed: Yes Diesel Particulate Filters (DPF)

	Controlled Emissions Factor Scenarios (all values in g/bhp-hr)						CO2e
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, Tier 2 Efs, 100% Load	4.5	2.6	0.3	0.005	0.010	0.010	163.052
Maint/Readiness Testing, 50 hrs/yr, Tier 2 Efs, 100% Load	4.5	2.6	0.3	0.005	0.010	0.010	163.052
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load	4.37	0.5	0.23	0.005	0.010	0.010	163.052
Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load	4.37	0.5	0.23	0.005	0.010	0.010	163.052
Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle Efs, 10% Load	4.37	0.5	0.23	0.005	0.010	0.010	163.052
Maint/Readiness Testing, 50 hrs/yr, Cummins EFs, 1% Load	15.3	14.4	4.79	0.005	0.130	0.130	163.052

Scenario 1: **Declared Emergency Ops, 100 hrs/yr, Tier 2 Efs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 24
Max Annual Runtime: 100

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	42.541	24.579	2.836	0.047	0.095	0.095	na
lbs/day	1020.975	589.897	68.065	1.134	2.269	2.269	na
TPY	2.127	1.229	0.142	0.002	0.005	0.005	234.6

All Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	1871.79	1081.48	124.79	2.08	4.16	4.16	na
lbs/day	44922.90	25955.45	2994.86	49.91	99.83	99.83	na
TPY	93.59	54.07	6.24	0.10	0.21	0.21	10321.3

Scenario 2: **Maint/Readiness Testing, 50 hrs/yr, Tier 2 Efs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	42.541	24.579	2.836	0.047	0.095	0.095	na
lbs/day	42.541	24.579	2.836	0.047	0.095	0.095	na
TPY	1.064	0.614	0.071	0.001	0.002	0.002	117.3

10 Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	42.541	24.579	2.836	0.047	0.095	0.095	na
lbs/day	425.406	245.790	28.360	0.473	0.945	0.945	na

All Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
TPY	46.79	27.04	3.12	0.05	0.10	0.10	5160.6

Scenario 3: **Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 100

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	41.312	4.727	2.174	0.047	0.095	0.095	na
lbs/day	41.312	4.727	2.174	0.047	0.095	0.095	na
TPY	2.066	0.236	0.109	0.002	0.005	0.005	234.6

All Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	1817.713	207.976	95.669	2.080	4.160	4.160	na
lbs/day	43625.123	4991.433	2296.059	49.914	99.829	99.829	na
TPY	90.89	10.40	4.78	0.10	0.21	0.21	10321.3

Scenario 4: **Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

			Single Engine				
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	41.312	4.727	2.174	0.047	0.095	0.095	na
lbs/day	41.312	4.727	2.174	0.047	0.095	0.095	na
TPY	1.033	0.118	0.054	0.001	0.002	0.002	117.3
			10 Engines				
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	41.312	4.727	2.174	0.047	0.095	0.095	na
lbs/day	413.117	47.267	21.743	0.473	0.945	0.945	na
			All Engines				
TPY	45.44	5.20	2.39	0.05	0.104	0.104	5160.6

BAAQMD 150 Hrs/Yr Emissions Totals, TPY:	**Nox**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
(based on 40 CFR 89 D2 Cycle Efs)	136.329	15.598	7.175	0.156	0.312	0.312	15482

OPTIONAL RUN SCENARIOS

Scenario 5: Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle Efs, 10% Load

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

			Single Engine				
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	5.087	0.582	0.268	0.006	0.012	0.012	na
lbs/day	5.087	0.582	0.268	0.006	0.012	0.012	na
TPY	0.127	0.015	0.007	0.0001	0.0003	0.0003	23.2
			10 Engines				
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	5.087	0.582	0.268	0.006	0.012	0.012	na
lbs/day	50.869	5.820	2.677	0.058	0.116	0.116	na
			All Engines				
TPY	5.60	0.64	0.29	0.01	0.013	0.013	1022.2

Scenario 6: Maint/Readiness Testing, 50 hrs/yr, Cummins EFs, 1% Load

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

			Single Engine				
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	5.127	4.826	1.605	0.002	0.044	0.044	na
lbs/day	5.127	4.826	1.605	0.002	0.044	0.044	na
TPY	0.128	0.121	0.040	0.0000	0.0011	0.0011	14.7
			10 Engines				
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	5.127	4.826	1.605	0.002	0.044	0.044	na
lbs/day	51.271	48.255	16.052	0.017	0.436	0.436	na
			All Engines				
TPY	5.64	5.31	1.77	0.002	0.048	0.048	648.2

Table AQ1-2 Emissions Estimates for Emergency Standby Generators

Engine Mfg:	**Cummins**
Model #:	**QST30**
Fuel:	ULSD
Fuel S, %wt:	0.0015
Fuel wt, lb/gal:	7.05
Btu/gal:	139000
Lbs S/1000 gal:	0.10575
Lbs SO2/1000 gal:	0.2115
EPA Tier:	2
Turbocharged:	Yes
Aftercooled:	Yes

# of Units: 1

Max # of Engines Tested per Day: 1

(engines are not tested concurrently)

Engine OPs Data

BHP	kWe	Load %	RPM	Fuel, gph	Stk Ht, ft	Stk Diam, in	Stk Temp, F	mmbtu/hr	Stk ACFM
1482	1105	100	1800	72.2	TBD	8	890	10.04	7540
1112	829	75	1800	54.1	TBD	8	814	7.52	6370
741	553	50	1800	35.8	TBD	8	760	4.98	4500
371	277	25	1800	19.1	TBD	8	620	2.65	2780

	Emissions Factor Scenarios (all values in g/bhp-hr)						CO2e
Scenarios	**Nox**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, Tier 2 Efs, 100% Load	4.5	2.6	0.3	0.005	0.15	0.15	163.052
Maint/Readiness Testing, 50 hrs/yr, Tier 2 Efs, 100% Load	4.5	2.6	0.3	0.005	0.15	0.15	163.052
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load	4.18	0.5	0.22	0.005	0.1	0.1	163.052
Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load	4.18	0.5	0.22	0.005	0.1	0.1	163.052
***	0	0	0	0	0	0	0
***	0	0	0	0	0	0	0

40 CFR 89 Emissions Factors are derived from the cycle weighted load point testing per Subpart E, Appendix A for constant speed engines.
Protocol D2, ref ISO 8178-1 and ISO 8178-4.
Nominal performance data from Cummins memo dated 9-17-19, Standby rating, per ISO 8178-1.

APC Installed: Yes Diesel Particulate Filters (DPF)

	Controlled Emissions Factor Scenarios (all values in g/bhp-hr)						CO2e
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, Tier 2 Efs, 100% Load	4.5	2.6	0.3	0.005	0.015	0.015	163.052
Maint/Readiness Testing, 50 hrs/yr, Tier 2 Efs, 100% Load	4.5	2.6	0.3	0.005	0.015	0.015	163.052
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load	4.18	0.5	0.22	0.005	0.010	0.010	163.052
Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load	4.18	0.5	0.22	0.005	0.010	0.010	163.052
***							
***							

Scenario 1: **Declared Emergency Ops, 100 hrs/yr, Tier 2 Efs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 24
Max Annual Runtime: 100

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	14.703	8.495	0.980	0.016	0.049	0.049	na
lbs/day	352.865	203.878	23.524	0.392	1.176	1.176	na
TPY	0.735	0.425	0.049	0.001	0.002	0.002	81.8

All Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	14.70	8.49	0.98	0.02	0.05	0.05	na
lbs/day	352.86	203.88	23.52	0.39	1.18	1.18	na
TPY	0.74	0.42	0.05	0.00	0.00	0.00	81.8

Scenario 2: **Maint/Readiness Testing, 50 hrs/yr, Tier 2 Efs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	14.703	8.495	0.980	0.016	0.049	0.049	na
lbs/day	14.703	8.495	0.980	0.016	0.049	0.049	na
TPY	0.368	0.212	0.025	0.000	0.001	0.001	40.9

1 Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	14.703	8.495	0.980	0.016	0.049	0.049	na
lbs/day	14.703	8.495	0.980	0.016	0.049	0.049	na

All Engines

TPY	0.37	0.21	0.02	0.00	0.00	0.00	40.9

Scenario 3: **Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 100

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	13.657	1.634	0.719	0.016	0.033	0.033	na
lbs/day	13.657	1.634	0.719	0.016	0.033	0.033	na
TPY	0.683	0.082	0.036	0.001	0.002	0.002	81.8

All Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	13.657	1.634	0.719	0.016	0.033	0.033	na
lbs/day	327.772	39.207	17.251	0.392	0.784	0.784	na
TPY	0.68	0.08	0.04	0.00	0.00	0.00	81.8

Scenario 4: **Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle Efs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	13.657	1.634	0.719	0.016	0.033	0.033	na
lbs/day	13.657	1.634	0.719	0.016	0.033	0.033	na
TPY	0.341	0.041	0.018	0.000	0.001	0.001	40.909

1 Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	13.657	1.634	0.719	0.016	0.033	0.033	na
lbs/day	13.657	1.634	0.719	0.016	0.033	0.033	na

All Engines

TPY	0.34	0.04	0.02	0.00	0.001	0.001	40.9

BAAQMD 150 Hrs/Yr Emissions Totals, TPY:	**Nox**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
(based on 40 CFR 89 D2 Cycle Efs)	1.024	0.123	0.054	0.001	0.002	0.002	122.727

OPTIONAL RUN SCENARIOS

Scenario 5: ***

Max Hourly Runtime: 0
Max Daily Runtime: 0
Max Annual Runtime: 0

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na
TPY	0.000	0.000	0.000	0.000	0.000	0.000	0.000

1 Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na

All Engines

TPY	0.00	0.00	0.00	0.00	0.000	0.000	0.0

Scenario 6: ***

Max Hourly Runtime: 0
Max Daily Runtime: 0
Max Annual Runtime: 0

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na
TPY	0.000	0.000	0.000	0.000	0.000	0.000	0.000

0 Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na

All Engines

TPY	0.00	0.00	0.00	0.00	0.000	0.000	0.0

AQ1-3 Cooling Towers-Wet Surface Condensers PM10/PM2.5 Based on Makeup Water TDS

Scenario or Project ID:	Lafayette Data Center				
Cooling Tower/Wet SAC Particulate Emissions			**Tower Physical Data (optional)**		
# of Identical Towers:	1		# of Fans:	3	
# of Cells:	3		Fan ACFM:	750000	
Operational Schedule: Hrs/day	24		Fan Diam (ft):	22 ft	6.7056 m
Days/Year	365		Exit Vel (ft/sec)	32.9 ft/sec	10.028 m/s
Hrs/Year	8760		Length (ft)	113.94 ft	34.73 m
Pumping rate of recirculation pumps (gal/min)	26927.4		Width (ft)	37.34 ft	11.38 m
Flow of cooling water (lbs/hr)	13464777.1		Deck Ht (ft)	35.042 ft	10.68 m
TDS in Makeup Water: (mg/l or ppmw)	1020.0		Fan Ht (ft)	45.042 ft	13.73 m
Cycles of Concentration:	4.0				
Avg TDS of circ water (mg/l or ppmw)	4080.0	annual avg value			
Flow of dissolved solids (lbs/hr)	54936.29				
Fraction of flow producing drift*	1.00	1= worst case			
Control efficiency of drift eliminators, %	0.0005	0.000005			
Calculated drift rate (lbs water/hr)		67.32	1615.773252	Calc lbs/day	

	Per Tower	Per Cell	All Towers
PM10 emissions (lbs/hr)	**0.275**	**0.092**	**0.275**
PM10 emissions (lbs/day)	**6.592**	**2.197**	**6.592**
PM10 emissions (tpy)	**1.203**	**0.401**	**1.203**
PM2.5 fraction of PM10	1.00	1= worst case	
PM2.5 emissions (lbs/hr)	**0.275**	**0.092**	**0.275**
PM2.5 emissions (lbs/day)	**6.592**	**2.197**	**6.592**
PM2.5 emissions (tpy)	**1.203**	**0.401**	**1.203**

Notes:
Based on Method AP 42, Section 13.4, Jan 1995
*Technical Report EPA-600-7-79-251a, Page 63
Effects of Pathogenic and Toxic Materials Transported Via Cooling Device Drift - Volume 1.

Appendix AQ2

Engine Specifications

Specification sheet

Diesel Generator set QSK95 series engine

2500 kW-3500 kW 60 Hz

EPA Tier 2 emissions regulated

Description

Cummins® commercial generator sets are fully integrated power generation systems providing optimum performance, fuel economy, reliability and versatility for stationary Standby, Prime and Continuous power applications.

Features

Cummins heavy-duty engine - Rugged 4-cycle, industrial diesel delivers reliable power, low emissions and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Control system - The PowerCommand® digital control is standard equipment and provides total genset system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protective relay, output metering and auto-shutdown.

Cooling system - Standard and enhanced integral set-mounted radiator systems, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat. Also optional remote cooled configuration for non-factory supplied cooling systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

NFPA - The generator set accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

	Standby rating	Prime rating	Continuous rating	Emissions compliance	Data sheets
Model	**60 Hz kW (kVA)**	**60 Hz kW (kVA)**	**60 Hz kW (kVA)**	**EPA**	**60 Hz**
C3000 D6e	3000 (3750)	2750 (3438)	2500 (3125)	EPA Tier 2	NAD-5942-EN
C3250 D6e	3250 (4063)	3000 (3750)	2500 (3125)	EPA Tier 2	NAD-3527-EN
C3500 D6e	3500 (4375)	3000 (3750)	2750 (3438)	EPA Tier 2	NAD-5917-EN

Note: All ratings include radiator fan losses.

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| NAS-5849-EN (09/17)

Generator set specifications

Governor regulation class	ISO 8528 Part 1 Class G3
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Radio Frequency (RF) emission compliance	47 CFR FCC PART 15 Subpart B (Class A for industrial)

Engine specifications

Bore	190 mm (7.48 in)
Stroke	210 mm (8.27 in)
Displacement	95.3 litres (5815 in^3)
Configuration	Cast iron, V 16 cylinder
Battery capacity	6 x 1400 amps minimum at ambient temperature of -18 °C (0 °F)
Battery charging alternator	145 amps
Starting voltage	24 volt, negative ground
Fuel system	Cummins modular common rail system
Fuel filter	On engine triple element, 5 micron primary filtration with water separators, 3 micron/2 micron (filter in filter design) secondary filtration.
Fuel transfer pump	Electronic variable speed priming and lift pump
Breather	Cummins impactor breather system
Air cleaner type	Unhoused dry replaceable element
Lube oil filter type(s)	Spin-on combination full flow filter and bypass filters
Standard cooling system	High ambient cooling system (ship loose)

Alternator specifications

Design	Brushless, 4 pole, drip proof, revolving field
Stator	Optimal
Rotor	Two bearing, flexible coupling
Insulation system	Class H on low and medium voltage, Class F on high voltage
Standard temperature rise	125 ºC Standby/105 ºC Prime
Exciter type	Optimal
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform Total Harmonic Distortion (THDV)	< 5% no load to full linear load, < 3% for any single harmonic
Telephone Influence Factor (TIF)	< 50 per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	< 3
Anti-condensation heater	1400 watt

Available voltages

60 Hz Line – Neutral/Line – Line

- 220/380
- 240/416
- 255/440
- 7200/12470
- 277/480
- 347/600
- 2400/4160
- 7620/13200
- 7970/13800

Note: Consult factory for other voltages.

Generator set options and accessories

Engine

- 480 V thermostatically controlled coolant heater for ambient above 4.5 °C (40 °F)
- Heavy duty air cleaner
- Redundant fuel filter
- Air starter
- Redundant electric starting
- Eliminator oil filter system
- Lube oil make up
- Coalescing breather filter

Alternator

- 80 °C rise
- 105 °C rise
- 125 °C rise
- 150 °C rise
- Differential current transformers

Cooling system

- Enhanced high ambient cooling system (ship loose)
- Remote cooled configuration

Generator set options and accessories (continued)

Control panel

- Multiple language support
- Ground fault indication
- Remote annunciator panel
- Paralleling and shutdown alarm relay package
- Floor mounted pedestal installed control panel

Generator set

- Battery
- Battery charger
- LV and MV entrance box
- Spring isolators
- Factory witness tests
- IBC, OSHPD, IEEE seismic certification

Warranty

- 3, 5, or 10 years for Standby including parts (labor and travel optional)
- 2 or 3 years for Prime including parts, labor and travel

Note: Some options may not be available on all models - consult factory for availability.

PowerCommand 3.3 – control system

An integrated microprocessor based generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing. Refer to document S-1570 for more detailed information on the control.

AmpSentry – Includes integral AmpSentry protection, which provides a full range of alternator protection functions that are matched to the alternator provided.

Power management – Control function provides battery monitoring and testing features and smart starting control system.

Advanced control methodology – Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.

Communications interface – Control comes standard with PCCNet and Modbus interface.

Regulation compliant – Prototype tested: UL, CSA and CE compliant.

Service - InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.

Easily upgradeable – PowerCommand controls are designed with common control interfaces.

Reliable design – The control system is designed for reliable operation in harsh environment.

Multi-language support

Operator panel features

Operator/display functions

- Displays paralleling breaker status
- Provides direct control of the paralleling breaker
- 320 x 240 pixels graphic LED backlight LCD
- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbuttons
- LED lamps indicating genset running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode and stop

Paralleling control functions

- First Start Sensor™ system selects first genset to close to bus
- Phase lock loop synchronizer with voltage matching
- Sync check relay
- Isochronous kW and kVar load sharing
- Load govern control for utility paralleling
- Extended paralleling (base load/peak shave) mode
- Digital power transfer control, for use with a breaker pair to provide open transition, closed transition, ramping closed transition, peaking and base load functions.

Other control features

- 150 watt anti-condensation heater
- DC distribution panel
- AC auxiliary distribution panel

Alternator data

- Line-to-Neutral and Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kW, kVar, power factor kVA (three phase and total)
- Winding temperature
- Bearing temperature

Engine data

- DC voltage
- Engine speed
- Lube oil pressure and temperature
- Coolant temperature
- Comprehensive FAE data (where applicable)

Other data

- Genset model data
- Start attempts, starts, running hours, kW hours
- Load profile (operating hours at % load in 5% increments)
- Fault history
- Data logging and fault simulation (requires InPower)
- Air cleaner restriction indication
- Exhaust temperature in each cylinder

Standard control functions

Digital governing

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Standard control functions (continued)

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase, 4-wire Line-to-Line sensing
- Configurable torque matching

AmpSentry AC protection

- AmpSentry protective relay
- Over current and short circuit shutdown
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shutdown
- Over and under frequency shutdown
- Overload warning with alarm contact
- Reverse power and reverse Var shutdown
- Field overload shutdown

Engine protection

- Battery voltage monitoring, protection and testing
- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Fuel-in-rupture-basin warning or shutdown
- Full authority electronic engine protection

Control functions

- Time delay start and cool down
- Real time clock for fault and event time stamping
- Exerciser clock and time of day start/stop
- Data logging
- Cycle cranking
- Load shed
- Configurable inputs and outputs (20)
- Remote emergency stop

Ratings definitions

Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical loads for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):

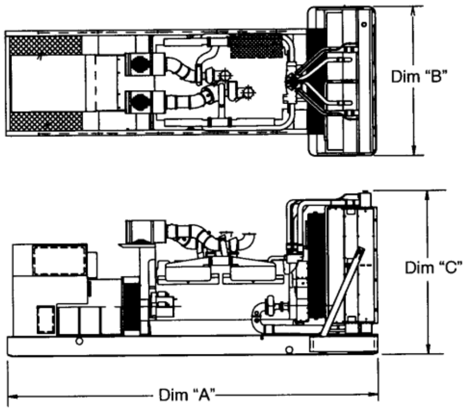
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):

Applicable for supplying power to varying electrical loads for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing is for reference only. See PowerSuite library for specific model outline drawing number.

Do not use for installation design

Model	Dim "A"* mm (in.)	Dim "B"* mm (in.)	Dim "C"* mm (in.)	Set weight* dry kg (lbs)	Set weight* wet kg (lbs)
C3000 D6e	7902 (311)	3028 (119)	3663 (144)	29526 (65092)	31194 (68771)
C3250 D6e	7902 (311)	3028 (119)	3663 (144)	29526 (65092)	31194 (68771)
C3500 D6e	7902 (311)	3028 (119)	3663 (144)	29526 (65092)	31194 (68771)

* Weights and dimensions represent a set with standard features and alternator frame P80X.
See outline drawing for weights and dimensions of other configurations.

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

REGISTERED TO ISO 9001	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.	UL	The generator set is available listed to UL 2200, Stationary Engine Generator Assemblies for all 60 Hz low voltage models. The PowerCommand control is Listed to UL 508 - Category NITW7 for U.S. and Canadian usage.
PTS	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.	**U.S. EPA**	Engine certified to Stationary Emergency U.S. EPA New Source Performance Standards, 40 CFR 60 subpart IIII Tier 2 exhaust emission levels. U.S. applications must be applied per this EPA regulation.
CSA	All models are CSA certified to product class 4215-01.		

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

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Generator set data sheet

Model: C3000 D6e
Frequency: 60 Hz
Fuel type: Diesel
kW rating: 3000 Standby
2750 Prime
2500 Continuous
Emissions level: EPA NSPS Stationary emergency Tier 2

Fuel consumption

	Standby				Prime				Continuous			
	kW (kVA)				**kW (kVA)**				**kW (kVA)**			
Ratings	3000 (3750)				2750 (3438)				2500 (3125)			
Ratings without fan[1]	3075 (3844)				2826 (3532)				2576 (3220)			
Load	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**
US gph	67	113	158	202	63	104	145	187	59	97	134	172
L/hr	254	428	598	769	238	394	549	708	223	367	507	651

[1] Ratings for reference with the optional remote radiator cooling configuration. See note 1 under "Alternator data" section.

Engine

	Standby rating	Prime rating	Continuous rating
Engine model	QSK95-G9		
Configuration	Cast iron, Vee, 16 cylinder		
Aspiration	Turbocharged and after-cooled		
Gross engine power output, kWm (bhp)	3213 (4307)	2923 (3918)	2665 (3572)
BMEP at set rated load, kPa (psi)	2248 (326)	2041 (296)	1862 (270)
Bore, mm (in.)	190.0 (7.48)		
Stroke, mm (in.)	210.1 (8.27)		
Rated speed, rpm	1800		
Piston speed, m/s (ft/min)	12.6 (2480)		
Compression ratio	15.1:1		
Lube oil capacity, L (qt)	647 (684)		
Overspeed limit, rpm	2070		
Regenerative power, kW	321		

Fuel flow

Maximum fuel flow, L/hr (US gph)	1601.1 (423)
Maximum fuel inlet restriction with clean filter, kPa (in Hg)	13.5 (4)
Maximum fuel return line restriction, kPa (in Hg)	34 (10)
Maximum fuel inlet temperature, °C (°F)	71.1 (160)
Maximum fuel outlet temperature, °C (°F)	92.2 (198)

Air	Standby rating	Prime rating	Continuous rating
Combustion air, m³/min (scfm)	270 (9550)	265 (9350)	260 (9170)
Maximum air cleaner restriction with clean filter, mm H_2O (in H_2O)	457 (18)		
Alternator cooling air, m³/min (scfm)	255 (9005)		

Exhaust

Exhaust flow at set rated load, m³/min (scfm)	641 (22630)	605 (21370)	573 (20250)
Exhaust temperature at set rated load, °C (°F)	441 (825)	414 (778)	392 (737)
Maximum back pressure, kPa (in H_2O)	7 (28)		

Standard set-mounted radiator cooling

Ambient design, °C (°F)	48 118
Fan load, kWm (HP)	78 (105)
Coolant capacity (with radiator), L (US gal)	1120 (296)
Cooling system air flow, m³/min (scfm)	3135 (110700)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)

Optional set-mounted radiator cooling

Ambient design, °C (°F)	50 (122)
Fan load, kWm (HP)	78 (105)
Coolant capacity (with radiator), L (US gal)	1120 (296)
Cooling system air flow, m³/min (scfm)	3135 (110700)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)

Optional remote radiator cooling

Engine coolant capacity, L (US gal)	379 (100)		
Max flow rate at max friction head, jacket water circuit, L/min (US gal/min)	3081 (814)		
Max flow rate at max friction head, after-cooler circuit, L/min (US gal/min)	651 (172)		
Heat rejected, jacket water circuit, MJ/min (Btu/min)	90 (85280)	81.60 (77310)	74.10 (70230)
Heat rejected, after-cooler circuit, MJ/min (Btu/min)	21.30 (20190)	20.20 (19110)	19.10 (18150)
Heat rejected, fuel circuit, MJ/min (Btu/min)	0.26 (248)	0.23 (222)	0.21 (199)
Total heat radiated to room, MJ/min (Btu/min)	24.70 (23380)	22.60 (21390)	20.60 (19570)
Maximum friction head, jacket water circuit, kPa (psi)	83 (12)		
Maximum friction head, after-cooler circuit, kPa (psi)	83 (12)		
Maximum static head above engine crank centerline, jacket water circuit, m (ft)	18 (60)		
Maximum static head above engine crank centerline, after-cooler circuit, m (ft)	18 (60)		
Maximum jacket water outlet temp, °C (°F)	140.4 (220)	100 (212)	100 (212)
Maximum after-cooler inlet temp, °C (°F)	71.1 (160)	68 (155)	68 (155)
Maximum after-cooler inlet temp at 25 °C (77 °F) ambient, °C (°F)	46.1 (115)		

Note: For non-standard remote installations contact your local Cummins representative.

Weights

Unit dry weight kg (lb)	29500 (65092)
Unit wet weight kg (lb)	31200 (68771)

Note: Weights represent a set with standard features and alternator frame P80X. See outline drawing for weights of other configurations.

Derating factors

Standby	Full genset power available up to 1312 m (4304 ft) at ambient temperatures up to 40 °C (104 °F) and 962 m (3156 ft) at ambient temperatures up to 50 °C (122 °F). Above these conditions, derate at 6.3% per 305 m (1000 ft) and 8% per 10 °C (18 °F).
Prime	Full genset power available up to 1641 m (5384 ft) at ambient temperatures up to 40 °C (104 °F) and 1205 m (3953 ft) at ambient temperatures up to 50 °C (122 °F). Above these conditions, derate at 5.1% per 305 m (1000 ft) and 10% per 10 °C (18 °F).
Continuous	Full genset power available up to 1350 m (4429 ft) at ambient temperatures up to 40 °C (104 °F) and 961 m (3153 ft) at ambient temperatures up to 50 °C (122 °F). Above these conditions, derate at 5.9 % per 305 m (1000 ft) and 10% per 10 °C (18 °F).

Ratings definitions

Emergency Standby Power (ESP):	Limited-Time Running Power (LTP):	Prime Power (PRP):	Base Load (Continuous) Power (COP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

Alternator data[1]

Voltage	Connection	Temp rise degrees C	Duty[2]	Max surge kVA[3]	Winding number	Alternator data sheet	Feature code
380	Wye, 3-phase	125	S	N/A	13	ADS-531	BB05-2
380	Wye, 3-phase	150	S	N/A	13	ADS-531	B814-2
380	Wye, 3-phase	105	P	N/A	13	ADS-531	B840-2
380	Wye, 3-phase	125	P	N/A	13	ADS-531	B815-2
380	Wye, 3-phase	105	C	N/A	13	ADS-531	B597-2
416	Wye, 3-phase	125	S	15093	12	ADS-532	BB76-2
416	Wye, 3-phase	150	S	13283	12	ADS-531	BA53-2
416	Wye, 3-phase	105	P	15093	12	ADS-532	BB75-2
416	Wye, 3-phase	125	P	13283	12	ADS-531	B982-2
416	Wye, 3-phase	80	C	15093	12	ADS-532	BB06-2
416	Wye, 3-phase	105	C	13283	12	ADS-531	BA54-2

Notes:

[1] Alternator data is configured for a set with ratings including engine cooling fan losses and standard features at 40 °C ambient temperature. For non-standard configurations, including remote radiator applications, check appropriate alternator data sheets or contact your local Cummins representative.

[2] Standby (S), Prime (P) and Continuous ratings (C).

[3] Maximum rated starting kVA that results in a minimum of 90% of rated sustained voltage during starting.

Alternator data[1] (Continued)

Voltage	Connection	Temp rise degrees C	Duty[2]	Max surge kVA[3]	Winding number	Alternator data sheet	Feature code
440	Wye, 3-phase	105	S	14781	12	ADS-532	B665-2
440	Wye, 3-phase	125	S	13024	12	ADS-531	B535-2
440	Wye, 3-phase	150/125/105	S/P/C	13024	12	ADS-531	B813-2
440	Wye, 3-phase	105	P	13024	12	ADS-531	B981-2
440	Wye, 3-phase	80	C	14781	12	ADS-532	BA55-2
480	Wye, 3-phase	105	S	13024	12	ADS-531	B280-2
480	Wye, 3-phase	125/105/80	S/P/C	13024	12	ADS-531	B801-2
480	Wye, 3-phase	80	P	14781	12	ADS-532	B694-2
600	Wye, 3-phase	105	S	12426	7	ADS-531	BB07-2
600	Wye, 3-phase	125/105/80	S/P/C	12426	7	ADS-531	B465-2
600	Wye, 3-phase	150/125/105	S/P/C	12426	7	ADS-531	B451-2
600	Wye, 3-phase	80	S	N/A	7	ADS-532	B695-2
4160	Wye, 3-phase	80	S	15662	51	ADS-587	B935-2
4160	Wye, 3-phase	105/80	S/P	9481	51	ADS-545	B937-2
4160	Wye, 3-phase	125/105/80	S/P/C	8752	51	ADS-520	B467-2
4160	Wye, 3-phase	150/125/105	S/P/C	7295	51	ADS-519	B938-2
12.47k	Wye, 3-phase	80	S	N/A	8030	ADS-590	B607-2
12.47k	Wye, 3-phase	105	S	13438	91	ADS-534	B568-2
12.47k	Wye, 3-phase	125/105/80	S/P/C	13438	91	ADS-534	B609-2
12.47k	Wye, 3-phase	80	P	15883	8029	ADS-589	B812-2
12.47k	Wye, 3-phase	105	C	11213	91	ADS-533	B569-2
13.2k	Wye, 3-phase	80	S	N/A	8030	ADS-590	B807-2
13.2k	Wye, 3-phase	105	S	13438	91	ADS-534	B501-2
13.2-13.8k	Wye, 3-phase	125/105	S/P	11213	91	ADS-533	B803-2
13.2k	Wye, 3-phase	80	P	13438	91	ADS-534	B566-2
13.2-13.8k	Wye, 3-phase	105	C	13438	91	ADS-534	B657-2
13.2k	Wye, 3-phase	80	C	13438	91	ADS-534	B808-2
13.8k	Wye, 3-phase	80	S	16688	8029	ADS-589	B610-2
13.8k	Wye, 3-phase	105	S	13438	91	ADS-534	B895-2
13.8k	Wye, 3-phase	80	P	13438	91	ADS-534	B809-2
13.8k	Wye, 3-phase	80	C	11213	91	ADS-533	B565-2

Notes:

[1] Alternator data is configured for a set with ratings including engine cooling fan losses and standard features at 40 °C ambient temperature. For non-standard configurations, including remote radiator applications, check appropriate alternator data sheets or contact your local Cummins representative.

[2] Standby (S), Prime (P) and Continuous ratings (C).

[3] Maximum rated starting kVA that results in a minimum of 90% of rated sustained voltage during starting.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor
or visit power.cummins.com

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NAD-5942-EN (05/18)

Exhaust emission data sheet
C3000 D6e
60 Hz Diesel generator set
EPA Tier 2

Engine Information:

Model:	Cummins Inc. QSK95-G9	Bore:	7.48 in. (190 mm)
Type:	4 Cycle, VEE, 16 cylinder diesel	Stroke:	8.27 in. (210 mm)
Aspiration:	Turbocharged and Aftercooled	Displacement:	5816 cu. in. (95.3 liters)
Compression Ratio:	15.5:1		
Emission Control Device:	Turbocharged and Aftercooled		
Emission Level:	Stationary Emergency		

Performance Data	**1/4 Standby**	**1/2 Standby**	**3/4 Standby**	**Full Standby**	**Full Prime**	**Full Continuous**
BHP @ 1800 RPM (60 Hz)	1145	2185	3225	4308	3919	3572
Fuel Consumption L/Hr (US Gal/Hr)	254 (67)	443 (117)	602 (159)	787 (208)	719 (190)	659 (174)
Exhaust Gas Flow m^3/min (CFM)	282 (9963)	45 (15921)	55 (19592)	662 (23369)	623 (21997)	588 (20776)
Exhaust Gas Temperature °C (°F)	331 (628)	354 (670)	377 (711)	443 (830)	417 (783)	396 (745)
Exhaust Emission Data						
HC (Total Unburned Hydrocarbons)	0.3 (114)	0.18 (76)	0.1 (48)	0.07 (33)	0.08 (37)	0.09 (42)
NOx (Oxides of Nitrogen as NO_2)	3.4 (1290)	3.3 (1350)	4.2 (1900)	5.2 (2440)	4.9 (2250)	4.5 (2080)
CO (Carbon Monoxide)	0.5 (170)	0.2 (90)	0.1 (60)	0.2 (100)	0.2 (80)	0.2 (70)
PM (Particulate Matter)	0.21 (69)	0.1 (37)	0.06 (23)	0.04 (18)	0.05 (19)	0.05 (21)
SO_2 (Sulfur Dioxide)	0.006 (1.8)	0.005 (1.8)	0.005 (1.8)	0.005 (1.8)	0.005 (1.8)	0.005 (1.8)
Smoke (FSN)	0.92	0.62	0.46	0.44	0.44	0.45

All values (except smoke) are cited: g/BHP-hr (mg/Nm^3 @ 5% O_2)

Test Conditions

Steady-state emissions recorded per ISO8178-1 during operation at rated engine speed (+/-2%) and stated constant load (+/-2%) with engine temperatures, pressures and emission rates stabilized.

Fuel Specification:	40-48 Cetane Number, 0.0015 Wt.% Sulfur; Reference ISO8178-5, 40 CFR 86, 1313—98 Type 2-D and ASTM D975 No. 2-D. Fuel Density at 0.85 Kg/L (7.1 lbs/US Gal)
Air Inlet Temperature	25 °C (77 °F)
Fuel Inlet Temperature:	40 °C (104 °F)
Barometric Pressure:	100 kPa (29.53 in Hg)
Humidity:	NOx measurement corrected to 10.7 g/kg (75 grains H_2O/lb) of dry air
Intake Restriction:	Set to 20 in of H_2O as measured from compressor inlet
Exhaust Back Pressure:	Set to 1.5 in Hg
Note:	mg/m^3 values are measured dry, corrected to 5% O_2 and normalized to standard temperature and pressure (0°C, 101.325 kPa)

The NOx, HC, CO and PM emission data tabulated here are representative of test data taken from a single engine under the test conditions shown above. Data for the other components are estimated. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may results in elevated emission levels.

2019 EPA Tier 2 Exhaust Emission Compliance Statement
C3000 D6e
Stationary Emergency
60 Hz Diesel Generator Set

Compliance Information:

The engine used in this generator set complies with Tier 2 emissions limit of U.S. EPA New Source Performance Standards for stationary emergency engines under the provisions of 40 CFR 60 Subpart IIII when tested per ISO8178 D2.

Engine Manufacturer:	Cummins Inc.
EPA Certificate Number:	KCEXL95.0AAA-015
Effective Date:	10/01/2018
Date Issued:	10/01/2018
EPA Engine Family (Cummins Emissions Family):	KCEXL95.0AAA

Engine Information:

Model:	QSK95-G9	Bore:	7.48 in. (190 mm)
Engine Nameplate HP:	5051	Stroke:	8.27 in. (210 mm)
Type:	4 cycle, Vee, 16 Cylinder Diesel	Displacement:	5816 cu. in. (95.3 liters)
Aspiration:	Turbocharged and Aftercooled	Compression Ratio:	15.5:1
Emission Control Device:	Turbocharged and Aftercooled	Exhaust Stack Diameter:	14 in.

Diesel Fuel Emissions Limits

D2 Cycle Exhaust Emissions	Grams per BHP-hr			Grams per kW$_m$-hr		
	NO$_X$ + NMHC	CO	PM	NO$_X$ + NMHC	CO	PM
Test Results	4.6	0.5	0.11	6.2	0.7	0.15
EPA Emissions Limit	4.8	2.6	0.15	6.4	3.5	0.20

Test methods: EPA nonroad emissions recorded per 40CFR89 (ref. ISO8178-1) and weighted at load points prescribed in Subpart E, Appendix A for constant speed engines (ref. ISO8178-4, D2)

Diesel fuel specifications: Cetane number: 40-48. Reference: ASTM D975 No. 2-D, <15 ppm Sulfur

Reference conditions: Air inlet temperature: 25°C (77°F), Fuel inlet temperature: 40°C (104°F). Barometric pressure: 100 kPa (29.53 in Hg), Humidity: 10.7 g/kg (75 grains H2O/lb) of dry air; required for NOx correction, Restrictions: Intake restriction set to a maximum allowable limit for clean filter; Exhaust back pressure set to a maximum allowable limit.

Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results.
Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

October 3rd, 2019

To Whom It May Concern:

With regards to Cummins Power Systems (CPS) manufactured diesel generator set model **C3000D6e** rated for 60 Hz operation and equipped with Cummins **QSK95-G9** engine:

When tested under the following conditions:

Table 1	
Fuel Specification:	ASTM D975 No. 2-D S15 diesel fuel with 0.0015% sulfur content (by weight), and 42-48 cetane number.
Air Inlet Temperature:	77 °F
Fuel Inlet Temperature:	104 °F (at fuel pump inlet)
Barometric Pressure:	29.53 in. Hg
Humidity:	NOx measurement corrected to 75 grains H2O/lb. dry air

Based on engine emissions validation testing, the table below represents the nominal performance and exhaust emissions data for the generator set listed above:

	Standby					
PERFORMANCE DATA	**1%**	**10%**	**25%**	**50%**	**75%**	**100%**
BHP @ 1800 RPM (60 Hz)	152	528	1154	2199	3243	4288
Power Output (KWe)	30	300	750	1500	2250	3000
Fuel Consumption (US Gal/Hr.)	26	41	68	118	160	207
Exhaust Gas Flow (CFM)	5480	7024	10020	16016	19646	23299
Exhaust Gas Temperature (°F)	427	533	629	670	712	828
NMHC (Nonmethane Hydrocarbons)	2.82	0.62	0.30	0.18	0.10	0.07
NOx (Oxides of Nitrogen)	11.8	4.8	3.4	3.3	4.2	5.2
CO (Carbon Monoxide)	7.2	1.4	0.5	0.2	0.1	0.2
PM (Particulate Matter)	0.52	0.30	0.21	0.10	0.06	0.04
All emissions values are cited as g/BHP-hr						

Steady-State emissions recorded per ISO8178-1 during operation at rated engine speed (+/-2%) and stated constant load (+/-2%) with engine temperatures, pressures and emission rates stabilized.

The NOx, HC, CO, and PM emission data tabulated here are representative of test data taken from a single engine under the test conditions shown above. Data for the other components are estimated. This data is subject to instrumentation and engine-to-engine variability. Field emissions test data is not guaranteed to these levels. Actual field test results may vary due to test ambient, site conditions, installation, fuel specification, test procedures, instrumentation and ambient correction factors. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Cummins Power Systems
1400 73rd Avenue NE
Minneapolis, MN 55432 USA
cumminspower.com

Values provided in the table below are representative of “Potential Site Variation” for the Digital Realty 2825 Lafayette site in Santa Clara, CA. These values account for variances as indicated above without consideration of improper generator set maintenance.

	Standby					
PERFORMANCE DATA	**1%**	**10%**	**25%**	**50%**	**75%**	**100%**
BHP @ 1800 RPM (60 Hz)	152	528	1154	2199	3243	4288
Power Output (KWe)	30	300	750	1500	2250	3000
NMHC (Nonmethane Hydrocarbons)	4.79	1.05	0.51	0.31	0.17	0.12
NOx (Oxides of Nitrogen)	15.3	6.2	4.4	4.3	5.5	6.8
CO (Carbon Monoxide)	14.4	2.8	1.0	0.4	0.2	0.4
PM (Particulate Matter)	1.30	0.75	0.53	0.25	0.15	0.10
All emissions values are cited as g/BHP-hr						
Potential Site variation values provided above account for Engine, Ambient and Measurement variation with no correction factors.						

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Best Regards,

Tochukwu Duru

Application Engineer – Strategic Accounts (Data Center)

Office: +1 (651) 787-6252

Specification sheet

Diesel generator set QST30 series engine

680 kW - 1000 kW 60 Hz

Description

Cummins® commercial generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary Standby and Prime power applications.

Features

Cummins heavy-duty engine - Rugged 4-cycle, industrial diesel delivers reliable power, low emissions and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Permanent Magnet Generator (PMG) - Offers enhanced motor starting and fault clearing short circuit capability.

Circuit breakers - Option for manually-and/or electrically-operated circuit breakers.

Control system - The PowerCommand® electronic control is standard equipment and provides total generator set system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protection, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Masterless Paralleling - An optional electrically operated circuit breaker can be added for a simple masterless paralleling solution.

Cooling system - Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

NFPA - The generator set accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

	Standby rating	Prime rating	Continuous rating	Data sheets
Model	60 Hz kW (kVA)	60 Hz kW (kVA)	60 Hz kW (kVA)	60 Hz
DQFAA	750 (938)	680 (850)		D-3329
DQFAB	800 (1000)	725 (907)		D-3330
DQFAC	900 (1125)	818 (1023)		D-3331
DQFAD	1000 (1250)	900 (1125)		D-3332

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| S-1508 (08/18)

Generator set specifications

Governor regulation class	ISO 8528 Part 1 Class G3
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Radio frequency emissions compliance	IEC 61000-4-2: Level 4 Electrostatic discharge IEC 61000-4-3: Level 3 Radiated susceptibility

Engine specifications

Bore	140 mm (5.51 in.)
Stroke	165.0 mm (6.5 in.)
Displacement	30.5 L (1860 in^3)
Cylinder block	Cast iron, V 12 cylinder
Battery capacity	1800 amps minimum at ambient temperature of -18 ℃ to 0 ℃ (0 ℉ to 32 ℉)
Battery charging alternator	35 amps
Starting voltage	24 volt, negative ground
Fuel system	Direct injection: number 2 diesel fuel, fuel filter, automatic electric fuel shutoff
Fuel filter	Triple element, 10 micron filtration, spin-on fuel filters with water separator
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Four spin-on, combination full flow filter and bypass filters
Standard cooling system	High ambient radiator

Alternator specifications

Design	Brushless, 4 pole, drip-proof, revolving field
Stator	2/3 pitch
Rotor	Single bearing flexible discs
Insulation system	Class H on low and medium voltage, Class F on high voltage
Standard temperature rise	150 ℃ Standby at 40 ℃ ambient
Exciter type	PMG (Permanent Magnet Generator)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform Total Harmonic Distortion (THDV)	< 5% no load to full linear load, < 3% for any single harmonic
Telephone Influence Factor (TIF)	< 50 per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	< 3

Available voltages

60 Hz Line – Neutral/Line - Line

- 120/208
- 139/240
- 220/380
- 230/400
- 240/416
- 277/480
- 347/600

Note: Consult factory for other voltages.

Generator set options

Engine

- 208/240/480 V coolant heater for ambient above 4.5 ℃ (40 ℉)
- 208/240/480 V coolant heater for ambient below 4.5 ℃ (40 ℉)

Control panel

- PowerCommand 3.3 with Masterless Load Demand (MLD)
- Run relay package
- Ground fault indication
- Paralleling configuration
- Remote fault signal package
- Exhaust gas temperature sensor
- 120/240 V 100 W control anti-condensation heater

Alternator

- 80 ℃ rise
- 105 ℃ rise
- 150 ℃ rise
- 120/240 V 300 W anti-condensation heater
- Temperature sensor - RTDs, 2-phase
- Temperature sensor – alternator bearing RTD
- Differential current transformers

Exhaust system

- Critical grade exhaust silencer
- Exhaust packages
- Industrial grade exhaust silencer
- Residential grade exhaust silencer

Cooling system

- High ambient 50 ℃ radiator

Generator set

- AC entrance box
- Battery
- Battery rack with hold-down - floor standing
- Circuit breaker - set mounted
- Disconnect switch - set mounted
- PowerCommand network
- Remote annunciator panel
- Spring isolators
- 2 year warranty
- 5 year warranty
- 10 year major components warranty

Note: Some options may not be available on all models - consult factory for availability.

PowerCommand 3.3 Control System

An integrated microprocessor based generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing. Refer to document S-1570 for more detailed information on the control.

AmpSentry – Includes integral AmpSentry protection, which provides a full range of alternator protection functions that are matched to the alternator provided.

Power management – Control function provides battery monitoring and testing features and smart starting control system.

Advanced control methodology – Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.

Communications interface – Control comes standard with PCCNet and Modbus® interface.

Regulation compliant – Prototype tested: UL, CSA and CE compliant.

Service - InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.

Easily upgradeable – PowerCommand controls are designed with common control interfaces.

Reliable design – The control system is designed for reliable operation in harsh environment.

Multi-language support

Operator panel features

Operator/display functions

- Displays paralleling breaker status
- Provides direct control of the paralleling breaker
- 320 x 240 pixels graphic LED backlight LCD
- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbuttons
- LED lamps indicating generator set running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode and stop

Paralleling control functions

- First Start Sensor System selects first generator set to close to bus
- Phase Lock Loop Synchronizer with voltage matching
- Sync check relay
- Isochronous kW and kVar load sharing
- Load govern control for utility paralleling
- Extended Paralleling (Base Load/Peak Shave) Mode
- Digital power transfer control, for use with a breaker pair to provide open transition, closed transition, ramping closed transition, peaking and base load functions,
- Alternator data
- Line-to-Neutral and Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kW, kVar, power factor kVA (three phase and total)
- Engine data
- DC voltage
- Engine speed
- Lube oil pressure and temperature
- Coolant temperature
- Comprehensive FAE data (where applicable)
- Other data
- Genset model data
- Start attempts, starts, running hours, kW hours
- Load profile (operating hours at % load in 5% increments)
- Fault history
- Data logging and fault simulation (requires InPower)

Standard control functions

Digital governing

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase, 4-wire Line-to-Line sensing
- Configurable torque matching

AmpSentry AC protection

- AmpSentry protective relay
- Over current and short circuit shutdown
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shutdown
- Over and under frequency shutdown
- Overload warning with alarm contact
- Reverse power and reverse Var shutdown
- Field overload shutdown

Engine protection

- Battery voltage monitoring, protection and testing
- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Fuel-in-rupture-basin warning or shutdown
- Full authority electronic engine protection

Control functions

- Time delay start and cool down
- Real time clock for fault and event time stamping
- Exerciser clock and time of day start/stop
- Data logging
- Cycle cranking
- Load shed
- Configurable inputs and outputs (4)
- Remote emergency stop

Options

- Auxiliary output relays (2)

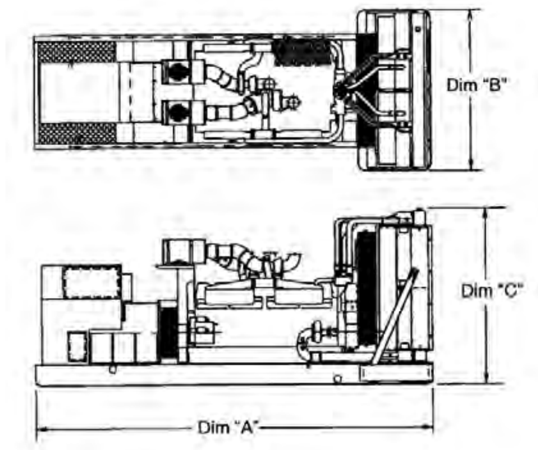
Ratings definitions

Emergency Standby Power (ESP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):
Applicable for supplying power to a constant electrical load for limited hours. Limited-Time running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):
Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):
Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



- This outline drawing is for reference only. See respective model data sheet for specific model outline drawing number.

Model	Dim 'A' mm (in.)	Dim 'B' mm (in.)	Dim 'C' mm (in.)	Set Weight dry* (kg)	Set Weight wet* (kg)
DQFAA	4287 (168.8)	1990 (78.3)	2355 (92.7)	6633 (14625)	6896 (15205)
DQFAB	4287 (168.8)	1990 (78.3)	2355 (92.7)	6857 (15117)	7120 (15697)
DQFAC	4287 (168.8)	1990 (78.3)	2355 (92.7)	7335 (16172)	7598 (16752)
DQFAD	4287 (168.8)	1990 (78.3)	2355 (92.7)	7594 (16742)	7857 (17322)

* Weights represent a set with standard features. See outline drawings for weights of other configurations.

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.		The generator set is available listed to UL 2200, Stationary Engine Generator Assemblies for all 60 Hz low voltage models. The PowerCommand control is Listed to UL 508 - Category NITW7 for U.S. and Canadian usage. Circuit breaker assemblies are UL 489 Listed for 100% Continuous operation and also UL 869A Listed Service Equipment.
	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.	**U.S. EPA**	Engine certified to Stationary Emergency U.S. EPA New Source Performance Standards, 40 CFR 60 subpart IIII Tier 2 exhaust emission levels. U.S. applications must be applied per this EPA regulation.
	All low voltage models are CSA certified to product class 4215-01.	**International Building Code**	The generator set package is available certified for seismic application in accordance with the following International Building Code: IBC2000, IBC2003, IBC2006, IBC2009 and IBC2012.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

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Generator Set Data Sheet

Model: DQFAD
Frequency: 60 Hz
Fuel Type: Diesel
kW Rating: 1000 Standby
900 Prime
Emissions level: EPA NSPS Stationary Emergency Tier 2

Exhaust emission data sheet:	**EDS-1063**
Exhaust emission compliance sheet:	**EPA-1097**
Sound performance data sheet:	**MSP-1038**
Cooling performance data sheet:	**MCP-156**
Prototype test summary data sheet:	**PTS-266**
Standard set-mounted radiator cooling outline:	**A049K674**
Optional remote radiator cooling outline:	**A053G787**

Fuel Consumption

	Standby				**Prime**				**Continuous**
	kW (kVA)				**kW (kVA)**				**kW (kVA)**
Ratings	1000 (1250)				900 (1125)				
Load	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**	**Full**
US gph	18.7	36.4	54.2	71.9	16.9	32.4	48.0	63.5	
L/hr	70.6	137.8	205.1	272.3	64.0	122.8	181.5	240.3	

Engine

	Standby rating	**Prime rating**	**Continuous rating**
Engine manufacturer	Cummins Inc.		
Engine model	QST30-G5 NR2		
Configuration	Cast iron, V 12 cylinder		
Aspiration	Turbocharged and low temperature after-cooled		
Gross engine power output, kWm (bhp)	1112 (1490)	1007 (1350)	
BMEP at set rated load, kPa (psi)	2417 (351)	2160 (313)	
Bore, mm (in.)	140 (5.51)		
Stroke, mm (in.)	165 (6.5)		
Rated speed, rpm	1800		
Piston speed, m/s (ft/min)	9.91 (1950)		
Compression ratio	14.7:1		
Lube oil capacity, L (qt)	154 (162.8)		
Overspeed limit, rpm	2100 ±50		
Regenerative power, kW	82		

Fuel Flow

Maximum fuel flow, L/hr (US gph)	570 (150)	
Maximum fuel inlet restriction, kPa (in Hg)	27 (8.0)	
Maximum fuel inlet temperature, °C (°F)	66 (150)	

Air

	Standby rating	Prime rating	Continuous rating
Combustion air, m^3/min (scfm)	88 (3150)	81 (2880)	
Maximum air cleaner restriction, kPa (in H_2O)	6.2 (25)		
Alternator cooling air, m^3/min (cfm)	204 (7300)		

Exhaust

Exhaust flow at set rated load, m^3/min (cfm)	211 (7540)	195 (6950)	
Exhaust temperature, °C (°F)	477 (890)	467 (873)	
Maximum back pressure, kPa (in H_2O)	6.8 (27)		

Standard Set-Mounted Radiator Cooling

Ambient design, °C (°F)	50 (122)		
Fan load, kW_m (HP)	33.1 (44.4)		
Coolant capacity (with radiator), L (US gal)	167 (44)		
Cooling system air flow, m^3/min (scfm)	1097.5 (38753)		
Total heat rejection, MJ/min (Btu/min)	48.9 (46455)	43.9 (41660)	
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)		
Maximum fuel return line restriction kPa (in Hg)	67.5 (20)		

Optional Heat Exchanger Cooling

Set coolant capacity, L (US gal)	
Heat rejected, jacket water circuit, MJ/min (Btu/min)	
Heat rejected, aftercooler circuit, MJ/min (Btu/min)	
Heat rejected, fuel circuit, MJ/min (Btu/min)	
Total heat radiated to room, MJ/min (Btu/min)	
Maximum raw water pressure, jacket water circuit, kPa (psi)	
Maximum raw water pressure, aftercooler circuit, kPa (psi)	
Maximum raw water pressure, fuel circuit, kPa (psi)	
Maximum raw water flow, jacket water circuit, L/min (US gal/min)	
Maximum raw water flow, aftercooler circuit, L/min (US gal/min)	
Maximum raw water flow, fuel circuit, L/min (US gal/min)	
Minimum raw water flow at 27 °C (80 °F) inlet temp, jacket water circuit, L/min (US gal/min)	
Minimum raw water flow at 27 °C (80 °F) inlet temp, aftercooler circuit, L/min (US gal/min)	
Minimum raw water flow at 27 °C (80 °F) inlet temp, fuel circuit, L/min (US gal/min)	
Raw water delta P at min flow, jacket water circuit, kPa (psi)	
Raw water delta P at min flow, aftercooler circuit, kPa (psi)	
Raw water delta P at min flow, fuel circuit, kPa (psi)	
Maximum jacket water outlet temp, °C (°F)	
Maximum aftercooler inlet temp, °C (°F)	
Maximum aftercooler inlet temp at 25 °C (77 °F) ambient, °C (°F)	
Maximum fuel return line restriction, kPa (in Hg)	

## Optional Remote Radiator Cooling[1]	Standby rating	Prime rating	Continuous rating
Set coolant capacity, L (US gal)			
Max flow rate at max friction head, jacket water circuit, L/min (US gal/min)	992 (262)		
Max flow rate at max friction head, aftercooler circuit, L/min (US gal/min)	303 (80)		
Heat rejected, jacket water circuit, MJ/min (Btu/min)	22.67 (21500)	21.01 (19925)	
Heat rejected, aftercooler circuit, MJ/min (Btu/min)	18.35 (17400)	15.69 (14885)	
Heat rejected, fuel circuit, MJ/min (Btu/min)			
Total heat radiated to room, MJ/min (Btu/min)	6.1 (5753)	5.6 (5301)	
Maximum friction head, jacket water circuit, kPa (psi)	69 (10)		
Maximum friction head, aftercooler circuit, kPa (psi)	48 (7)		
Maximum static head, jacket water circuit, m (ft)	14 (46)		
Maximum static head, aftercooler circuit, m (ft)	14 (46)		
Maximum jacket water outlet temp, ℃ (℉)	104 (220)	100 (212)	
Maximum aftercooler inlet temp at 25 ℃ (77 ℉) ambient, ℃ (℉)	41 (105)		
Maximum aftercooler inlet temp, ℃ (℉)	62 (143)	56 (133)	
Maximum fuel flow, L/hr (US gph)			
Maximum fuel return line restriction, kPa (in Hg)	67.5 (20)		

Weights[2]

Unit dry weight kgs (lbs)	7594 (16742)
Unit wet weight kgs (lbs)	7857 (17322)

Notes:

[1] For non-standard remote installations contact your local Cummins representative.

[2] Weights represent a set with standard features. See outline drawing for weights of other configurations.

Derating Factors

Standby	Engine power available up to 701 m (2300 ft) at ambient temperatures up to 40 ℃ (104 ℉). Above these elevations, derate at 3.5% per 305 m (1000 ft) and 7% per 10 ℃ (18℉).
Prime	Engine power available up to 727 m (2385 ft) at ambient temperatures up to 40 ℃ (104 ℉). Above these elevations, derate at 3.5% per 305 m (1000 ft) and 7% per 10 ℃ (18 ℉).
Continuous	

Ratings Definitions

Emergency Standby Power (ESP):	Limited-Time Running Power (LTP):	Prime Power (PRP):	Base Load (Continuous) Power (COP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514. No sustained overload capability is available at this rating.

Alternator Data

Voltage	Connection[1]	Temp rise degrees C	Duty[2]	Single phase factor[3]	Max surge kVA[4]	Surge kW	Alternator data sheet	Feature code
120/208-139/240	12-lead	125/105	S/P		4234	1019	ADS-312	B252
240/416-277/480	12-lead	125/105	S/P		4234	1019	ADS-312	B252
277/480	Wye, 3-phase	125/105	S/P		3866	1018	ADS-311	B276
220/380-277/480	Wye, 3-phase	125/105	S/P		4602	1018	ADS-330	B282
220/380-277/480	Wye, 3-phase	105/80	S/P		4602	1018	ADS-330	B283
210/380-277/480	Wye, 3-phase	80	S		5521	1024	ADS-331	B284
240/416-277/480	Wye	125/105	S/P		4234	1019	ADS-312	B288
347/600	3-phase	125/105	S/P		3866	1021	ADS-311	B300
347/600	3-phase	105/80	S/P		4234	1024	ADS-312	B301
347/600	3-phase	80	S		4602	1004	ADS-330	B604

Notes:

[1] Limited single phase capability is available from some three phase rated configurations. To obtain single phase rating, multiply the three phase kW rating by the Single Phase Factor[3]. All single phase ratings are at unity power factor.

[2] Standby (S), Prime (P) and Continuous ratings (C).

[3] Factor for the *Single phase output from Three phase alternator* formula listed below.

[4] Maximum rated starting kVA that results in a minimum of 90% of rated sustained voltage during starting.

Formulas for Calculating Full Load Currents:

Three phase output

$$\frac{\text{kW x 1000}}{\text{Voltage x 1.73 x 0.8}}$$

Single phase output

$$\frac{\text{kW x SinglePhaseFactor x 1000}}{\text{Voltage}}$$

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor
or visit power.cummins.com

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Exhaust emission data sheet
1000DQFAD
60 Hz Diesel generator set

Engine information:

Model:	Cummins Inc. QST30-G5 NR2	Bore:	5.51 in. (139 mm)
Type:	4 Cycle, 50° V, 12 cylinder diesel	Stroke:	6.5 in. (165 mm)
Aspiration:	Turbocharged and low temperature after-cooled	Displacement:	1860 cu. in. (30.4 liters)
Compression ratio:	14.7:1		
Emission control device:	After-cooled (air-to-air)		

Performance data	1/4 Standby	1/2 Standby	3/4 Standby	Full Standby	Full Prime
BHP @ 1800 RPM (60 Hz)	371	741	1112	1482	1322
Fuel consumption (gal/Hr)	19.1	35.8	54.1	72.2	63.9
Exhaust gas flow (CFM)	2780	4500	6370	7540	6950
Exhaust gas temperature (°F)	620	760	814	890	873
Exhaust emission data					
HC (Total unburned hydrocarbons)	0.12	0.10	0.08	0.07	0.08
NOx (Oxides of nitrogen as NO2)	4.17	5.20	3.87	3.95	4.00
CO (Carbon monoxide)	0.66	0.36	0.48	0.66	0.58
PM (Particular matter)	0.19	0.15	0.12	0.11	0.11
SO2 (Sulfur dioxide)	0.11	0.10	0.10	0.11	0.10
Smoke (Bosch)	0.88	0.80	0.79	0.73	0.75

All values are Grams/HP-Hour, Smoke is Bosch #

Test conditions

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load (± 2%). Pressures, temperatures, and emission rates were stabilized.

Fuel specification:	46.5 Cetane Number, 0.035 Wt.% Sulfur; Reference ISO8178-5, 40CFR86. 1313-98 Type 2-D and ASTM D975 No. 2-D.
Fuel temperature:	99 ± 9 °F (at fuel pump inlet)
Intake air temperature:	77 ± 9 °F
Barometric pressure:	29.6 ± 1 in. Hg
Humidity:	NOx measurement corrected to 75 grains H2O/lb dry air
Reference standard:	ISO 8178

The NOx, HC, CO and PM emission data tabulated here were taken from a single engine under the test conditions shown above. Data for the other components are estimated. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may results in elevated emission levels.

2019 EPA Tier 2 Exhaust Emission Compliance Statement
1000DQFAD
Stationary Emergency,
60 Hz Diesel Generator Set

Compliance Information:

The engine used in this generator set complies with Tier 2 emissions limit of U.S. EPA New Source Performance Standards for stationary emergency engines under the provisions of 40 CFR 60 Subpart IIII.

Engine Manufacturer:	Cummins Inc.
EPA Certificate Number:	KCEXL030.AAD-028
Effective Date:	10/10/2018
Date Issued:	10/10/2018
EPA Engine Family (Cummins Emissions Family):	KCEXL030.AAD

Engine Information:

Model:	QSK30/QST30-G/QST30-G5 NR2	Bore:	5.51 in. (140 mm)
Engine Nameplate HP:	1490	Stroke:	6.50 in. (165 mm)
Type:	4 Cycle, 50°V, 12 Cylinder Diesel	Displacement:	1860 cu. in. (30.5 liters)
Aspiration:	Turbocharged & CAC	Compression Ratio:	14.0:1
Emission Control Device:	Electronic Control	Exhaust Stack Diameter:	2 – 8 in. (2 – 203 mm)

Diesel Fuel Emissions Limits

D2 cycle exhaust emissions	Grams per BHP-hr			Grams per kW$_m$-hr		
	NO$_X$ + NMHC	CO	PM	NO$_X$ + NMHC	CO	PM
Test Results	4.4	0.5	0.10	5.9	0.7	0.13
EPA Emissions Limit	4.8	2.6	0.15	6.4	3.5	0.20

Test methods: EPA nonroad emissions recorded per 40 CFR 89 (ref. ISO8178-1) and weighted at load points prescribed in Subpart E, Appendix A for constant speed engines (ref. ISO8178-4, D2)

Diesel fuel specifications: Cetane number: 40-48. Reference: ASTM D975 No. 2-D, 300-500 ppm Sulfur.

Reference conditions: Air inlet temperature: 25°C (77°F), Fuel inlet temperature: 40°C (104°F). Barometric pressure: 100 kPa (29.53 in Hg), Humidity: 10.7 g/kg (75 grains H_2O/lb) of dry air; required for NOx correction, Restrictions: Intake restriction set to a maximum allowable limit for clean filter; Exhaust back pressure set to a maximum allowable limit.

Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results.
Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Appendix AQ3

Modeling Support Data

Table AQ3-1 Emissions Estimates for Emergency Standby Generators

Engine Mfg: **Cummins** # of Units: 45 Max # of Engines Tested per Day: 10
Model #: **QSK95** *(engines are not tested concurrently)*

Fuel: ULSD **Engine Data**

		SO2, lbs/hr	**BHP**	**kWe**	**Load %**	**RPM**	**Fuel, gph**	**Stk Ht, ft**	**Stk Diam, in**	**Stk Temp, F**	**mmbtu/hr**	**Stk Flow, ACFM**	**Stack Vel, f/s**	***METRIC UNITs*** **Stk Diam, m**	**Stk Temp, Kelvins**	**Stk Vel, m/s**
Fuel S, %wt:	0.0015															
Fuel wt, lb/gal:	7.05	0.043781	4288	3000	100	1800	207	75	22	828	28.77	23299	147.1002	0.5588	715.37	44.8362
Btu/gal:	139000	0.033840	3243	2250	75	1800	160	75	22	712	22.24	19646	124.0367	0.5588	650.93	37.8064
Lbs S/1000 gal:	0.10575	0.024957	2199	1500	50	1800	118	75	22	670	16.40	16016	101.1184	0.5588	627.59	30.8209
Lbs SO2/1000 gal:	0.2115	0.014382	1154	750	25	1800	68	75	22	629	9.45	10020	63.2621	0.5588	604.82	19.2823
EPA Tier:	2	0.008672	528	300	10	1800	41	75	22	533	5.70	7024	44.3466	0.5588	551.48	13.5169
		0.005499	152	30	1	1800	26	75	22	427	3.61	5480	34.5984	0.5588	492.59	10.5456

Stack Exit Area (sq.ft) = 2.63981

Turbocharged: Yes
Aftercooled: Yes

Scenarios	**Emissions Factor Scenarios (all values in g/bhp-hr)** NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, Tier 2 EFs, 100% Load	4.5	2.6	0.3	0.005	0.15	0.15	163.052
Maint/Readiness Testing, 50 hrs/yr, Tier 2 EFs, 100% Load	4.5	2.6	0.3	0.005	0.15	0.15	163.052
Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	3.97	1.12	0.36	0.005	0.08	0.08	163.052
Maint/Readiness Testing, 50 hrs/yr, CAT EFs, 10% Load	4.56	1.66	0.43	0.005	0.15	0.15	163.052

***

40 CFR 89 Emissions Factors are derived from the cycle weighted load point testing per Subpart E, Appendix A for constant speed engines.
Protocol D2, ref ISO 8178-1 and ISO 8178-4.

Potential Site Variation *Screening* Emissions (g/hp-hr)

Load %	**NOx**	**CO**	**PM**	**SO2**
100	6.80	0.40	0.01	4.631E-3
75	5.50	0.20	0.01	4.733E-3
50	4.30	0.40	0.01	5.148E-3
25	4.40	1.00	0.01	5.653E-3
10	6.20	2.80	0.01	7.449E-3
1	15.30	14.40	0.01	1.641E-2

NOMINAL *Screening* Emissions (g/hp-hr)

Load %	**NOx**	**CO**	**PM**	**SO2**
28.773	6.07	0.34	0.01	1.546E+3
22.24	5.35	0.57	0.01	1.546E+3
16.402	3.41	0.43	0.01	1.546E+3
9.452	2.55	0.81	0.01	1.546E+3
5.699	4.56	1.66	0.01	1.546E+3
			represent DPF	

APC Installed: Yes

APC Type: Active DPF	**Nox**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Emission Reduction % Due to Controls: >>>>>>>>>>>>>>	0	0	0	0	90	90	0
Emitted Fraction at Stack Outlet: >>>>>>>>>>>>>>>>>>	1	1	1	1	0.1	0.1	1

	Controlled Emissions Factor Scenarios (all values in g/bhp-hr) NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, Tier 2 EFs, 100% Load	4.500	2.600	0.300	0.005	0.010	0.010	163.052
Maint/Readiness Testing, 50 hrs/yr, Tier 2 EFs, 100% Load	4.500	2.600	0.300	0.005	0.010	0.010	163.052
Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	3.970	1.120	0.360	0.005	0.010	0.010	163.052
Maint/Readiness Testing, 50 hrs/yr, CAT EFs, 10% Load	4.560	1.660	0.430	0.005	0.010	0.010	163.052

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Scenario 1: **Declared Emergency Ops, 100 hrs/yr, Tier 2 EFs, 100% Load** *(Exempt from NSR Applicability)*

Max Hourly Runtime: 1
Max Daily Runtime: 24
Max Annual Runtime: 100

Single Engine

	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	42.541	24.579	2.836	0.047	0.095	0.095	na
lbs/day	1020.975	589.897	68.065	1.134	2.269	2.269	na
TPY	2.127	1.229	0.142	0.002	0.005	0.005	234.6

All Engines

	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	1914.33	1106.06	127.62	2.13	4.25	4.25	na
lbs/day	45943.87	26545.35	3062.92	51.05	102.10	102.10	na
TPY	95.72	55.30	6.38	0.11	0.21	0.21	10555.9

Scenario 2: **Maint/Readiness Testing, 50 hrs/yr, Tier 2 EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

			Single Engine				
	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	42.541	24.579	2.836	0.047	0.095	0.095	na
lbs/day	42.541	24.579	2.836	0.047	0.095	0.095	na
TPY	1.064	0.614	0.071	0.001	0.002	0.002	117.3
			10 Engines				
	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	42.541	24.579	2.836	0.047	0.095	0.095	na
lbs/day	425.406	245.790	28.360	0.473	0.945	0.945	na
			All Engines				
TPY	47.86	27.65	3.19	0.05	0.11	0.11	5277.9

Scenario 3: **Maint/Readiness Testing, 50 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

			Single Engine				
	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	37.530	10.588	3.403	0.047	0.095	0.095	na
lbs/day	37.530	10.588	3.403	0.047	0.095	0.095	na
TPY	0.938	0.265	0.085	0.001	0.002	0.002	117.3
			10 Engines				
	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	37.530	10.588	3.403	0.047	0.095	0.095	na
lbs/day	375.303	105.879	34.032	0.473	0.945	0.945	na
			All Engines				
TPY	42.22	11.91	3.83	0.05	0.11	0.11	5277.9

Scenario 4: **Maint/Readiness Testing, 50 hrs/yr, CAT EFs, 10% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

			Single Engine				
	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	5.308	1.932	0.501	0.006	0.012	0.012	na
lbs/day	5.308	1.932	0.501	0.006	0.012	0.012	na
TPY	0.133	0.048	0.013	0.000	0.000	0.000	23.231
			10 Engines				
	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	5.308	1.932	0.501	0.006	0.012	0.012	na
lbs/day	53.081	19.323	5.005	0.058	0.116	0.116	na
			All Engines				
TPY	5.97	2.17	0.56	0.01	0.013	0.013	1045.4

BAAQMD 150 Hrs/Yr Emissions Totals, TPY:	**NOx**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
	143.575	82.954	9.572	0.160	0.319	0.319	15833.8

Table AQ3-2 Emissions Estimates for Emergency Standby Generators

Engine Mfg:	Cummins	# of Units:	1	Max # of Engines Tested per Day:	1
Model #:	**QST30**			*(engines are not tested concurrently)*	
Fuel:	ULSD	**Engine Data**			

Fuel S, %wt:	0.0015	SO2, lbs/hr	BHP	kWe	Load %	RPM	Fuel, gph	Stk Ht, ft	Stk Diam, in	Stk Temp, F	mmbtu/hr	Stk ACFM	Stack Vel, f/s	*METRIC UNITs* Stk Diam, m	Stk Temp, Kelvins	Stk Vel, m/s
Fuel wt, lb/gal:	7.05	0.015270	1482	1000	100	1800	72.2	75	8	890	10.04	7540	360.01	0.2032	749.82	109.7305
Btu/gal:	139000	0.011442	1112	829	75	1800	54.1	75	8	814	7.52	6370	304.14	0.2032	707.59	92.7034
Lbs S/1000 gal:	0.10575	0.007572	741	553	50	1800	35.8	75	8	760	4.98	4500	214.86	0.2032	677.59	65.489
Lbs SO2/1000 gal:	0.2115	0.004040	371	277	25	1800	19.1	75	8	620	2.65	2780	132.74	0.2032	599.82	40.4577
EPA Tier:	2		***													
Turbocharged:	Yes		***													

Stack Exit Area (sq.ft) = 0.349066

Aftercooled: Yes

Scenarios	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e lb/mmbtu
	Emissions Factor Scenarios (all values in g/bhp-hr)						
Declared Emergency Ops, 100 hrs/yr, Tier 2 Efs, 100% Load	4.5	2.6	0.3	0.005	0.15	0.15	163.052
Maint/Readiness Testing, 50 hrs/yr, Tier 2 Efs, 100% Load	4.5	2.6	0.3	0.005	0.15	0.15	163.052
Maint/Readiness Testing, 50 hrs/yr, 40CFR89 Cycle Efs, 100% Load	4.18	0.5	0.22	0.005	0.10	0.10	163.052
Maint/Readiness Testing, 50 hrs/yr, Cummins Efs, 25% Load	4.17	0.66	0.12	0.005	0.19	0.19	163.052

NOMINAL *Screening* Emissions (g/hp-hr)

Load %	NOx	CO	PM	SO2
100	3.95	0.66	0.01	4.674E-3
75	3.87	0.48	0.01	4.667E-3
50	5.20	0.36	0.01	4.635E-3
25	4.17	0.66	0.01	4.939E-3

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40 CFR 89 Emissions Factors are derived from the cycle weighted load point testing per Subpart E, Appendix A for constant speed engines.
Protocol D2, ref ISO 8178-1 and ISO 8178-4.

APC Installed: Yes

APC Type: Active DPF	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
Emission Reduction % Due to Controls: >>>>>>>>>>>>>>	0	0	0	0	90	90	0
Emitted Fraction at Stack Outlet: >>>>>>>>>>>>>>>>>>>	1	1	1	1	0.1	0.1	1

Controlled Emissions Factor Scenarios (all values in g/bhp-hr)

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e lb/mmbtu
Declared Emergency Ops, 100 hrs/yr, Tier 2 Efs, 100% Load	4.500	2.600	0.300	0.005	0.015	0.015	163.052
Maint/Readiness Testing, 50 hrs/yr, Tier 2 Efs, 100% Load	4.500	2.600	0.300	0.005	0.015	0.015	163.052
Maint/Readiness Testing, 50 hrs/yr, 40CFR89 Cycle Efs, 100% Load	4.180	0.500	0.220	0.005	0.010	0.010	163.052
Maint/Readiness Testing, 50 hrs/yr, Cummins Efs, 25% Load	4.170	0.660	0.120	0.005	0.019	0.019	163.052

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#REF!

Scenario 1: **Declared Emergency Ops, 100 hrs/yr, Tier 2 Efs, 100% Load** *(Exempt from NSR Offsets)*

Max Hourly Runtime: 1
Max Daily Runtime: 24
Max Annual Runtime: 100

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	14.703	8.495	0.980	0.016	0.049	0.049	na
lbs/day	352.865	203.878	23.524	0.392	1.176	1.176	na
TPY	0.735	0.425	0.049	0.001	0.002	0.002	81.818

All Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	14.70	8.49	0.98	0.02	0.05	0.05	na
lbs/day	352.86	203.88	23.52	0.39	1.18	1.18	na
TPY	0.74	0.42	0.05	0.00	0.00	0.00	81.82

Scenario 2: **Maint/Readiness Testing, 50 hrs/yr, Tier 2 Efs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	14.703	8.495	0.980	0.016	0.049	0.049	na
lbs/day	14.703	8.495	0.980	0.016	0.049	0.049	na
TPY	0.368	0.212	0.025	0.000	0.001	0.001	40.9
			All Engines				
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	14.703	8.495	0.980	0.016	0.049	0.049	na
lbs/day	14.703	8.495	0.980	0.016	0.049	0.049	na
			All Engines				
TPY	0.368	0.212	0.025	0.0004	0.001	0.001	40.9

Scenario 3: **Maint/Readiness Testing, 50 hrs/yr, 40CFR89 Cycle Efs, 100% Lc**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	13.657	1.634	0.719	0.016	0.033	0.033	na
lbs/day	13.657	1.634	0.719	0.016	0.033	0.033	na
TPY	0.341	0.041	0.018	0.000	0.001	0.001	40.9
			All Engines				
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	13.657	1.634	0.719	0.016	0.033	0.033	na
lbs/day	13.657	1.634	0.719	0.016	0.033	0.033	na
			All Engines				
TPY	0.341	0.041	0.018	0.0004	0.001	0.001	40.9

Scenario 4: **Maint/Readiness Testing, 50 hrs/yr, Cummins Efs, 25% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 50

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	3.4107	0.5398	0.0982	0.0041	0.0155	0.0155	na
lbs/day	3.4107	0.5398	0.0982	0.0041	0.0155	0.0155	na
TPY	0.0853	0.0135	0.0025	0.0001	0.0004	0.0004	10.8
			All Engines				
	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	3.411	0.540	0.098	0.004	0.016	0.016	na
lbs/day	3.411	0.540	0.098	0.004	0.016	0.016	na
			All Engines				
TPY	0.085	0.0135	0.0025	0.0001	0.0004	0.0004	10.8

BAAQMD 150 Hrs/Yr Emissions Totals, TPY	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
	1.103	0.637	0.074	0.001	0.004	0.004	122.7

Table AQ3-3 **Lafayette Data Center Screening Analysis - Cummins QST30 (1,000 kW) - NOMINAL Screening Emissions**

QST30 (1) QSK95 Engines (44)

Emergency Generator*	**EG01**	**EG02**	**EG03**	**EG04**	**EG05**	**EG06**	**EG07**	**EG08**	**EG09**	**EG10**	**EG11**	**EG12**	**EG13**	**EG14**
Load %	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
kWe	1000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
bhp	1482	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288
Stack Height (feet)	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Stack Exit Temp (deg.F)	890.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0
Volumetric Flowrate ACFM	7,540	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299
Stack Velocity (ft/sec)	360.01	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10
Stack Diameter (feet)	8/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12
Stack Height (m)	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86
Stack Exit Temp (deg.K)	749.82	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37
Stack Exit Velocity (m/s)	109.7306	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361
Stack Inside Diameter (m)	0.2032	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588
	Load Emissions (g/hp-hr)													
NOx (g/hp-hr/engine)	3.95	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80
CO (g/hp-hr/engine)*	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
SO2 (g/hp-hr/engine)	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3
PM (g/hp-hr/engine)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
*NSPS (>Nominal for all loads)	**Short-term Screening Emissions (lb/hr/engine) and Unitized Screening Impacts (ug/m3 for 1.0 g/s/engine)**													
NOx (lb/hr/engine)	12.906	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284
CO (lb/hr/engine)	8.495	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579
SO2 (lb/hr/engine)	0.016	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047
PM (lb/hr/engine)	0.033	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
1-Hr Unitized Conc (ug/m3)	171.36810	100.12556	91.40581	83.88281	74.59694	83.18165	87.53796	91.09639	93.44328	95.63099	96.05985	98.66702	99.00428	97.62891
X(m)	592976.5	592999.6	593017.0	593017.8	593097.0	593037.0	593037.0	593057.0	593057.0	593057.0	593077.0	593077.0	593077.0	593117.0
Y(m)	4136872.0	4136874.4	4136873.0	4136872.5	4136933.0	4136913.0	4136913.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136893.0
Z(m)														
YYMMDDHH	15050110	16061712	17072412	17072412	13111917	16120917	16120917	16112517	16112517	16120917	16112517	16112517	16120917	17071311
3-Hr Unitized Conc (ug/m3)	123.08760	94.24869	84.58962	67.63627	57.11891	70.62048	73.84237	76.14522	78.63466	78.23574	75.90431	78.23677	78.25909	79.05832
X(m)	592999.6	592999.6	592999.6	592999.6	593077.0	593057.0	593057.0	593057.0	593057.0	593057.0	593077.0	593077.0	593077.0	593106.3
Y(m)	4136874.4	4136874.4	4136874.4	4136874.4	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136860.4
Z(m)														
YYMMDDHH	14082015	14082015	14082015	14082015	17041715	17051015	17051015	17051015	17051015	17051015	17051015	17051015	17051015	17052615
8-Hr Unitized Conc (ug/m3)	107.91753	77.55897	68.65354	57.86002	36.99974	55.70409	68.43270	71.48802	73.88237	74.11383	72.84422	70.83634	70.96364	71.45523
X(m)	593017.0	593017.8	593017.0	593017.8	592972.0	593057.0	593057.0	593057.0	593057.0	593057.0	593057.0	593077.0	593077.0	593097.0
Y(m)	4136873.0	4136872.5	4136873.0	4136872.5	4136854.1	4136913.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136873.0
Z(m)														
YYMMDDHH	17052616	17052616	13061016	13061016	17020616	17052616	13061016	13061016	13061016	13061016	13061016	17052616	13061016	17052616
24-Hr Unitized Conc (ug/m3)	41.32712	28.68297	25.60911	21.65233	14.91280	19.86472	25.87107	27.02104	27.67498	27.47085	26.80015	26.79234	26.67253	27.15445
X(m)	593017.0	593008.7	593017.0	593017.8	592972.0	593057.0	593057.0	593057.0	593057.0	593057.0	593057.0	593077.0	593077.0	593097.0
Y(m)	4136873.0	4136873.5	4136873.0	4136872.5	4136854.1	4136913.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136873.0
Z(m)														
YYMMDDHH	17052624	13061024	13061024	13061024	17020624	17052624	13061024	13061024	13061024	13061024	13061024	17052624	13061024	17052624
	Short-term Pollutant Emissions (g/s/engine) and Pollutant Screening Impacts (ug/m3/engine)													
NOx (g/s/engine)	1.626	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100
CO (g/s/engine)	1.070	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097
SO2 (g/s/engine)	0.0021	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060
PM (g/s/engine)	0.0041	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119
1-Hour NOx (ug/m3)	278.645	811.017	740.387	679.451	604.235	673.771	709.057	737.881	756.891	774.611	778.085	799.203	801.935	790.794
1-Hour CO (ug/m3)	183.364	310.089	283.084	259.785	231.027	257.614	271.105	282.126	289.394	296.169	297.497	305.572	306.616	302.357
8-Hour CO (ug/m3)	115.472	**240.200**	212.620	179.192	114.588	172.516	211.936	221.398	228.814	229.531	225.599	219.380	219.774	221.297
1-Hour SO2 (ug/m3)	0.360	0.601	0.548	0.503	0.448	0.499	0.525	0.547	0.561	0.574	0.576	0.592	0.594	0.586
3-Hour SO2 (ug/m3)	0.258	0.565	0.508	0.406	0.343	0.424	0.443	0.457	0.472	0.469	0.455	0.469	0.470	0.474
24-Hour SO2 (ug/m3)	0.087	**0.172**	0.154	0.130	0.089	0.119	0.155	0.162	0.166	0.165	0.161	0.161	0.160	0.163
24-Hour PM (ug/m3)	0.169	**0.341**	0.305	0.258	0.177	0.236	0.308	0.322	0.329	0.327	0.319	0.319	0.317	0.323
	Annual Unitized Impacts (ug/m3 for 1.0 g/s/engine)											**Annual Emissions & Pollutant Impacts**		
	2013	**2014**	**2015**	**2016**	**2017**	**5-Year**						**(TPY/eng)**	**(lb/hr/eng)**	**(g/s/eng)**
Ann. Unitized Conc (ug/m3)	68.98534	66.78471	67.59370	78.34339	67.75719	64.32486		Modeled Hours/Day:		10	NOx	0.938	5.141E-1	6.478E-2
X(m)	593355.38	593061.72	593354.91	593070.42	593079.12	593354.91				(7AM-5PM)	SO2	1.182E-3	6.475E-4	8.158E-5
Y(m)	4136635.81	4136867.70	4136644.49	4136866.73	4136865.76	4136644.49					PM	2.363E-3	1.295E-3	1.632E-4
											5-Yr PM2.5	2.363E-3	1.295E-3	1.632E-4

Worst-Case Engine bolded

*Emergency Generator stacks are numbered from west to east.

Table AQ3-3

Memorex Drive Data Center Screening Analysis - Caterpillar - NOMINAL Screening Emissions
C175-16 Engines (30)

Emergency Generator*	**EG15**	**EG16**	**EG17**	**EG18**	**EG19**	**EG20**	**EG21**	**EG22**	**EG23**	**EG24**	**EG25**	**EG26**	**EG27**	**EG28**
Load %	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
kWe	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
bhp	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288
Stack Height (feet)	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Stack Exit Temp (deg.F)	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0
Volumetric Flowrate ACFM	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299
Stack Velocity (ft/sec)	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10
Stack Diameter (feet)	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12
Stack Height (m)	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86
Stack Exit Temp (deg.K)	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37
Stack Exit Velocity (m/s)	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361
Stack Inside Diameter (m)	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588
		Short-term Screening Emissions (lb/hr/engine) and Unitized Screening Impacts (ug/m3 for 1.0 g/s/engine)												
NOx (g/hp-hr/engine)	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80
CO (g/hp-hr/engine)*	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
SO2 (g/hp-hr/engine)	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3
PM (g/hp-hr/engine)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
*NSPS (>Nominal for all loads)		**Short-term Screening Emissions (lb/hr/engine) and Unitized Screening Impacts (ug/m3 for 1.0 g/s/engine)**												
NOx (lb/hr/engine)	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284
CO (lb/hr/engine)	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579
SO2 (lb/hr/engine)	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047
PM (lb/hr/engine)	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
1-Hr Unitized Conc (ug/m3)	94.48153	99.82506	99.92201	102.01043	100.58764	101.51174	100.42145	100.50239	98.66810	99.57923	98.15631	97.41042	99.95045	100.31280
X(m)	593115.5	593124.8	593137.0	593134.0	593143.2	593157.0	593157.0	593161.8	593161.7	593170.9	593177.0	593197.0	593197.0	593198.7
Y(m)	4136858.2	4136856.0	4136893.0	4136853.8	4136851.7	4136913.0	4136873.0	4136853.0	4136847.3	4136845.1	4136853.0	4136893.0	4136873.0	4136838.5
Z(m)														
YYMMDDHH	17071311	17071311	17071311	17071311	17071311	17071311	17071311	17071311	17071311	17071311	17071311	17071311	17071311	17071311
3-Hr Unitized Conc (ug/m3)	79.10347	78.76888	76.83555	77.54166	78.83600	79.23934	79.20611	79.44075	78.66252	79.21773	78.14562	77.95842	77.00414	76.53509
X(m)	593106.3	593115.5	593157.0	593157.0	593157.0	593157.0	593161.7	593170.9	593177.0	593180.2	593189.4	593198.7	593198.7	593207.9
Y(m)	4136860.4	4136858.2	4136913.0	4136893.0	4136873.0	4136853.0	4136847.3	4136845.1	4136853.0	4136842.9	4136840.7	4136838.5	4136838.5	4136836.3
Z(m)														
YYMMDDHH	17052615	17052615	17052615	13050615	13050615	13050615	13050615	13050615	13050615	13050615	13050615	13050615	13050615	13050615
8-Hr Unitized Conc (ug/m3)	71.88754	71.59386	72.89790	71.58855	70.76505	72.08825	71.21243	68.21918	69.81107	69.15953	66.62093	66.51128	65.18770	62.06381
X(m)	593106.3	593106.3	593117.0	593117.0	593137.0	593137.0	593137.0	593157.0	593157.0	593157.0	593157.0	593177.0	593177.0	593177.0
Y(m)	4136860.4	4136860.4	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0
Z(m)														
YYMMDDHH	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616
24-Hr Unitized Conc (ug/m3)	27.16335	27.08888	27.61716	27.19687	26.75046	27.25699	26.98128	25.92741	26.32697	26.14095	25.24942	25.02421	24.56303	23.47615
X(m)	593097.0	593117.0	593117.0	593117.0	593137.0	593137.0	593137.0	593137.0	593157.0	593157.0	593157.0	593177.0	593177.0	593177.0
Y(m)	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0
Z(m)														
YYMMDDHH	13061024	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624
		Short-term Pollutant Emissions (g/s/engine) and Pollutant Screening Impacts (ug/m3/engine)												
NOx (g/s/engine)	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100
CO (g/s/engine)	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097
SO2 (g/s/engine)	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060
PM (g/s/engine)	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119
1-Hour NOx (ug/m3)	765.300	808.583	809.368	826.284	814.760	822.245	813.414	814.069	799.212	806.592	795.066	789.024	809.599	812.534
1-Hour CO (ug/m3)	292.609	309.158	309.458	315.926	311.520	314.382	311.005	311.256	305.575	308.397	303.990	301.680	309.547	310.669
8-Hour CO (ug/m3)	222.636	221.726	225.765	221.710	219.159	223.257	220.545	211.275	216.205	214.187	206.325	205.985	201.886	192.212
1-Hour SO2 (ug/m3)	0.567	0.599	0.600	0.612	0.604	0.609	0.603	0.603	0.592	0.597	0.589	0.584	0.600	0.602
3-Hour SO2 (ug/m3)	0.475	0.473	0.461	0.465	0.473	0.475	0.475	0.477	0.472	0.475	0.469	0.468	0.462	0.459
24-Hour SO2 (ug/m3)	0.163	0.163	0.166	0.163	0.161	0.164	0.162	0.156	0.158	0.157	0.151	0.150	0.147	0.141
24-Hour PM (ug/m3)	0.323	0.322	0.329	0.324	0.318	0.324	0.321	0.309	0.313	0.311	0.300	0.298	0.292	0.279
	; (ug/m3)													
	(ug/m3)													
Ann. Unitized Conc (ug/m3)	5.075E+0	(based on D2 cycle emissions for 50 hours/year, assuming all engines are QSK95 engines)												
X(m)	6.392E-3	(based on D2 cycle emissions for 50 hours/year, assuming all engines are QSK95 engines)												
Y(m)	1.278E-2	(based on D2 cycle emissions for 50 hours/year, assuming all engines are QSK95 engines)												
	1.050E-2	(based on D2 cycle emissions for 50 hours/year, assuming all engines are QSK95 engines)												

Worst-Case Engine bolded

*Emergency Generator stacks are numbered from west to east.

Table AQ3-3

Emergency Generator*	**EG29**	**EG30**	**EG31**	**EG32**	**EG33**	**EG34**	**EG35**	**EG36**	**EG37**	**EG38**	**EG39**	**EG40**
Load %	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
kWe	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
bhp	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288	4288
Stack Height (feet)	75	75	75	75	75	75	75	75	75	75	75	75
Stack Exit Temp (deg.F)	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0	828.0
Volumetric Flowrate ACFM	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299	23,299
Stack Velocity (ft/sec)	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10	147.10
Stack Diameter (feet)	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12
Stack Height (m)	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86
Stack Exit Temp (deg.K)	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37	715.37
Stack Exit Velocity (m/s)	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361	44.8361
Stack Inside Diameter (m)	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588
NOx (g/hp-hr/engine)	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80	6.80
CO (g/hp-hr/engine)*	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
SO2 (g/hp-hr/engine)	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3
PM (g/hp-hr/engine)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
*NSPS (>Nominal for all loads)												
NOx (lb/hr/engine)	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284	64.284
CO (lb/hr/engine)	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579	24.579
SO2 (lb/hr/engine)	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047
PM (lb/hr/engine)	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095
1-Hr Unitized Conc (ug/m3)	100.97987	101.95775	97.99035	97.56000	96.53712	94.33972	89.69384	83.43078	78.91214	116.23512	119.18786	116.48271
X(m)	593237.0	593237.0	593237.0	593257.0	593257.0	593257.0	593257.0	593257.0	593357.0	593377.0	593377.0	593377.0
Y(m)	4136893.0	4136893.0	4136893.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136773.0	4136753.0	4136773.0	4136773.0
Z(m)												
YYMMDDHH	17072413	17072413	17072413	13111917	15060915	15060915	15060915	15060915	13020508	16112708	16122917	16122917
3-Hr Unitized Conc (ug/m3)	78.04184	77.72514	75.87464	77.04240	75.95962	76.39177	74.31090	65.30602	60.55408	85.15951	87.06781	90.67397
X(m)	593237.0	593237.0	593237.0	593257.0	593257.0	593257.0	593257.0	593257.0	593257.0	593377.0	593377.0	593226.4
Y(m)	4136893.0	4136893.0	4136893.0	4136893.0	4136893.0	4136873.0	4136873.0	4136873.0	4136873.0	4136753.0	4136753.0	4136831.9
Z(m)												
YYMMDDHH	13050615	17072415	17072415	13050615	13050615	13050615	17072415	17072415	17072415	17041312	17041312	16040715
8-Hr Unitized Conc (ug/m3)	61.75756	59.88333	59.35414	57.51725	56.78807	54.26100	52.82889	48.58449	45.34716	66.78164	67.81190	69.77234
X(m)	593197.0	593197.0	593197.0	593217.0	593217.0	593237.0	593237.0	593217.0	593217.0	593377.0	593343.7	593272.7
Y(m)	4136893.0	4136893.0	4136933.0	4136933.0	4136933.0	4136913.0	4136913.0	4136933.0	4136933.0	4136753.0	4136762.5	4136820.9
Z(m)												
YYMMDDHH	17052616	17052616	13061016	17052616	17052616	17052616	13061016	13061016	13061016	17041316	16052016	13061016
24-Hr Unitized Conc (ug/m3)	23.11347	22.54136	22.28654	21.44722	20.92976	20.43883	19.45610	18.30802	17.11697	26.51726	27.31703	26.64339
X(m)	593197.0	593197.0	593197.0	593197.0	593217.0	593217.0	593237.0	593217.0	593217.0	593344.8	593344.8	593344.8
Y(m)	4136893.0	4136893.0	4136933.0	4136933.0	4136933.0	4136933.0	4136913.0	4136933.0	4136933.0	4136753.4	4136753.4	4136753.4
Z(m)												
YYMMDDHH	17052624	17052624	13061024	13061024	17052624	13061024	17052624	13061024	13061024	16052024	16052024	16052024
NOx (g/s/engine)	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100	8.100
CO (g/s/engine)	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097	3.097
SO2 (g/s/engine)	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060	0.0060
PM (g/s/engine)	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119	0.0119
1-Hour NOx (ug/m3)	817.937	825.858	**793.722**	790.236	781.951	764.152	726.520	675.789	639.188	941.504	**965.422**	943.510
1-Hour CO (ug/m3)	312.735	315.763	**303.476**	302.143	298.975	292.170	277.782	258.385	244.391	359.980	**369.125**	360.747
8-Hour CO (ug/m3)	191.263	185.459	**183.820**	178.131	175.873	168.046	163.611	150.466	140.440	206.823	210.013	216.085
1-Hour SO2 (ug/m3)	0.606	0.612	**0.588**	0.585	0.579	0.566	0.538	0.501	0.473	0.697	**0.715**	0.699
3-Hour SO2 (ug/m3)	0.468	0.466	**0.455**	0.462	0.456	0.458	0.446	0.392	0.363	0.511	0.522	0.544
24-Hour SO2 (ug/m3)	0.139	0.135	**0.134**	0.129	0.126	0.123	0.117	0.110	0.103	0.159	0.164	0.160
24-Hour PM (ug/m3)	0.275	0.268	**0.265**	0.255	0.249	0.243	0.232	0.218	0.204	0.316	0.325	0.317
Ann. Unitized Conc (ug/m3)												
X(m)												
Y(m)												

Table AQ3-3

Emergency Generator*	**EG41**	**EG42**	**EG43**	**EG44**	**EG45**		
Load %	**100%**	**100%**	**100%**	**100%**	**100%**		
kWe	3000	3000	3000	3000	3000		
bhp	4288	4288	4288	4288	4288		
Stack Height (feet)	75	75	75	75	75		
Stack Exit Temp (deg.F)	828.0	828.0	828.0	828.0	828.0		
Volumetric Flowrate ACFM	23,299	23,299	23,299	23,299	23,299		
Stack Velocity (ft/sec)	147.10	147.10	147.10	147.10	147.10		
Stack Diameter (feet)	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12		
Stack Height (m)	22.86	22.86	22.86	22.86	22.86		
Stack Exit Temp (deg.K)	715.37	715.37	715.37	715.37	715.37		
Stack Exit Velocity (m/s)	44.8361	44.8361	44.8361	44.8361	44.8361		
Stack Inside Diameter (m)	0.5588	0.5588	0.5588	0.5588	0.5588		
NOx (g/hp-hr/engine)	6.80	6.80	6.80	6.80	6.80		
CO (g/hp-hr/engine)*	2.60	2.60	2.60	2.60	2.60		
SO2 (g/hp-hr/engine)	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3		
PM (g/hp-hr/engine)	0.01	0.01	0.01	0.01	0.01		
*NSPS (>Nominal for all loads)							
NOx (lb/hr/engine)	64.284	64.284	64.284	64.284	64.284		
CO (lb/hr/engine)	24.579	24.579	24.579	24.579	24.579		
SO2 (lb/hr/engine)	0.047	0.047	0.047	0.047	0.047		
PM (lb/hr/engine)	0.095	0.095	0.095	0.095	0.095		
1-Hr Unitized Conc (ug/m3)	110.66287	116.31762	108.54006	102.32030	96.68953		
X(m)	593377.0	593226.4	593226.4	593226.4	593226.4		
Y(m)	4136773.0	4136831.9	4136831.9	4136831.9	4136831.9		
Z(m)							
YYMMDDHH	16122917	15120317	15120317	17112615	17112615		
3-Hr Unitized Conc (ug/m3)	94.11459	95.34466	95.88297	89.20598	81.76403		
X(m)	593226.4	593226.4	593226.4	593226.4	593226.4		
Y(m)	4136831.9	4136831.9	4136831.9	4136831.9	4136831.9		
Z(m)							
YYMMDDHH	16040715	16040715	17020315	17020315	17020315		
8-Hr Unitized Conc (ug/m3)	71.43017	70.77588	68.41233	66.10148	64.30431		
X(m)	593272.7	593272.7	593226.4	593226.4	593226.4		
Y(m)	4136820.9	4136820.9	4136831.9	4136831.9	4136831.9		
Z(m)							
YYMMDDHH	13061016	13061016	17020616	17020616	17020616		
24-Hr Unitized Conc (ug/m3)	27.33072	27.79318	28.45083	27.59963	26.89042		
X(m)	593272.7	593226.4	593226.4	593226.4	593226.4		
Y(m)	4136820.9	4136831.9	4136831.9	4136831.9	4136831.9		
Z(m)							
YYMMDDHH	13061024	13061024	17020624	17020624	17020624		
NOx (g/s/engine)	8.100	8.100	8.100	8.100	8.100		
CO (g/s/engine)	3.097	3.097	3.097	3.097	3.097		
SO2 (g/s/engine)	0.0060	0.0060	0.0060	0.0060	0.0060		
PM (g/s/engine)	0.0119	0.0119	0.0119	0.0119	0.0119	Max 100%	Max 100% &1%
1-Hour NOx (ug/m3)	896.369	942.173	879.174	828.794	783.185	**965.422**	**965.422**
1-Hour CO (ug/m3)	342.723	360.236	336.149	316.886	299.447	**369.125**	**369.125**
8-Hour CO (ug/m3)	221.219	219.193	211.873	204.716	199.150	**240.200**	**240.200**
1-Hour SO2 (ug/m3)	0.664	0.698	0.651	0.614	0.580	**0.715**	**0.715**
3-Hour SO2 (ug/m3)	0.565	**0.572**	0.575	0.535	0.491	**0.575**	**0.575**
24-Hour SO2 (ug/m3)	0.164	0.167	0.171	0.166	0.161	**0.172**	**0.172**
24-Hour PM (ug/m3)	0.325	0.331	0.339	0.328	0.320	**0.341**	**0.341**
Ann. Unitized Conc (ug/m3)							
X(m)							
Y(m)							

Table AQ3-4

Lafayette Data Center Screening Analysis - Cummins QST30 (1,00 kW) - NOMINAL Screening Emissions & QSK95 (3,000 kW) - POTENTIAL SITE Screening Emissions

QST30 (1) QSK95 Engines (44)

Emergency Generator*	**EG01**	**EG02**	**EG03**	**EG04**	**EG05**	**EG06**	**EG07**	**EG08**	**EG09**	**EG10**	**EG11**	**EG12**	**EG13**
Load %	**25%**	**1%**	**1%**	**1%**	**1%**	**1%**	**1%**	**1%**	**1%**	**1%**	**1%**	**1%**	**1%**
kWe	277	30	30	30	30	30	30	30	30	30	30	30	30
bhp	371	152	152	152	152	152	152	152	152	152	152	152	152
Stack Height (feet)	75	75	75	75	75	75	75	75	75	75	75	75	75
Stack Exit Temp (deg.F)	620.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0
Volumetric Flowrate ACFM	2,780	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480
Stack Velocity (ft/sec)	132.74	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60
Stack Diameter (feet)	8/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12
Stack Height (m)	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86
Stack Exit Temp (deg.K)	599.82	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59
Stack Exit Velocity (m/s)	40.4577	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456
Stack Inside Diameter (m)	0.2032	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588
	Load Emissions (g/hp-hr)												
NOx (g/hp-hr/engine)	4.17	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30
CO (g/hp-hr/engine)*	0.66	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40
SO2 (g/hp-hr/engine)	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3
PM (g/hp-hr/engine)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
*NSPS (>Nominal for all loads)	**Short-term Screening Emissions (lb/hr/engine) and Unitized Screening Impacts (ug/m3 for 1.0 g/s/engine)**												
NOx (lb/hr/engine)	3.411	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127
CO (lb/hr/engine)	0.540	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826
SO2 (lb/hr/engine)	0.004	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
PM (lb/hr/engine)	0.008	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
1-Hr Unitized Conc (ug/m3)	293.90426	250.99740	235.80569	204.70609	184.63186	176.84465	185.64021	189.66474	191.16931	193.29452	200.47939	205.35900	202.48349
X(m)	592971.7	592976.5	592999.6	592976.5	592971.8	593057.0	593057.0	593057.0	593057.0	593157.0	593077.0	593077.0	593077.0
Y(m)	4136867.6	4136872.0	4136874.4	4136872.0	4136860.8	4136913.0	4136913.0	4136913.0	4136933.0	4136953.0	4136933.0	4136933.0	4136933.0
Z(m)													
YYMMDDHH	17123010	13060809	17061408	17092509	16092609	15010908	15010908	17012708	16010509	17122108	16010509	16010509	13013108
3-Hr Unitized Conc (ug/m3)	192.30816	170.38195	151.12887	132.74523	115.00128	115.36939	119.74465	125.06523	125.89186	124.76073	120.06813	119.16945	120.37933
X(m)	592976.5	592990.5	592990.5	592966.0	592965.5	592965.5	593057.0	593057.0	593057.0	593057.0	593057.0	593077.0	593077.0
Y(m)	4136872.0	4136875.4	4136875.4	4136802.9	4136838.4	4136838.4	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0
Z(m)													
YYMMDDHH	14071612	14071612	13072912	15061312	13091012	13091012	15031512	15031512	15031512	15031512	15031512	17052612	15031512
8-Hr Unitized Conc (ug/m3)	152.70674	139.79933	120.03068	98.93437	77.45258	91.08778	109.18197	112.96176	112.55758	108.32518	109.63325	109.66903	105.86760
X(m)	593008.7	593017.8	593017.0	593017.8	592972.2	593057.0	593057.0	593057.0	593057.0	593057.0	593077.0	593077.0	593077.0
Y(m)	4136873.5	4136872.5	4136873.0	4136872.5	4136847.3	4136913.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0
Z(m)													
YYMMDDHH	17052616	17052616	17052616	17052616	13010516	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616
24-Hr Unitized Conc (ug/m3)	58.68940	52.33779	44.12617	35.84393	27.43983	32.50039	40.42438	41.85432	41.81887	40.53255	41.11954	41.25913	40.22929
X(m)	593017.0	593017.8	593008.7	593017.8	592972.2	593057.0	593057.0	593057.0	593057.0	593057.0	593077.0	593077.0	593087.8
Y(m)	4136873.0	4136872.5	4136873.5	4136872.5	4136847.3	4136913.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136933.0	4136864.8
Z(m)													
YYMMDDHH	17052624	17052624	17052624	17052624	16011824	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624
	Short-term Pollutant Emissions (g/s/engine) and Pollutant Screening Impacts (ug/m3/engine)												
NOx (g/s/engine)	0.430	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646
CO (g/s/engine)	0.068	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608
SO2 (g/s/engine)	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
PM (g/s/engine)	0.0010	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
1-Hour NOx (ug/m3)	126.379	**162.144**	152.330	132.240	119.272	114.242	119.924	122.523	123.495	124.868	129.510	132.662	130.804
1-Hour CO (ug/m3)	19.985	**152.606**	143.370	124.461	112.256	107.522	112.869	115.316	116.231	117.523	121.891	124.858	123.110
8-Hour CO (ug/m3)	10.384	**84.998**	72.979	60.152	47.091	55.381	66.383	68.681	68.435	65.862	66.657	66.679	64.368
1-Hour SO2 (ug/m3)	**0.147**	0.050	0.047	0.041	0.037	0.035	0.037	0.038	0.038	0.039	0.040	0.041	0.040
3-Hour SO2 (ug/m3)	**0.096**	0.034	0.030	0.027	0.023	0.023	0.024	0.025	0.025	0.025	0.024	0.024	0.024
24-Hour SO2 (ug/m3)	**0.029**	0.010	0.009	0.007	0.005	0.007	0.008	0.008	0.008	0.008	0.008	0.008	0.008
24-Hour PM (ug/m3)	**0.059**	0.021	0.018	0.014	0.011	0.013	0.016	0.017	0.017	0.016	0.016	0.017	0.016
	Annual Unitized Impacts (ug/m3 for 1.0 g/s/engine)											**Annual Emissions & Pollu**	
	2013	**2014**	**2015**	**2016**	**2017**	**5-Year**						**(TPY/eng)**	**(lb/hr/eng)**
Ann. Unitized Conc (ug/m3)	142.15736	160.14656	142.77922	172.40567	162.13084	150.43340			Modeled Hours/Day:	10	NOx	0.938	5.141E-1
X(m)	593266.38	593266.38	593266.38	593266.38	593217.25	593266.38				(7AM-5PM)	SO2	1.182E-3	6.475E-4
Y(m)	4136682.14	4136682.14	4136682.14	4136682.14	4136724.31	4136682.14					PM	2.363E-3	1.295E-3
Z(m)											5-Yr PM2.5	2.363E-3	1.295E-3

Worst-Case Engine bolded

*Emergency Generator stacks are numbered from west to east (EG01/EG02 are first two stacked EGs through EG25/EG26), then north to south for the four rooftop EGs (EG27-EG30).

Table AQ3-4

Memorex Drive Data Center Screening Analysis - Caterpillar - NOMINAL Screening Emissions
C175-16 Engines (30)

Emergency Generator*	EG14	EG15	EG16	EG17	EG18	EG19	EG20	EG21	EG22	EG23	EG24	EG25	EG26	EG27
Load %	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
kWe	30	30	30	30	30	30	30	30	30	30	30	30	30	30
bhp	152	152	152	152	152	152	152	152	152	152	152	152	152	152
Stack Height (feet)	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Stack Exit Temp (deg.F)	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0
Volumetric Flowrate ACFM	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480
Stack Velocity (ft/sec)	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60
Stack Diameter (feet)	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12
Stack Height (m)	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86
Stack Exit Temp (deg.K)	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59
Stack Exit Velocity (m/s)	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456
Stack Inside Diameter (m)	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588
			Short-term Screening Emissions (lb/hr/engine) and Unitized Screening Impacts (ug/m3 for 1.0 g/s/engine)											
NOx (g/hp-hr/engine)	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30
CO (g/hp-hr/engine)*	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40
SO2 (g/hp-hr/engine)	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3
PM (g/hp-hr/engine)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
*NSPS (>Nominal for all loads)			**Short-term Screening Emissions (lb/hr/engine) and Unitized Screening Impacts (ug/m3 for 1.0 g/s/engine)**											
NOx (lb/hr/engine)	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127
CO (lb/hr/engine)	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826
SO2 (lb/hr/engine)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
PM (lb/hr/engine)	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
1-Hr Unitized Conc (ug/m3)	198.94752	201.69438	202.65153	199.40675	198.12252	200.61935	198.99471	197.46852	200.05161	197.98251	197.33700	195.78189	195.25634	196.59410
X(m)	593106.3	593117.0	593117.0	593124.8	593137.0	593177.0	593177.0	593177.0	593170.9	593197.0	593180.2	593189.4	593197.0	593197.0
Y(m)	4136860.4	4136893.0	4136873.0	4136856.0	4136913.0	4136913.0	4136893.0	4136873.0	4136845.1	4136893.0	4136842.9	4136840.7	4136873.0	4136853.0
Z(m)														
YYMMDDHH	16100108	16100108	14031509	16100108	16100108	15010517	15010517	15010517	15010517	15010517	15010517	15010517	15032108	15032108
3-Hr Unitized Conc (ug/m3)	133.54744	133.72969	133.43687	135.76861	135.16687	133.51361	135.84206	135.64855	137.39076	136.10701	137.37305	137.47786	136.54552	136.70391
X(m)	593106.3	593106.3	593115.5	593157.0	593157.0	593143.2	593177.0	593177.0	593177.0	593170.9	593177.0	593197.0	593198.7	593207.9
Y(m)	4136860.4	4136860.4	4136858.2	4136873.0	4136873.0	4136851.7	4136873.0	4136873.0	4136853.0	4136845.1	4136853.0	4136853.0	4136838.5	4136836.3
Z(m)														
YYMMDDHH	15042115	15042115	15042115	14120615	14120615	17120512	14120615	14120615	14120615	17120512	17120512	14120615	14120615	14120615
8-Hr Unitized Conc (ug/m3)	118.80385	117.98614	115.90754	115.99752	113.23375	110.41555	111.56826	109.46420	105.04449	106.56945	105.37467	100.83924	99.49847	97.35975
X(m)	593097.0	593106.3	593106.3	593117.0	593117.0	593137.0	593137.0	593137.0	593137.0	593157.0	593157.0	593157.0	593177.0	593177.0
Y(m)	4136873.0	4136860.4	4136860.4	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0
Z(m)														
YYMMDDHH	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616	17052616
24-Hr Unitized Conc (ug/m3)	45.53196	45.08809	44.55148	44.63719	43.62170	42.75857	43.09470	42.29349	40.99166	41.39163	40.75241	38.97803	38.41511	37.44233
X(m)	593097.0	593106.3	593117.0	593117.0	593117.0	593137.0	593137.0	593137.0	593157.0	593157.0	593157.0	593157.0	593177.0	593177.0
Y(m)	4136873.0	4136860.4	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0
Z(m)														
YYMMDDHH	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624	17052624
			Short-term Pollutant Emissions (g/s/engine) and Pollutant Screening Impacts (ug/m3/engine)											
NOx (g/s/engine)	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646
CO (g/s/engine)	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608
SO2 (g/s/engine)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
PM (g/s/engine)	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
1-Hour NOx (ug/m3)	128.520	130.295	130.913	128.817	127.987	129.600	128.551	127.565	129.233	127.897	127.480	126.475	126.136	127.000
1-Hour CO (ug/m3)	120.960	122.630	123.212	121.239	120.458	121.977	120.989	120.061	121.631	120.373	119.981	119.035	118.716	119.529
8-Hour CO (ug/m3)	72.233	71.736	70.472	70.526	68.846	67.133	67.834	66.554	63.867	64.794	64.068	61.310	60.495	59.195
1-Hour SO2 (ug/m3)	0.040	0.040	0.041	0.040	0.040	0.040	0.040	0.039	0.040	0.040	0.039	0.039	0.039	0.039
3-Hour SO2 (ug/m3)	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027
24-Hour SO2 (ug/m3)	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.008	0.008	0.008	0.008	0.008	0.008	0.007
24-Hour PM (ug/m3)	0.018	0.018	0.018	0.018	0.017	0.017	0.017	0.017	0.016	0.017	0.016	0.016	0.015	0.015

	tant Impacts (ug/m3)	
	(g/s/eng)	(ug/m3)
Ann. Unitized Conc (ug/m3)	6.478E-2	1.117E+1
X(m)	8.158E-5	1.407E-2
Y(m)	1.632E-4	2.813E-2
Z(m)	1.632E-4	2.455E-2

Worst-Case Engine bolded

*Emergency Generator stacks are numbered from west to east (EG01/EG02 are first two stacked EGs through EG25/EG26), then north to south for the four rooftop EGs (EG27-EG30).

Table AQ3-4

Emergency Generator*	EG28	EG29	EG30	EG31	EG32	EG33	EG34	EG35	EG36	EG37	EG38	EG39
Load %	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
kWe	30	30	30	30	30	30	30	30	30	30	30	30
bhp	152	152	152	152	152	152	152	152	152	152	152	152
Stack Height (feet)	75	75	75	75	75	75	75	75	75	75	75	75
Stack Exit Temp (deg.F)	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0	427.0
Volumetric Flowrate ACFM	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480	5,480
Stack Velocity (ft/sec)	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60	34.60
Stack Diameter (feet)	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12
Stack Height (m)	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86	22.86
Stack Exit Temp (deg.K)	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59	492.59
Stack Exit Velocity (m/s)	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456
Stack Inside Diameter (m)	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588
NOx (g/hp-hr/engine)	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30	15.30
CO (g/hp-hr/engine)*	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40	14.40
SO2 (g/hp-hr/engine)	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3
PM (g/hp-hr/engine)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
*NSPS (>Nominal for all loads)												
NOx (lb/hr/engine)	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127	5.127
CO (lb/hr/engine)	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826	4.826
SO2 (lb/hr/engine)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
PM (lb/hr/engine)	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
1-Hr Unitized Conc (ug/m3)	199.28617	204.53419	204.94919	197.38966	201.75027	201.96515	192.25252	181.11834	167.48594	174.88321	190.92494	218.59879
X(m)	593197.0	593197.0	593197.0	593237.0	593257.0	593257.0	593257.0	593257.0	593257.0	593343.7	593377.0	593377.0
Y(m)	4136933.0	4136933.0	4136933.0	4136893.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136762.5	4136773.0	4136773.0
Z(m)												
YYMMDDHH	13022708	13022708	13022708	16013109	14021108	14021108	15010517	16011108	16011108	15120217	15121908	15121908
3-Hr Unitized Conc (ug/m3)	137.28197	135.20909	137.64365	140.66612	136.06778	134.58569	134.24309	130.20791	122.61294	113.59666	126.97574	130.13245
X(m)	593237.0	593217.1	593237.0	593237.0	593237.0	593257.0	593257.0	593257.0	593257.0	593257.0	593343.7	593343.7
Y(m)	4136893.0	4136834.1	4136893.0	4136893.0	4136893.0	4136873.0	4136893.0	4136893.0	4136893.0	4136893.0	4136762.5	4136762.5
Z(m)												
YYMMDDHH	14120615	14120615	17041715	17041715	17041715	13050615	17041715	17041715	17041715	17041715	13112212	13112212
8-Hr Unitized Conc (ug/m3)	91.61421	91.08165	88.36484	84.57311	86.30344	86.84002	85.43442	81.47363	73.57131	68.12238	76.93506	86.59500
X(m)	593177.0	593197.0	593197.0	593226.4	593257.0	593257.0	593257.0	593257.0	593257.0	593257.0	593377.0	593237.0
Y(m)	4136873.0	4136893.0	4136893.0	4136831.9	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136753.0	4136833.0
Z(m)												
YYMMDDHH	17052616	17052616	17052616	13050616	13050616	13050616	13050616	13050616	13050616	13050616	17041316	16050716
24-Hr Unitized Conc (ug/m3)	35.25748	35.04033	34.43958	34.28349	34.95013	35.55302	34.95270	33.37923	30.36051	28.06065	30.80491	32.26909
X(m)	593177.0	593237.0	593237.0	593226.4	593257.0	593257.0	593257.0	593257.0	593257.0	593257.0	593344.8	593272.7
Y(m)	4136873.0	4136893.0	4136893.0	4136831.9	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136873.0	4136753.4	4136820.9
Z(m)												
YYMMDDHH	17052624	17052624	13050624	13050624	13050624	13050624	13050624	13050624	13050624	13050624	17030524	17052624
NOx (g/s/engine)	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646
CO (g/s/engine)	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608
SO2 (g/s/engine)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
PM (g/s/engine)	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004
1-Hour NOx (ug/m3)	128.739	132.129	132.397	127.514	130.331	130.469	124.195	117.002	108.196	112.975	123.338	141.215
1-Hour CO (ug/m3)	121.166	124.357	124.609	120.013	122.664	122.795	116.890	110.120	101.831	106.329	116.082	132.908
8-Hour CO (ug/m3)	55.701	55.378	53.726	51.420	52.472	52.799	51.944	49.536	44.731	41.418	46.777	52.650
1-Hour SO2 (ug/m3)	0.040	0.041	0.041	0.039	0.040	0.040	0.038	0.036	0.033	0.035	0.038	0.044
3-Hour SO2 (ug/m3)	0.027	0.027	0.028	0.028	0.027	0.027	0.027	0.026	0.025	0.023	0.025	0.026
24-Hour SO2 (ug/m3)	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.006
24-Hour PM (ug/m3)	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.013	0.012	0.011	0.012	0.013

Ann. Unitized Conc (ug/m3)	
X(m)	
Y(m)	
Z(m)	

Table AQ3-4

Emergency Generator*	**EG40**	**EG41**	**EG42**	**EG43**	**EG44**	**EG45**	
Load %	**1%**	**1%**	**1%**	**1%**	**1%**	**1%**	
kWe	30	30	30	30	30	30	
bhp	152	152	152	152	152	152	
Stack Height (feet)	75	75	75	75	75	75	
Stack Exit Temp (deg.F)	427.0	427.0	427.0	427.0	427.0	427.0	
Volumetric Flowrate ACFM	5,480	5,480	5,480	5,480	5,480	5,480	
Stack Velocity (ft/sec)	34.60	34.60	34.60	34.60	34.60	34.60	
Stack Diameter (feet)	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	1 10/12	
Stack Height (m)	22.86	22.86	22.86	22.86	22.86	22.86	
Stack Exit Temp (deg.K)	492.59	492.59	492.59	492.59	492.59	492.59	
Stack Exit Velocity (m/s)	10.5456	10.5456	10.5456	10.5456	10.5456	10.5456	
Stack Inside Diameter (m)	0.5588	0.5588	0.5588	0.5588	0.5588	0.5588	
NOx (g/hp-hr/engine)	15.30	15.30	15.30	15.30	15.30	15.30	
CO (g/hp-hr/engine)*	14.40	14.40	14.40	14.40	14.40	14.40	
SO2 (g/hp-hr/engine)	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	5.000E-3	
PM (g/hp-hr/engine)	0.01	0.01	0.01	0.01	0.01	0.01	
*NSPS (>Nominal for all loads)							
NOx (lb/hr/engine)	5.127	5.127	5.127	5.127	5.127	5.127	
CO (lb/hr/engine)	4.826	4.826	4.826	4.826	4.826	4.826	
SO2 (lb/hr/engine)	0.002	0.002	0.002	0.002	0.002	0.002	
PM (lb/hr/engine)	0.003	0.003	0.003	0.003	0.003	0.003	
1-Hr Unitized Conc (ug/m3)	236.77145	226.09866	225.05989	220.23722	190.96851	177.07355	
X(m)	593377.0	593377.0	593226.4	593226.4	593226.4	593226.4	
Y(m)	4136773.0	4136773.0	4136831.9	4136831.9	4136831.9	4136831.9	
Z(m)							
YYMMDDHH	15121908	15121908	17022208	17022208	17022208	17022208	
3-Hr Unitized Conc (ug/m3)	139.61278	145.14891	132.88036	125.68473	115.35609	107.01327	
X(m)	593377.0	593340.3	593341.4	593226.4	593357.0	593226.4	
Y(m)	4136773.0	4136789.9	4136780.8	4136831.9	4136793.0	4136831.9	
Z(m)							
YYMMDDHH	14111612	16120512	16120512	13010515	16120512	13010515	
8-Hr Unitized Conc (ug/m3)	90.79406	95.91436	100.94655	99.64686	89.95992	81.05559	
X(m)	593226.4	593226.4	593226.4	593226.4	593226.4	593291.3	
Y(m)	4136831.9	4136831.9	4136831.9	4136831.9	4136831.9	4136816.5	
Z(m)							
YYMMDDHH	17112616	17110216	17110216	17110216	17110216	17052616	
24-Hr Unitized Conc (ug/m3)	35.80802	38.95962	40.99918	39.84963	35.91246	33.34454	
X(m)	593226.4	593226.4	593226.4	593226.4	593244.9	593291.3	
Y(m)	4136831.9	4136831.9	4136831.9	4136831.9	4136827.5	4136816.5	
Z(m)							
YYMMDDHH	17110224	17110224	17110224	17110224	17110224	17052624	
NOx (g/s/engine)	0.646	0.646	0.646	0.646	0.646	0.646	
CO (g/s/engine)	0.608	0.608	0.608	0.608	0.608	0.608	
SO2 (g/s/engine)	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	
PM (g/s/engine)	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	Max 100%
1-Hour NOx (ug/m3)	152.954	146.060	145.389	142.273	123.366	114.390	**162.144**
1-Hour CO (ug/m3)	143.957	137.468	136.836	133.904	116.109	107.661	**152.606**
8-Hour CO (ug/m3)	55.203	58.316	61.376	60.585	54.696	49.282	**84.998**
1-Hour SO2 (ug/m3)	0.047	0.045	0.045	0.044	0.038	0.035	**0.147**
3-Hour SO2 (ug/m3)	0.028	0.029	0.027	0.025	0.023	0.021	**0.096**
24-Hour SO2 (ug/m3)	0.007	0.008	0.008	0.008	0.007	0.007	**0.029**
24-Hour PM (ug/m3)	0.014	0.016	0.016	0.016	0.014	0.013	**0.059**
Ann. Unitized Conc (ug/m3)							
X(m)							
Y(m)							
Z(m)							

FIGURE AQ3-1
PROJECT SITE, FENCELINE, NEARBY RECEPTORS, and BPIP STRUCTURES/STACKS

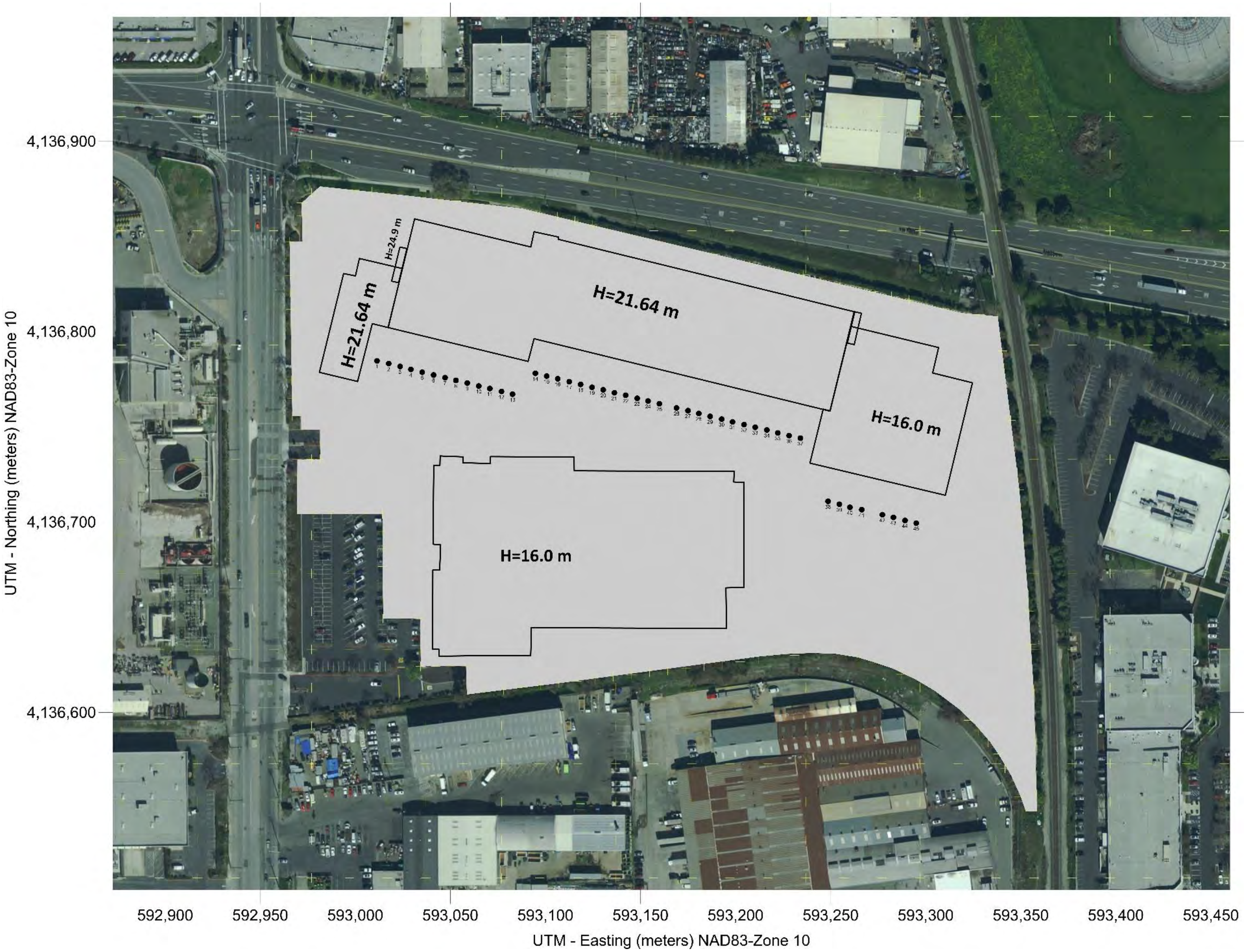


FIGURE AQ3-2
MODELED RECEPTOR GRIDS

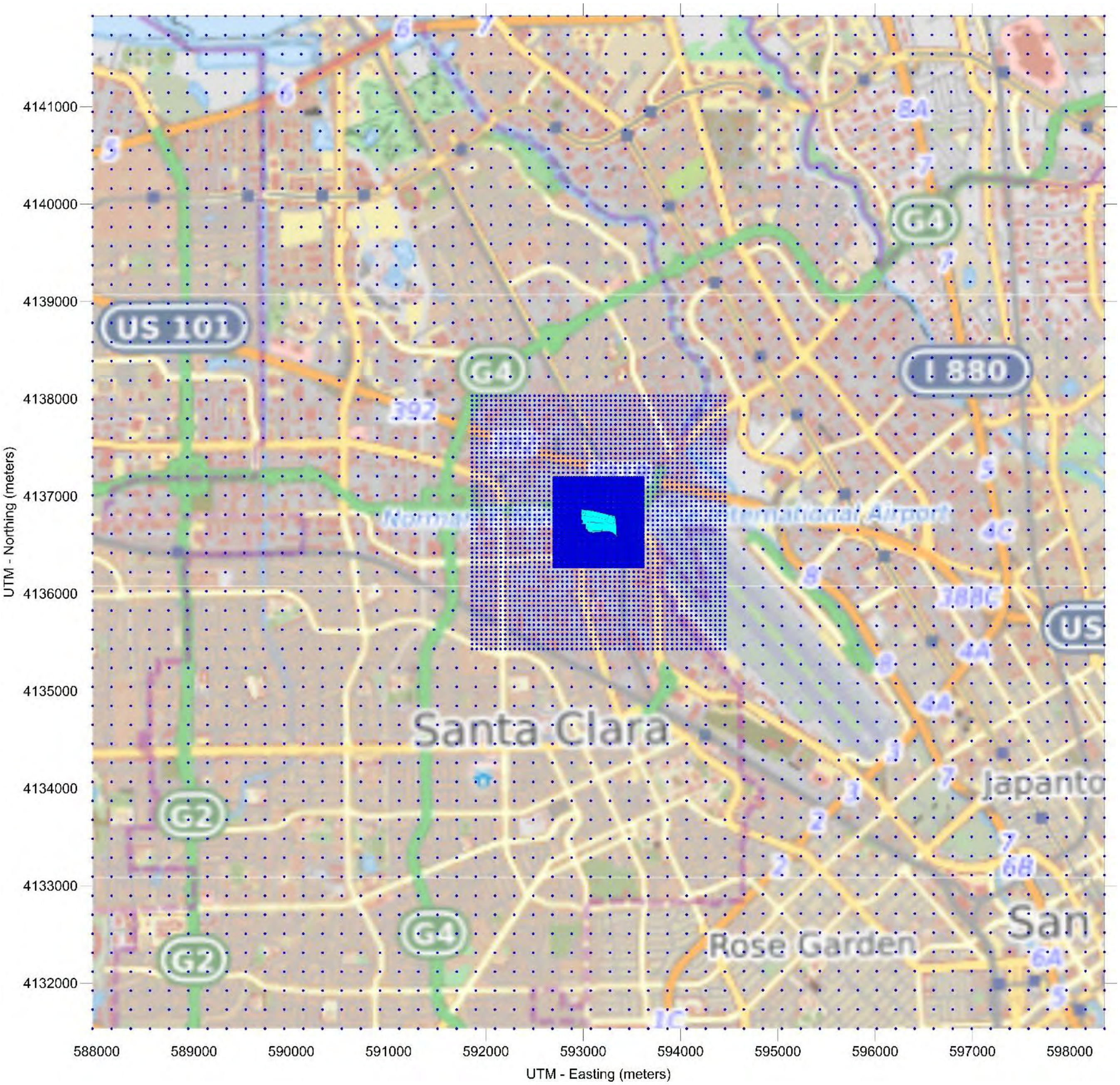
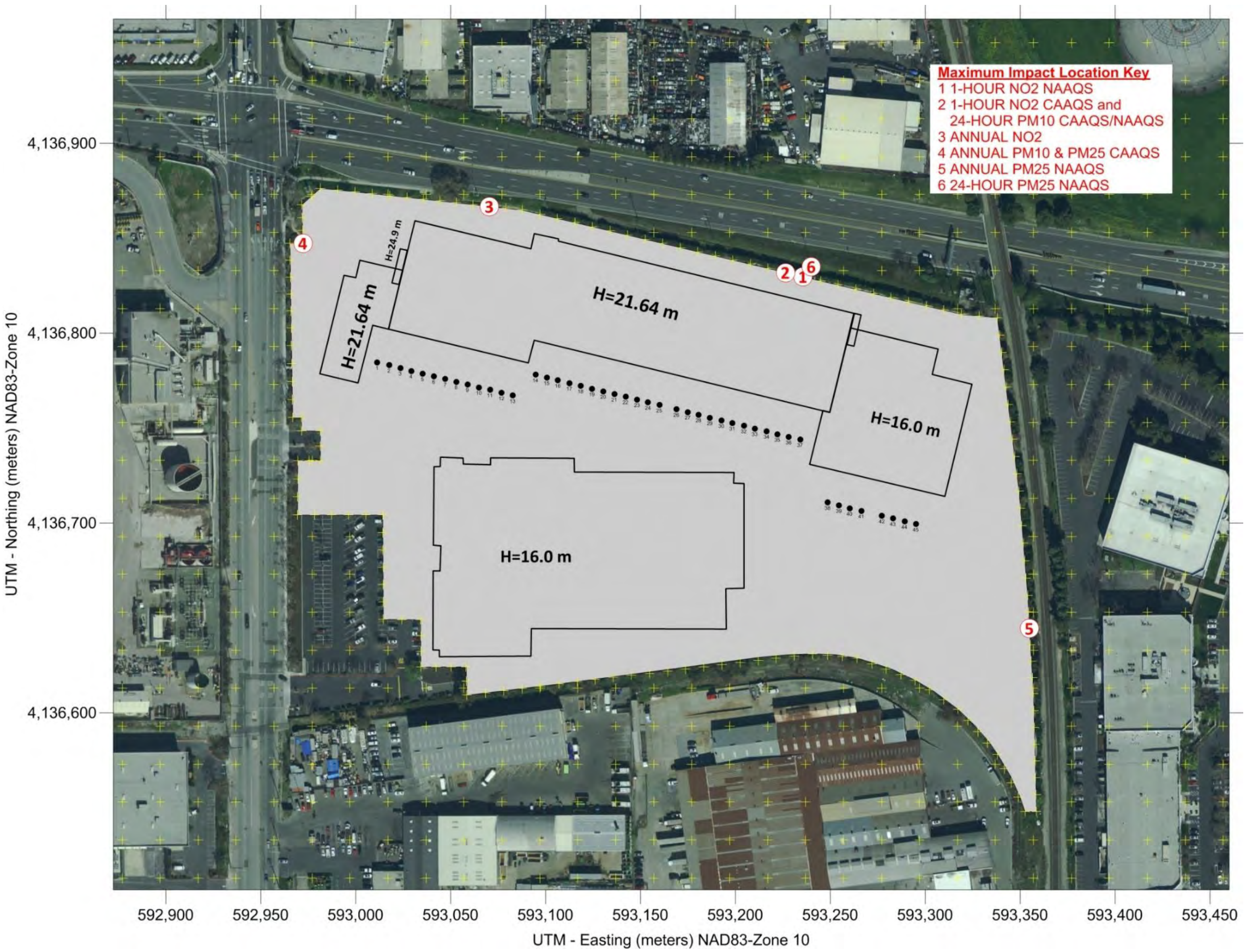


FIGURE AQ3-3
MAXIMUM IMPACT LOCATIONS



Appendix AQ4

Construction Emissions

Table AQ4-1 CalEEMod Construction Data for Data Centers

Project Name:	Lafayette Data Center		**Other Construction Data……..**			
Total Site Acres:	15.45	North parcel only	**Disturbed Acres:**	15.45	**Sewer or Septic:**	Sewer
New bldg sq.ft.:	576120		**Cut and Fill-Export, cu.yds:**	4000	**Elec Utility:**	PG&E
Demolition sq.ft.:	326400		**Cut and Fill-Import, cu.yds:**	34000	**Water:**	City
Const Days/week:	5		**# Cement deliveries:**	1500		
Const Hrs/day:	10		**Avg manpower per day:**		**Const Period, months:**	24
Parking spaces:	177	256651 sq.ft.	**Max manpower per day:**		**Const Start date:**	1-Jan-21
# Ops Employees:	35		**Paving Asphalt req'd, cu.yds:**	2387	**Low VOC Coatings:**	Yes
Actual work period, hrs/day:	8.5	(union labor lunch and daily work breaks subtracted)				

Phase 1 - Site Prep (including demolition) **Start Date:** 1-Jan-21 **Phase Months:** 4 **Est work days:** 87

QTY	Phase/Equipment	HP	Load Factor	Hrs/day	Equip Use Days	Equip Avg Hours Day	Comments
2	Concrete Industrial Saws	81	0.73	8.5	10	1.0	(any use rate less than 1 hour per day should be input as 1 hr/day)
3	Excavators	162	0.38	8.5	30	2.9	***
3	Rubber tired dozers	255	0.4	8.5	25	2.4	***
4	Tractors/Loaders/Backhoes	97	0.37	8.5	35	3.4	***
0	Rubber tired loaders	199	0.36	8.5	0	0.0	***
1	Water trucks	150	0.34	8.5	75	7.3	***
1	Cranes (swing ball type)	226	0.29	8.5	10	1.0	***
0	Other (specify)			8.5	0	0.0	***

Phase 2 - Grading and Foundation Construction **Start Date:** 1-May-21 **Phase Months:** 6 **Est work days:** 131

1	Scrapers	361	0.48	8.5	20	1.3	***
2	Graders	174	0.41	8.5	20	1.3	***
3	Excavators	162	0.38	8.5	20	1.3	***
2	Rubber tired dozers	255	0.4	8.5	20	1.3	***
0	Crawler dozers	208	0.43	8.5	0	0.0	***
3	Tractors/Loaders/Backhoes	97	0.37	8.5	40	2.6	***
0	Rubber tired loaders	199	0.36	8.5	0	0.0	***
1	Water trucks	150	0.34	8.5	110	7.2	***
0	Other (specify)			8.5	0	0.0	***

Lafayette Data Center

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	576.12	1000sqft	15.45	0.00	0
Other Asphalt Surfaces	256.65	1000sqft	5.89	256,650.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - applicant data

Land Use - Applicant data on bldg and lot sizes

Construction Phase - Applicant proposed const schedule per 24 month period

Off-road Equipment - Applicant best estimate

Off-road Equipment - Applicant best estimate

Off-road Equipment - Demolition combined with site prep phase

Off-road Equipment - Applicant best estimate

Off-road Equipment - Applicant best estimate

Off-road Equipment - Applicant best estimate

Trips and VMT - Applicant best estimate

Demolition - Bldg sq.ft. for 2 bldgs to be demolished per Applicant

Grading - Applicant best estimate

Vehicle Trips - DC will have 35 employees max. At 576120 sq.ft. this results in a daily trip rate of 0.061 per 1000 sq.ft.

Road Dust - There will be no vehicle trips on unpaved roads pertaining ot the proposed data center.

Woodstoves - No woodstoves or fireplaces will be associated wiht the data center.

Energy Use - defaults

Water And Wastewater - Water use reduced by 90% due to proposed use as a data center wiht only 35 employees on site.

Solid Waste - Solid waste generation rate reduced by 90% due to data center bldg type with only 35 employees.

Construction Off-road Equipment Mitigation - TYpical level of mitigation available and required by CEC and AQMD.

Fleet Mix - defaults

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	0.00	336,501.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	0.00	1,009,503.00
tblArchitecturalCoating	ConstArea_Parking	1,590.00	0.00
tblAreaCoating	Area_Nonresidential_Exterior	0	336501
tblAreaCoating	Area_Nonresidential_Interior	0	1009503

tblAreaCoating	Area_Parking	1590	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	300.00	262.00
tblConstructionPhase	NumDays	20.00	1.00
tblConstructionPhase	NumDays	30.00	130.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	10.00	86.00
tblGrading	AcresOfGrading	42.25	15.45
tblGrading	MaterialExported	0.00	4,000.00
tblGrading	MaterialImported	0.00	34,000.00
tblLandUse	LandUseSquareFeet	576,120.00	0.00
tblLandUse	LotAcreage	13.23	15.45
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	UsageHours	6.00	6.90
tblOffRoadEquipment	UsageHours	7.00	2.50
tblOffRoadEquipment	UsageHours	8.00	1.30
tblOffRoadEquipment	UsageHours	8.00	3.00
tblOffRoadEquipment	UsageHours	8.00	1.30
tblOffRoadEquipment	UsageHours	8.00	1.30
tblOffRoadEquipment	UsageHours	8.00	7.10
tblOffRoadEquipment	UsageHours	8.00	7.90
tblOffRoadEquipment	UsageHours	8.00	7.10
tblOffRoadEquipment	UsageHours	8.00	1.30
tblOffRoadEquipment	UsageHours	8.00	2.50
tblOffRoadEquipment	UsageHours	8.00	1.30
tblOffRoadEquipment	UsageHours	7.00	1.30
tblOffRoadEquipment	UsageHours	8.00	2.60
tblOffRoadEquipment	UsageHours	8.00	3.50
tblOffRoadEquipment	UsageHours	8.00	1.20
tblRoadDust	MaterialMoistureContent	0.5	0
tblRoadDust	MaterialSiltContent	4.3	0
tblRoadDust	MeanVehicleSpeed	40	0
tblSolidWaste	SolidWasteGenerationRate	535.79	54.00

tblSolidWaste	SolidWasteGenerationRate	0.00	4.0000e-003
tblTripsAndVMT	HaulingTripNumber	0.00	120.00
tblTripsAndVMT	VendorTripNumber	4.00	30.00
tblTripsAndVMT	WorkerTripNumber	11.00	100.00
tblTripsAndVMT	WorkerTripNumber	2.00	20.00
tblVehicleTrips	ST_TR	2.46	0.06
tblVehicleTrips	ST_TR	0.00	0.06
tblVehicleTrips	SU_TR	1.05	0.06
tblVehicleTrips	SU_TR	0.00	0.06
tblVehicleTrips	WD_TR	11.03	0.06
tblVehicleTrips	WD_TR	0.00	0.06
tblWater	IndoorWaterUseRate	102,395,966.89	10,239,597.00
tblWater	OutdoorWaterUseRate	62,758,818.42	6,275,882.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2013	2.5128	1.4589	5.0700e-003	0.6435	0.0804	0.7239	0.2568	0.0745	0.3312						469.7468
2022	3.6639	1.2521	1.1907	3.2500e-003	0.1129	0.0464	0.1593	0.0305	0.0441	0.0746						292.2694
Maximum	**3.6639**	**2.5128**	**1.4589**	**5.0700e-003**	**0.6435**	**0.0804**	**0.7239**	**0.2568**	**0.0745**	**0.3312**						**469.7468**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0932	1.9073	1.6058	5.0700e-003	0.3460	0.0538	0.3998	0.1309	0.0536	0.1845						469.7466
2022	3.5976	1.1203	1.2801	3.2500e-003	0.1129	0.0471	0.1599	0.0305	0.0470	0.0775						292.2692
Maximum	**3.5976**	**1.9073**	**1.6058**	**5.0700e-003**	**0.3460**	**0.0538**	**0.3998**	**0.1309**	**0.0536**	**0.1845**						**469.7466**

	ROG	**NOx**	**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	**4.51**	**19.59**	**-8.91**	**0.00**	**39.34**	**20.47**	**36.63**	**43.82**	**15.10**	**35.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	0.7671	0.5120
2	**4-1-2021**	**6-30-2021**	0.6766	0.4860
3	**7-1-2021**	**9-30-2021**	0.7088	0.5497
4	**10-1-2021**	**12-31-2021**	0.4998	0.3905
5	**1-1-2022**	**3-31-2022**	0.3475	0.2916
6	**4-1-2022**	**6-30-2022**	0.3485	0.2920
7	**7-1-2022**	**9-30-2022**	0.3524	0.2952
		Highest	0.7671	0.5497

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3682	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005						0.0159
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	7.4400e-003	0.0282	0.0887	3.2000e-004	0.0307	2.5000e-004	0.0310	8.2200e-003	2.3000e-004	8.4500e-003						29.4039
Waste						0.0000	0.0000		0.0000	0.0000						27.1587
Water						0.0000	0.0000		0.0000	0.0000						36.5344
Total	**0.3757**	**0.0283**	**0.0964**	**3.2000e-004**	**0.0307**	**2.8000e-004**	**0.0310**	**8.2200e-003**	**2.6000e-004**	**8.4800e-003**						**93.1128**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3682	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005						0.0159
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	7.4400e-003	0.0282	0.0887	3.2000e-004	0.0307	2.5000e-004	0.0310	8.2200e-003	2.3000e-004	8.4500e-003						29.4039
Waste						0.0000	0.0000		0.0000	0.0000						27.1587
Water						0.0000	0.0000		0.0000	0.0000						36.5344
Total	**0.3757**	**0.0283**	**0.0964**	**3.2000e-004**	**0.0307**	**2.8000e-004**	**0.0310**	**8.2200e-003**	**2.6000e-004**	**8.4800e-003**						**93.1128**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	1/1/2021	5	1	Demo in site prep
2	Site Preparation	Site Preparation	1/1/2021	4/30/2021	5	86	
3	Grading	Grading	5/1/2021	10/31/2021	5	130	
4	Building Construction	Building Construction	11/1/2021	11/1/2022	5	262	
5	Architectural Coating	Architectural Coating	11/1/2022	12/30/2022	5	44	
6	Paving	Paving	12/1/2022	12/31/2022	5	22	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 15.45

Acres of Paving: 5.89

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,009,503; Non-Residential Outdoor: 336,501; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Concrete/Industrial Saws	2	1.00	81	0.73
Site Preparation	Cranes	1	1.00	231	0.29
Site Preparation	Dumpers/Tenders	1		16	0.38
Site Preparation	Excavators	3	3.00	158	0.38
Site Preparation	Rubber Tired Dozers	3	2.50	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	3.50	97	0.37
Grading	Dumpers/Tenders	1	7.30	16	0.38

Grading	Excavators	3	1.30	158	0.38
Grading	Graders	2	1.30	187	0.41
Grading	Rubber Tired Dozers	2	1.30	247	0.40
Grading	Scrapers	1	1.30	367	0.48
Grading	Tractors/Loaders/Backhoes	3	2.60	97	0.37
Building Construction	Cranes	2	2.50	231	0.29
Building Construction	Dumpers/Tenders	1	4.10	16	0.38
Building Construction	Forklifts	4	3.00	89	0.20
Building Construction	Generator Sets	2	1.30	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	1.30	97	0.37
Building Construction	Welders	4	1.20	46	0.45
Architectural Coating	Aerial Lifts	1	6.90	63	0.31
Architectural Coating	Air Compressors	3	6.90	78	0.48
Paving	Pavers	1	7.10	130	0.42
Paving	Paving Equipment	1	7.90	132	0.36
Paving	Rollers	1	7.10	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.10	97	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	0	0.00	0.00	1,485.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	14	35.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	12	30.00	0.00	4,750.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	14	100.00	30.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	4	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	4	10.00	0.00	120.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1607	0.0000	0.1607	0.0243	0.0000	0.0243						0.0000
Off-Road	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**	**0.1607**	**0.0000**	**0.1607**	**0.0243**	**0.0000**	**0.0243**						**0.0000**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.8200e-003	0.1986	0.0433	5.8000e-004	0.0126	6.2000e-004	0.0132	3.4600e-003	5.9000e-004	4.0500e-003						55.9761
Vendor	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
Total	**5.8200e-003**	**0.1986**	**0.0433**	**5.8000e-004**	**0.0126**	**6.2000e-004**	**0.0132**	**3.4600e-003**	**5.9000e-004**	**4.0500e-003**						**55.9761**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0723	0.0000	0.0723	0.0110	0.0000	0.0110						0.0000
Off-Road	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**	**0.0723**	**0.0000**	**0.0723**	**0.0110**	**0.0000**	**0.0110**						**0.0000**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.8200e-003	0.1986	0.0433	5.8000e-004	0.0126	6.2000e-004	0.0132	3.4600e-003	5.9000e-004	4.0500e-003						55.9761
Vendor	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
Total	**5.8200e-003**	**0.1986**	**0.0433**	**5.8000e-004**	**0.0126**	**6.2000e-004**	**0.0132**	**3.4600e-003**	**5.9000e-004**	**4.0500e-003**						**55.9761**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2428	0.0000	0.2428	0.1334	0.0000	0.1334						0.0000
Off-Road	0.0737	0.7478	0.5413	9.3000e-004		0.0379	0.0379		0.0350	0.0350						81.8720
Total	**0.0737**	**0.7478**	**0.5413**	**9.3000e-004**	**0.2428**	**0.0379**	**0.2806**	**0.1334**	**0.0350**	**0.1684**						**81.8720**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	4.6400e-003	3.2100e-003	0.0344	1.1000e-004	0.0119	8.0000e-005	0.0120	3.1700e-003	7.0000e-005	3.2400e-003						9.8866
Total	**4.6400e-003**	**3.2100e-003**	**0.0344**	**1.1000e-004**	**0.0119**	**8.0000e-005**	**0.0120**	**3.1700e-003**	**7.0000e-005**	**3.2400e-003**						**9.8866**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1092	0.0000	0.1092	0.0601	0.0000	0.0601						0.0000
Off-Road	0.0224	0.4578	0.6064	9.3000e-004		0.0238	0.0238		0.0238	0.0238						81.8719
Total	**0.0224**	**0.4578**	**0.6064**	**9.3000e-004**	**0.1092**	**0.0238**	**0.1330**	**0.0601**	**0.0238**	**0.0838**						**81.8719**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	4.6400e-003	3.2100e-003	0.0344	1.1000e-004	0.0119	8.0000e-005	0.0120	3.1700e-003	7.0000e-005	3.2400e-003						9.8866
Total	**4.6400e-003**	**3.2100e-003**	**0.0344**	**1.1000e-004**	**0.0119**	**8.0000e-005**	**0.0120**	**3.1700e-003**	**7.0000e-005**	**3.2400e-003**						**9.8866**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1376	0.0000	0.1376	0.0711	0.0000	0.0711						0.0000
Off-Road	0.0650	0.6859	0.4584	8.9000e-004		0.0310	0.0310		0.0286	0.0286						77.7824
Total	**0.0650**	**0.6859**	**0.4584**	**8.9000e-004**	**0.1376**	**0.0310**	**0.1686**	**0.0711**	**0.0286**	**0.0998**						**77.7824**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0186	0.6352	0.1384	1.8500e-003	0.0403	1.9800e-003	0.0423	0.0111	1.9000e-003	0.0130						179.0482
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	6.0100e-003	4.1600e-003	0.0446	1.4000e-004	0.0155	1.0000e-004	0.0156	4.1100e-003	9.0000e-005	4.2000e-003						12.8098
Total	**0.0246**	**0.6393**	**0.1830**	**1.9900e-003**	**0.0557**	**2.0800e-003**	**0.0578**	**0.0152**	**1.9900e-003**	**0.0172**						**191.8581**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0619	0.0000	0.0619	0.0320	0.0000	0.0320						0.0000
Off-Road	0.0206	0.4156	0.5279	8.9000e-004		0.0201	0.0201		0.0201	0.0201						77.7823
Total	**0.0206**	**0.4156**	**0.5279**	**8.9000e-004**	**0.0619**	**0.0201**	**0.0820**	**0.0320**	**0.0201**	**0.0521**						**77.7823**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0186	0.6352	0.1384	1.8500e-003	0.0403	1.9800e-003	0.0423	0.0111	1.9000e-003	0.0130						179.0482
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	6.0100e-003	4.1600e-003	0.0446	1.4000e-004	0.0155	1.0000e-004	0.0156	4.1100e-003	9.0000e-005	4.2000e-003						12.8098
Total	**0.0246**	**0.6393**	**0.1830**	**1.9900e-003**	**0.0557**	**2.0800e-003**	**0.0578**	**0.0152**	**1.9900e-003**	**0.0172**						**191.8581**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0184	0.1638	0.1286	2.4000e-004		8.4300e-003	8.4300e-003		7.9500e-003	7.9500e-003						20.0875
Total	**0.0184**	**0.1638**	**0.1286**	**2.4000e-004**		**8.4300e-003**	**8.4300e-003**		**7.9500e-003**	**7.9500e-003**						**20.0875**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	2.2000e-003	0.0694	0.0185	1.8000e-004	4.4400e-003	1.5000e-004	4.5900e-003	1.2800e-003	1.5000e-004	1.4300e-003						17.5035
Worker	6.9300e-003	4.8000e-003	0.0515	1.6000e-004	0.0179	1.1000e-004	0.0180	4.7500e-003	1.0000e-004	4.8500e-003						14.7806
Total	**9.1300e-003**	**0.0742**	**0.0699**	**3.4000e-004**	**0.0223**	**2.6000e-004**	**0.0226**	**6.0300e-003**	**2.5000e-004**	**6.2800e-003**						**32.2841**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.9300e-003	0.1187	0.1408	2.4000e-004		6.8600e-003	6.8600e-003		6.8600e-003	6.8600e-003						20.0875
Total	**5.9300e-003**	**0.1187**	**0.1408**	**2.4000e-004**		**6.8600e-003**	**6.8600e-003**		**6.8600e-003**	**6.8600e-003**						**20.0875**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	2.2000e-003	0.0694	0.0185	1.8000e-004	4.4400e-003	1.5000e-004	4.5900e-003	1.2800e-003	1.5000e-004	1.4300e-003						17.5035
Worker	6.9300e-003	4.8000e-003	0.0515	1.6000e-004	0.0179	1.1000e-004	0.0180	4.7500e-003	1.0000e-004	4.8500e-003						14.7806
Total	**9.1300e-003**	**0.0742**	**0.0699**	**3.4000e-004**	**0.0223**	**2.6000e-004**	**0.0226**	**6.0300e-003**	**2.5000e-004**	**6.2800e-003**						**32.2841**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0804	0.7093	0.6095	1.1300e-003		0.0351	0.0351		0.0331	0.0331						96.8727
Total	**0.0804**	**0.7093**	**0.6095**	**1.1300e-003**		**0.0351**	**0.0351**		**0.0331**	**0.0331**						**96.8727**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	9.9000e-003	0.3162	0.0839	8.7000e-004	0.0214	6.4000e-004	0.0221	6.1900e-003	6.2000e-004	6.8100e-003						83.5952
Worker	0.0312	0.0208	0.2281	7.6000e-004	0.0861	5.3000e-004	0.0866	0.0229	4.9000e-004	0.0234						68.6836
Total	**0.0411**	**0.3369**	**0.3120**	**1.6300e-003**	**0.1075**	**1.1700e-003**	**0.1086**	**0.0291**	**1.1100e-003**	**0.0302**						**152.2787**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0286	0.5724	0.6791	1.1300e-003		0.0331	0.0331		0.0331	0.0331						96.8726
Total	**0.0286**	**0.5724**	**0.6791**	**1.1300e-003**		**0.0331**	**0.0331**		**0.0331**	**0.0331**						**96.8726**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	9.9000e-003	0.3162	0.0839	8.7000e-004	0.0214	6.4000e-004	0.0221	6.1900e-003	6.2000e-004	6.8100e-003						83.5952
Worker	0.0312	0.0208	0.2281	7.6000e-004	0.0861	5.3000e-004	0.0866	0.0229	4.9000e-004	0.0234						68.6836
Total	**0.0411**	**0.3369**	**0.3120**	**1.6300e-003**	**0.1075**	**1.1700e-003**	**0.1086**	**0.0291**	**1.1100e-003**	**0.0302**						**152.2787**

3.6 Architectural Coating - 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	tons/yr										MT/yr					
Archit. Coating	3.5093					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	0.0162	0.1175	0.1584	2.6000e-004		6.4000e-003	6.4000e-003		6.3800e-003	6.3800e-003						22.2327
Total	**3.5255**	**0.1175**	**0.1584**	**2.6000e-004**		**6.4000e-003**	**6.4000e-003**		**6.3800e-003**	**6.3800e-003**						**22.2327**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.2700e-003	8.4000e-004	9.2500e-003	3.0000e-005	3.4900e-003	2.0000e-005	3.5100e-003	9.3000e-004	2.0000e-005	9.5000e-004						2.7853
Total	**1.2700e-003**	**8.4000e-004**	**9.2500e-003**	**3.0000e-005**	**3.4900e-003**	**2.0000e-005**	**3.5100e-003**	**9.3000e-004**	**2.0000e-005**	**9.5000e-004**						**2.7853**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.5093					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	5.3000e-003	0.1209	0.1633	2.6000e-004		8.4700e-003	8.4700e-003		8.4700e-003	8.4700e-003						22.2327
Total	**3.5146**	**0.1209**	**0.1633**	**2.6000e-004**		**8.4700e-003**	**8.4700e-003**		**8.4700e-003**	**8.4700e-003**						**22.2327**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.2700e-003	8.4000e-004	9.2500e-003	3.0000e-005	3.4900e-003	2.0000e-005	3.5100e-003	9.3000e-004	2.0000e-005	9.5000e-004						2.7853
Total	**1.2700e-003**	**8.4000e-004**	**9.2500e-003**	**3.0000e-005**	**3.4900e-003**	**2.0000e-005**	**3.5100e-003**	**9.3000e-004**	**2.0000e-005**	**9.5000e-004**						**2.7853**

3.7 Paving - 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	tons/yr										MT/yr					
Off-Road	7.1900e-003	0.0726	0.0958	1.5000e-004		3.7500e-003	3.7500e-003		3.4500e-003	3.4500e-003						12.9413
Paving	7.7200e-003					0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0149**	**0.0726**	**0.0958**	**1.5000e-004**		**3.7500e-003**	**3.7500e-003**		**3.4500e-003**	**3.4500e-003**						**12.9413**

3.7 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.4000e-004	0.0147	3.4400e-003	5.0000e-005	1.0200e-003	4.0000e-005	1.0600e-003	2.8000e-004	4.0000e-005	3.2000e-004						4.4623
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.2000e-004	2.1000e-004	2.3100e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.8000e-004	2.3000e-004	0.0000	2.4000e-004						0.6963
Total	**7.6000e-004**	**0.0150**	**5.7500e-003**	**6.0000e-005**	**1.8900e-003**	**5.0000e-005**	**1.9400e-003**	**5.1000e-004**	**4.0000e-005**	**5.6000e-004**						**5.1586**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5900e-003	0.0742	0.1107	1.5000e-004		4.2600e-003	4.2600e-003		4.2600e-003	4.2600e-003						12.9413
Paving	7.7200e-003					0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0113**	**0.0742**	**0.1107**	**1.5000e-004**		**4.2600e-003**	**4.2600e-003**		**4.2600e-003**	**4.2600e-003**						**12.9413**

3.7 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.4000e-004	0.0147	3.4400e-003	5.0000e-005	1.0200e-003	4.0000e-005	1.0600e-003	2.8000e-004	4.0000e-005	3.2000e-004						4.4623
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.2000e-004	2.1000e-004	2.3100e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.8000e-004	2.3000e-004	0.0000	2.4000e-004						0.6963
Total	**7.6000e-004**	**0.0150**	**5.7500e-003**	**6.0000e-005**	**1.8900e-003**	**5.0000e-005**	**1.9400e-003**	**5.1000e-004**	**4.0000e-005**	**5.6000e-004**						**5.1586**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.4400e-003	0.0282	0.0887	3.2000e-004	0.0307	2.5000e-004	0.0310	8.2200e-003	2.3000e-004	8.4500e-003						29.4039
Unmitigated	7.4400e-003	0.0282	0.0887	3.2000e-004	0.0307	2.5000e-004	0.0310	8.2200e-003	2.3000e-004	8.4500e-003						29.4039

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	34.57	34.57	34.57	82,607	82,607
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	34.57	34.57	34.57	82,607	82,607

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	9.50	7.30	7.30	33.00	48.00	19.00	77	19	4
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720
Other Asphalt Surfaces	0.612822	0.036208	0.182365	0.105071	0.013933	0.005011	0.012748	0.021514	0.002168	0.001529	0.005280	0.000629	0.000720

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	0				0.0000
Other Asphalt Surfaces	0				0.0000
Total					**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	0				0.0000
Other Asphalt Surfaces	0				0.0000
Total					**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3682	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005						0.0159
Unmitigated	0.3682	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005						0.0159

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3509					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0166					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	7.1000e-004	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005						0.0159
Total	**0.3682**	**7.0000e-005**	**7.6500e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**						**0.0159**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3509					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0166					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	7.1000e-004	7.0000e-005	7.6500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005						0.0159
Total	**0.3682**	**7.0000e-005**	**7.6500e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**						**0.0159**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated				36.5344
Unmitigated				36.5344

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	10.2396 / 6.27588				36.5344
Other Asphalt Surfaces	0 / 0				0.0000
Total					**36.5344**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	10.2396 / 6.27588				36.5344
Other Asphalt Surfaces	0 / 0				0.0000
Total					**36.5344**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated				27.1587
Unmitigated				27.1587

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	54				27.1567
Other Asphalt Surfaces	0.004				2.0100e-003
Total					**27.1587**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	54				27.1567
Other Asphalt Surfaces	0.004				2.0100e-003
Total					**27.1587**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Phase 3 - Building Construction				**Start Date:**		1-Nov-21	**Phase Months:**	12	**Est work days:**	261
2	Cranes (std type)	226	0.29	8.5	75	2.4	***				
4	Forklifts	89	0.2	8.5	90	2.9	***				
0	Aerial lifts	62	0.31	8.5	0	0.0	***				
1	Tractors/Loaders/Backhoes	97	0.37	8.5	40	1.3	***				
2	Generator sets	84	0.74	8.5	40	1.3	***				
0	Portable light sets	6	0.82	8.5	0	0.0	***				
4	Welders	46	0.45	8.5	35	1.1	***				
1	Water trucks	150	0.34	8.5	125	4.1	***				
0	Other (specify)			8.5	0	0.0	***				
	Phase 4 - Architectural Coating				**Start Date:**		1-Nov-22	**Phase Months:**	2	**Est work days:**	44
3	Air compressors	78	0.48	8.5	35	6.8	***				
1	Aerial lifts	62	0.31	8.5	35	6.8	***				
	Other (specify)			8.5		0.0	***				
	Phase 5 - Paving				**Start Date:**		1-Dec-22	**Phase Months:**	1	**Est work days:**	22
1	Pavers	125	0.42	8.5	18	7.0	(overlaps Arch coating phase by 1 month)				
1	Paving Equipment	130	0.36	8.5	20	7.8	***				
1	Rollers	80	0.38	8.5	18	7.0	***				
1	Tractors/Loaders/Backhoes	97	0.37	8.5	18	7.0	***				
0	Other (specify)			8.5	0	0.0	***			**Total Const Days:**	**545**

Note: All of the equipment listed for each phase will not be onsite at the same time. Individual equipment will be brought and removed from the site as needed.

Appendix AQ5

Risk Assessment Support Data

Lafayette Data Center

				Distance from Site		
Receptor ID	UTM Em	UTM Nm	Elev., ft.	meters	feet	miles
Site (approx middle point) *	**593207.00**	**4136753.00**	40	na	na	
School Admin Ofc	593759.00	4137426.00	63	870.4	2855.9	0.54
Arts/College	597074.00	4138045.00	51	4077.1	13377.0	2.53
Headstart	597362.00	4138016.00	56	4342.7	14248.5	2.70
School Dist Ofc	597196.00	4138592.00	49	4392.5	14411.8	2.73
Child Dev Center	594941.00	4139336.00	58	3111.1	10207.4	1.93
College	594779.00	4138458.00	24	2319.1	7609.0	1.44
College	593425.00	4138352.00	24	1613.8	5294.9	1.00
School	593299.00	4138575.00	22	1824.3	5985.6	1.13
UC Ext Bldg	591007.00	4137803.00	32	2437.7	7998.2	1.51
School	591952.00	4136337.00	45	1322.2	4338.0	0.82
School	590882.00	4136078.00	53	2421.0	7943.3	1.50
School	590565.00	4137350.00	66	2708.6	8887.0	1.68
School	591139.00	4135057.00	66	2674.5	8775.1	1.66
School	590665.00	4135023.00	70	3074.8	10088.6	1.91
School	592151.00	4135121.00	66	1943.9	6377.8	1.21
Residential SSW	592532.00	4135453.00	56	1464.8	4806.0	0.91
University	590468.00	4138777.00	21	3405.7	11174.1	2.12
College	590105.00	4138743.00	91	3685.4	12091.9	2.29
Hospital	589321.00	4136778.00	51	3886.1	12750.2	2.41
Residential N	592885.00	4138037.00	26	1323.8	4343.3	0.82
School	597758.00	4136575.00	63	4554.5	14943.2	2.83
Mobile Home Park	598021.00	4136795.00	60	4814.2	15795.3	2.99
Residential ESE	596033.00	4135506.00	51	3088.9	10134.7	1.92
School	596266.00	4135738.00	50	3223.0	10574.7	2.00
School	597335.00	4134610.00	61	4651.1	15260.3	2.89
School	595723.00	4133424.00	79	4172.8	13691.1	2.59

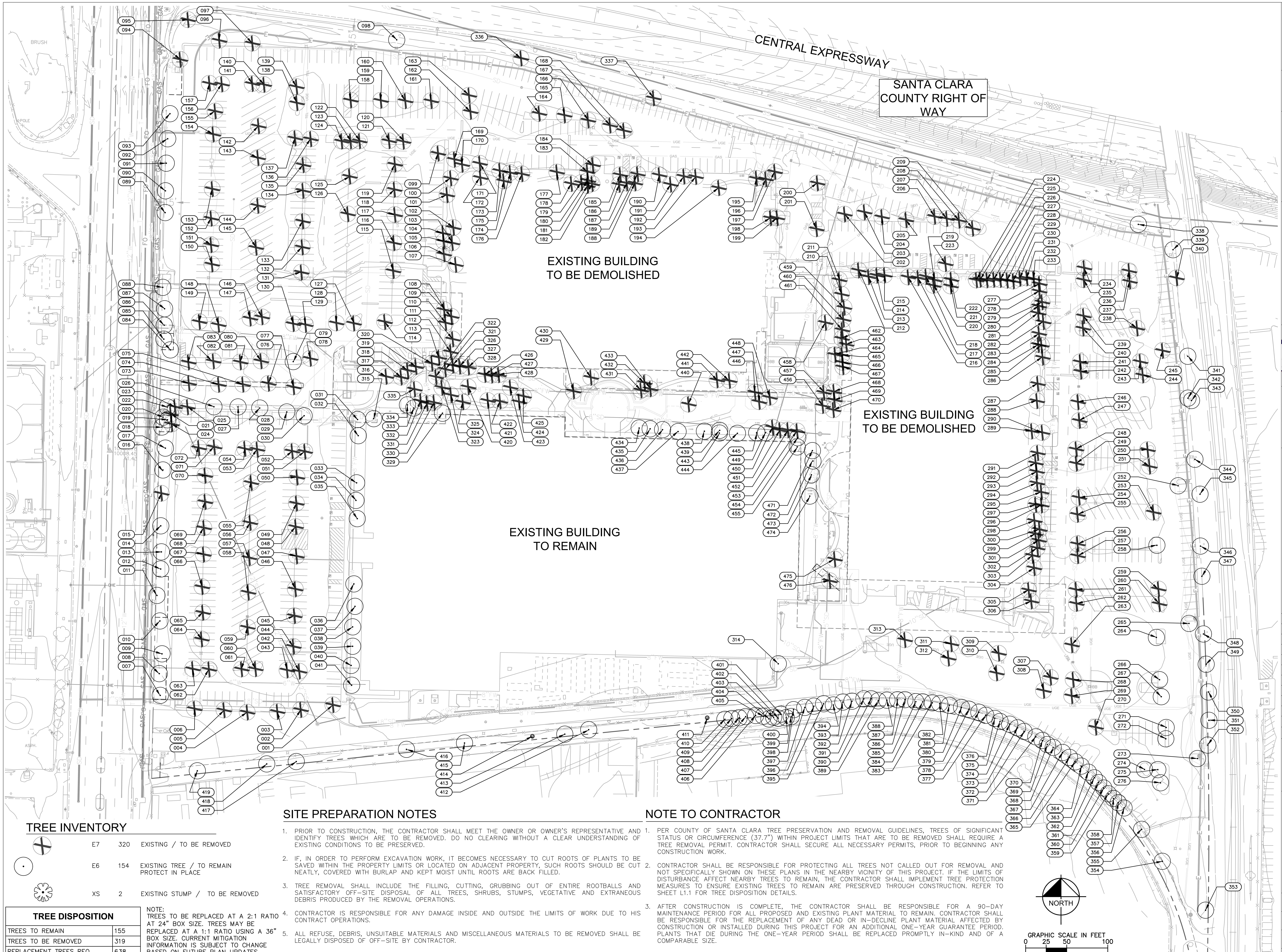
Receptor Count : 26

* approximate mid point between stacks

Google Image date: 8/9/18

Appendix B

Arborist Report



TREE INVENTORY

⊗	E7	320	EXISTING / TO BE REMOVED
⊙	E6	154	EXISTING TREE / TO REMAIN PROTECT IN PLACE
✿	XS	2	EXISTING STUMP / TO BE REMOVED

TREE DISPOSITION	
TREES TO REMAIN	155
TREES TO BE REMOVED	319
REPLACEMENT TREES REQ.	638

NOTE:
TREES TO BE REPLACED AT A 2:1 RATIO AT 24" BOX SIZE. TREES MAY BE REPLACED AT A 1:1 RATIO USING A 36" BOX SIZE. CURRENT MITIGATION INFORMATION IS SUBJECT TO CHANGE BASED ON FUTURE PLAN UPDATES

SITE PREPARATION NOTES

1. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL MEET THE OWNER OR OWNER'S REPRESENTATIVE AND IDENTIFY TREES WHICH ARE TO BE REMOVED. DO NO CLEARING WITHOUT A CLEAR UNDERSTANDING OF EXISTING CONDITIONS TO BE PRESERVED.
2. IF, IN ORDER TO PERFORM EXCAVATION WORK, IT BECOMES NECESSARY TO CUT ROOTS OF PLANTS TO BE SAVED WITHIN THE PROPERTY LIMITS OR LOCATED ON ADJACENT PROPERTY, SUCH ROOTS SHOULD BE CUT NEATLY, COVERED WITH BURLAP AND KEPT MOIST UNTIL ROOTS ARE BACK FILLED.
3. TREE REMOVAL SHALL INCLUDE THE FILLING, CUTTING, GRUBBING OUT OF ENTIRE ROOTBALLS AND SATISFACTORY OFF–SITE DISPOSAL OF ALL TREES, SHRUBS, STUMPS, VEGETATIVE AND EXTRANEOUS DEBRIS PRODUCED BY THE REMOVAL OPERATIONS.
4. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE INSIDE AND OUTSIDE THE LIMITS OF WORK DUE TO HIS CONTRACT OPERATIONS.
5. ALL REFUSE, DEBRIS, UNSUITABLE MATERIALS AND MISCELLANEOUS MATERIALS TO BE REMOVED SHALL BE LEGALLY DISPOSED OF OFF–SITE BY CONTRACTOR.
6. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES IN THE SITE SURVEY TO THE OWNER OR OWNER'S REPRESENTATIVE PRIOR TO STARTING WORK.

NOTE TO CONTRACTOR

1. PER COUNTY OF SANTA CLARA TREE PRESERVATION AND REMOVAL GUIDELINES, TREES OF SIGNIFICANT STATUS OR CIRCUMFERENCE (37.7") WITHIN PROJECT LIMITS THAT ARE TO BE REMOVED SHALL REQUIRE A TREE REMOVAL PERMIT. CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS, PRIOR TO BEGINNING ANY CONSTRUCTION WORK.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL TREES NOT CALLED OUT FOR REMOVAL AND NOT SPECIFICALLY SHOWN ON THESE PLANS IN THE NEARBY VICINITY OF THIS PROJECT. IF THE LIMITS OF DISTURBANCE AFFECT NEARBY TREES TO REMAIN, THE CONTRACTOR SHALL IMPLEMENT TREE PROTECTION MEASURES TO ENSURE EXISTING TREES TO REMAIN ARE PRESERVED THROUGH CONSTRUCTION. REFER TO SHEET L1.1 FOR TREE DISPOSITION DETAILS.
3. AFTER CONSTRUCTION IS COMPLETE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR A 90–DAY MAINTENANCE PERIOD FOR ALL PROPOSED AND EXISTING PLANT MATERIAL TO REMAIN. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY DEAD OR IN–DECLINE PLANT MATERIAL AFFECTED BY CONSTRUCTION OR INSTALLED DURING THIS PROJECT FOR AN ADDITIONAL ONE–YEAR GUARANTEE PERIOD. PLANTS THAT DIE DURING THE ONE–YEAR PERIOD SHALL BE REPLACED PROMPTLY IN–KIND AND OF A COMPARABLE SIZE.

DIGITAL REALTY
Data Center Solutions

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95050-2627

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ARCHITECT
HKS

STRUCTURAL ENGINEER
PEOPLES ASSOCIATES
STRUCTURAL ENGINEERS

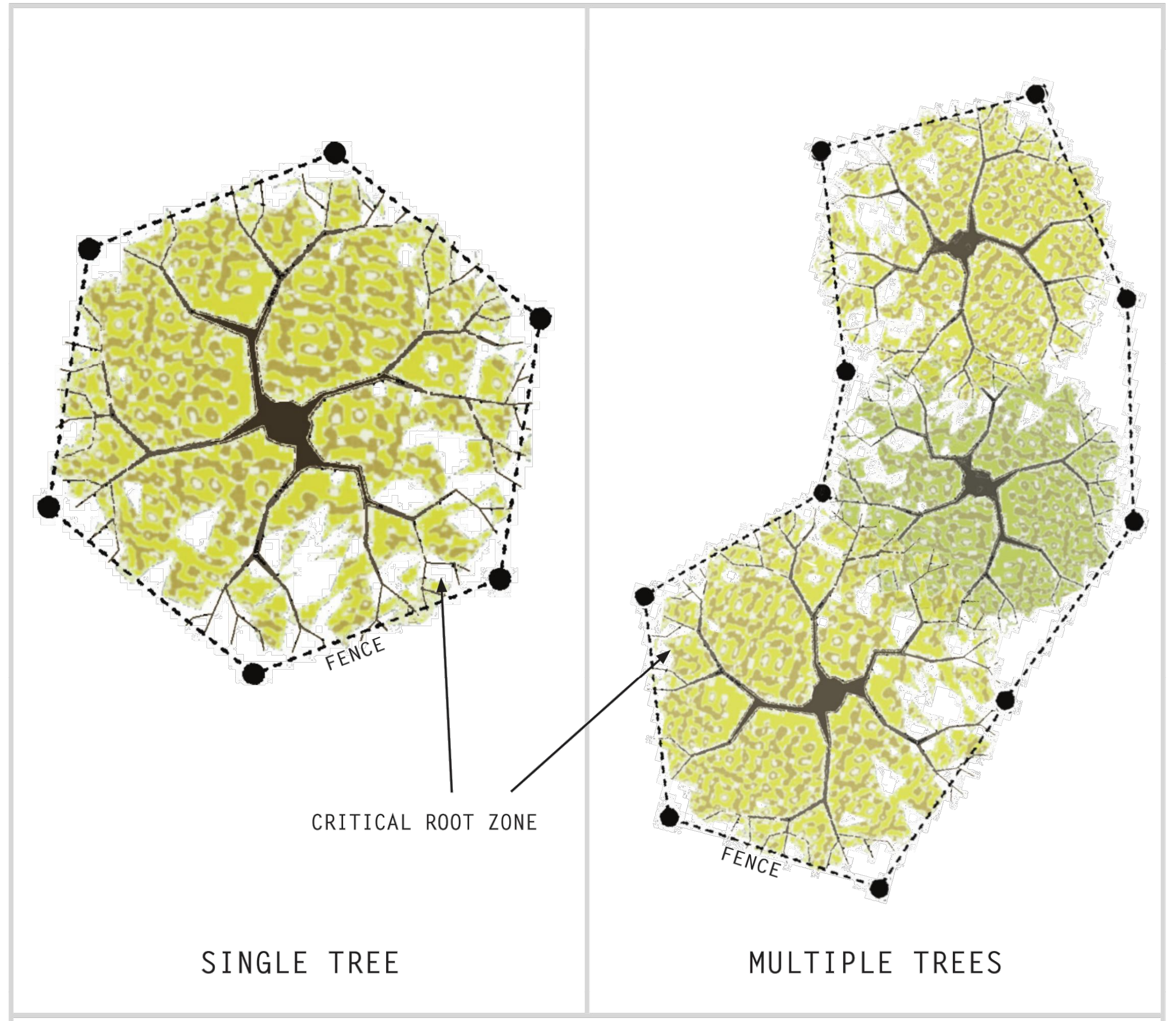
CIVIL ENGINEER
Kimley»Horn

NO.	RECORD	DATE
1	PCC ISSUANCE	10.07.19

DLR DATA CENTER
2825 LAFAYETTE STREET
SANTA CLARA, CA, 95050

PRELIMINARY TREE DISPOSITION PLAN

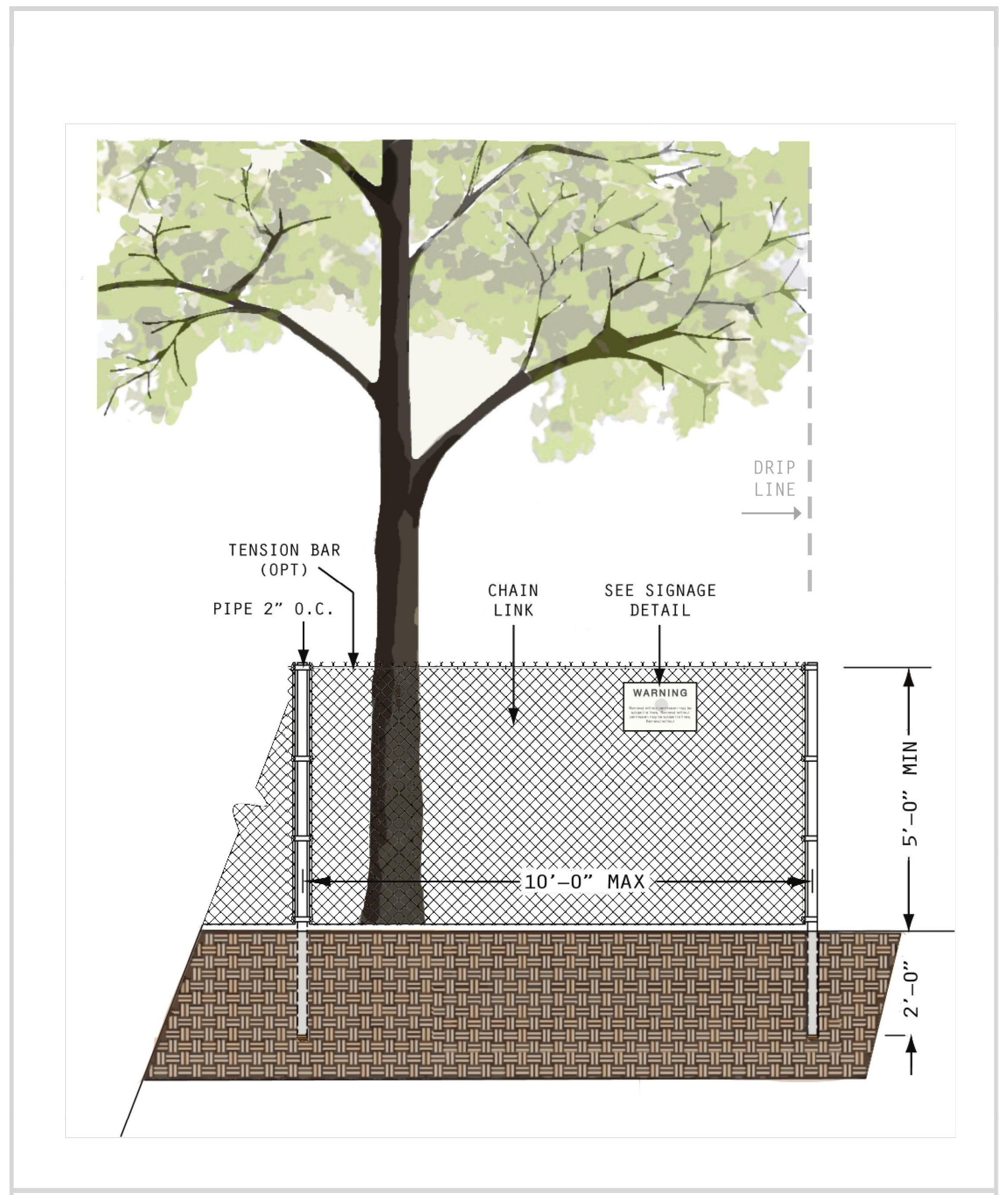
PRINCIPAL IN CHARGE MC	PROJECT NUMBER 197250001
PROJECT MANAGER CM	DATE 10/04/2019
PROJECT ENGINEER MJ	SHEET NUMBER L1.0
SCALE AS SHOWN	



NOTES:

1. Tree protection fencing shall be erected at the edge of the critical root zone or beyond prior to the start of any clearing, grading or other construction activity.
2. Fence shall be minimum 5 feet tall constructed of sturdy material (chain-link or equivalent strength/ durability).
3. Fence shall be supported by vertical posts driven 2 feet (min) into the ground and spaced not more than 10 feet apart.
4. A sign that includes the words, “WARNING: This fence shall not be removed without the expressed permission of the Santa Clara County Planning Office,” shall be securely attached to the fence in a visually prominent location.

TREE PROTECTION FENCE DETAIL
PLAN VIEW



TREE PROTECTION FENCE DETAIL
ELEVATION VIEW

COUNTY OF SANTA CLARA TREE DISPOSITION NOTES

1. FENCING:
   ALL TREES TO BE RETAINED SHALL BE PROTECTED WITH CHAIN LINK FENCING OR OTHER RIGID FENCE ENCLOSURE ACCEPTABLE BY THE PLANNING OFFICE. FENCED ENCLOSURES FOR TREES TO BE PROTECTED SHALL BE ERECTED AT THE DRIPLINE OF TREES OR AS ESTABLISHED BY THE ARBORIST TO ESTABLISH THE TREE PROTECTIVE ZONE (TPZ) IN WHICH NO SOIL DISTURBANCE IS PERMITTED AND ACTIVITIES ARE RESTRICTED.
   ALL TREES TO BE PRESERVED SHALL BE PROTECTED WITH MINIMUM 5–FOOT HIGH FENCES ARE TO BE MOUNTED ON 2–INCH DIAMETER GALVANIZED IRON POSTS, DRIVEN INTO THE GROUND TO A DEPTH OF AT LEAST 2 FEET, AT NO MORE THAN 10–FOOT SPACING (SEE DETAIL, AVAILABLE AT WWW.SCCPLANNING.ORG). THIS DETAIL SHALL APPEAR ON GRADING, DEMOLITION AND BUILDING PERMIT PLANS.
   TREE FENCING SHALL BE ERECTED BEFORE ANY DEMOLITION, GRADING OR CONSTRUCTION BEGINS AND REMAIN IN PLACE UNTIL THE FINAL INSPECTION.
2. ”WARNING” SIGNS (SEE SAMPLE SIGNAGE DESIGN THIS SHEET):
   A WARNING SIGN SHALL BE PROMINENTLY DISPLAYED ON EACH TREE PROTECTIVE FENCE PER THE REQUIREMENTS OF DEVELOPMENT PURSUANT TO THE SANTA CLARA COUNTY PLANNING OFFICE. (SEE ATTACHED EXAMPLE). THE SIGNS ARE AVAILABLE AT THE PLANNING AND BUILDING INSPECTION OFFICES OR AT WWW.SCCPLANNING.ORG.
3. IRRIGATION PROGRAM:
   IRRIGATE TO WET THE SOIL WITHIN THE TPZ DURING THE DRY SEASON AS SPECIFIED BY THE PROJECT ARBORIST.
4. DUST CONTROL PROGRAM:
   DURING PERIODS OF EXTENDED DROUGHT, OR GRADING, SPRAY TRUNK, LIMBS AND FOLIAGE TO REMOVE ACCUMULATED CONSTRUCTION DUST.

WARNING

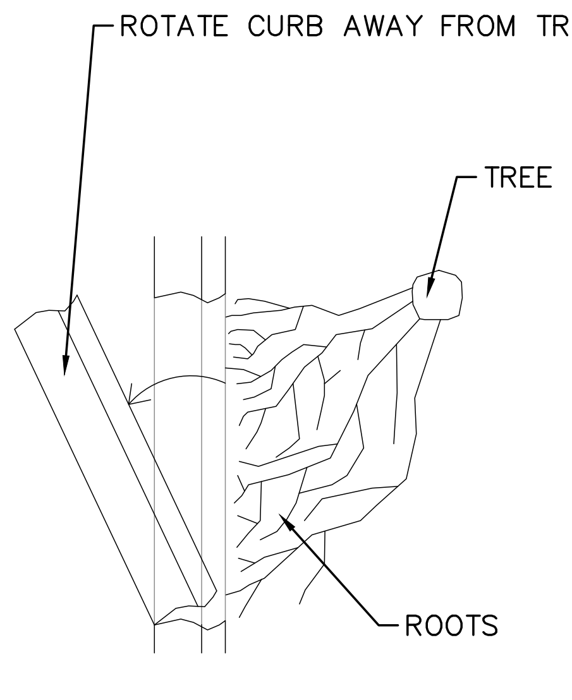
This fencing shall not be removed without permission from the
Santa Clara County Planning Office: (408) 299-5770

REMOVAL WITHOUT PERMISSION MAY BE SUBJECT TO FINES

Santa Clara County Ordinance Code Chapter C16

County of Santa Clara tree protection measures may be found at:
http://www.sccplanning.gov

WARNING SIGN ON TREE PROTECTIVE FENCE



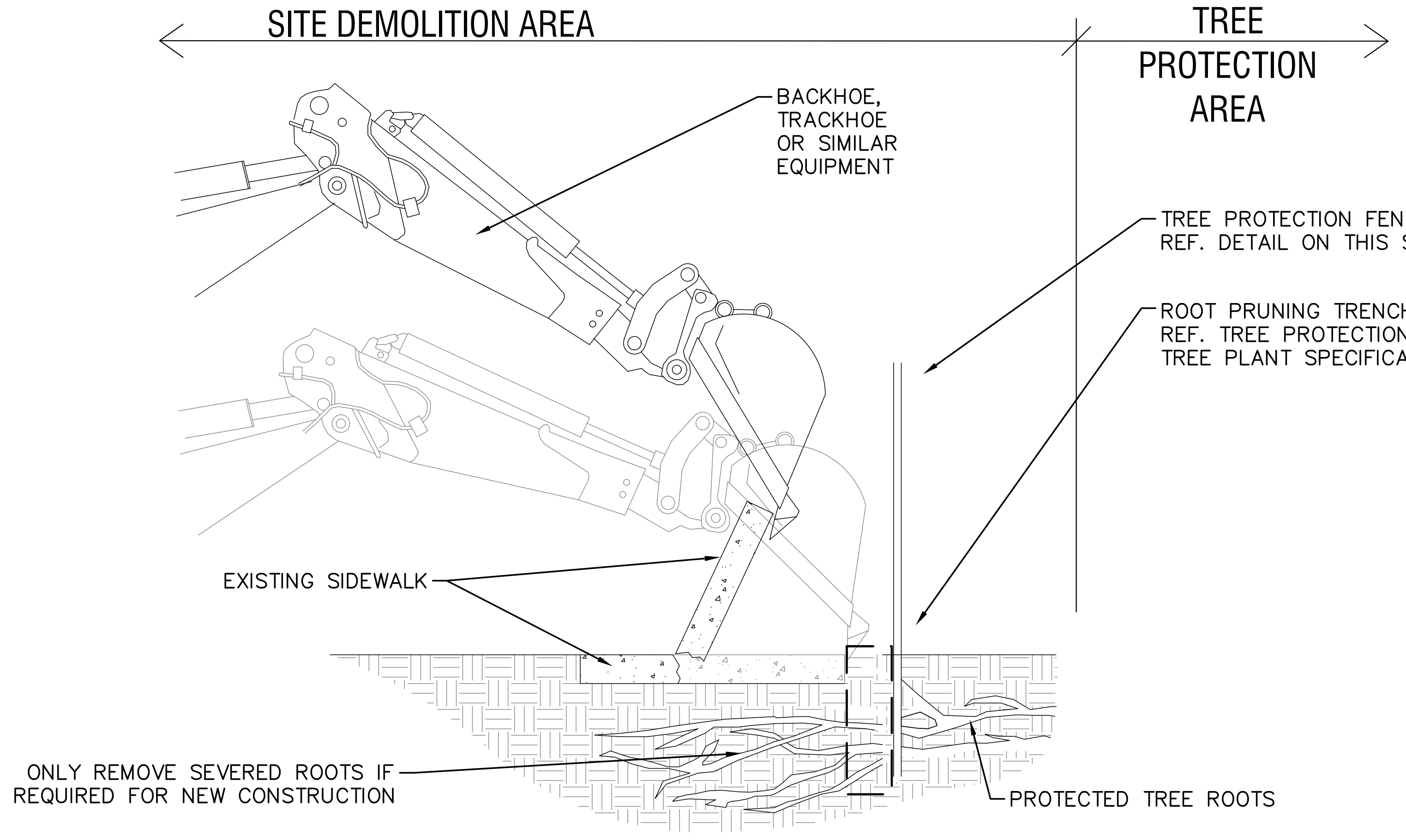
DEMOLITION SEQUENCE:

1. PERFORM ANY ROOT PRUNING.
2. INSTALL TREE PROTECTION FENCING
3. CAREFULLY REMOVE SIDEWALK AND BASE MATERIAL, COORDINATE ALL DEMOLITION OPERATIONS AROUND PROTECTED TREES WITH ENGINEER AND PROJECT ARBORIST.

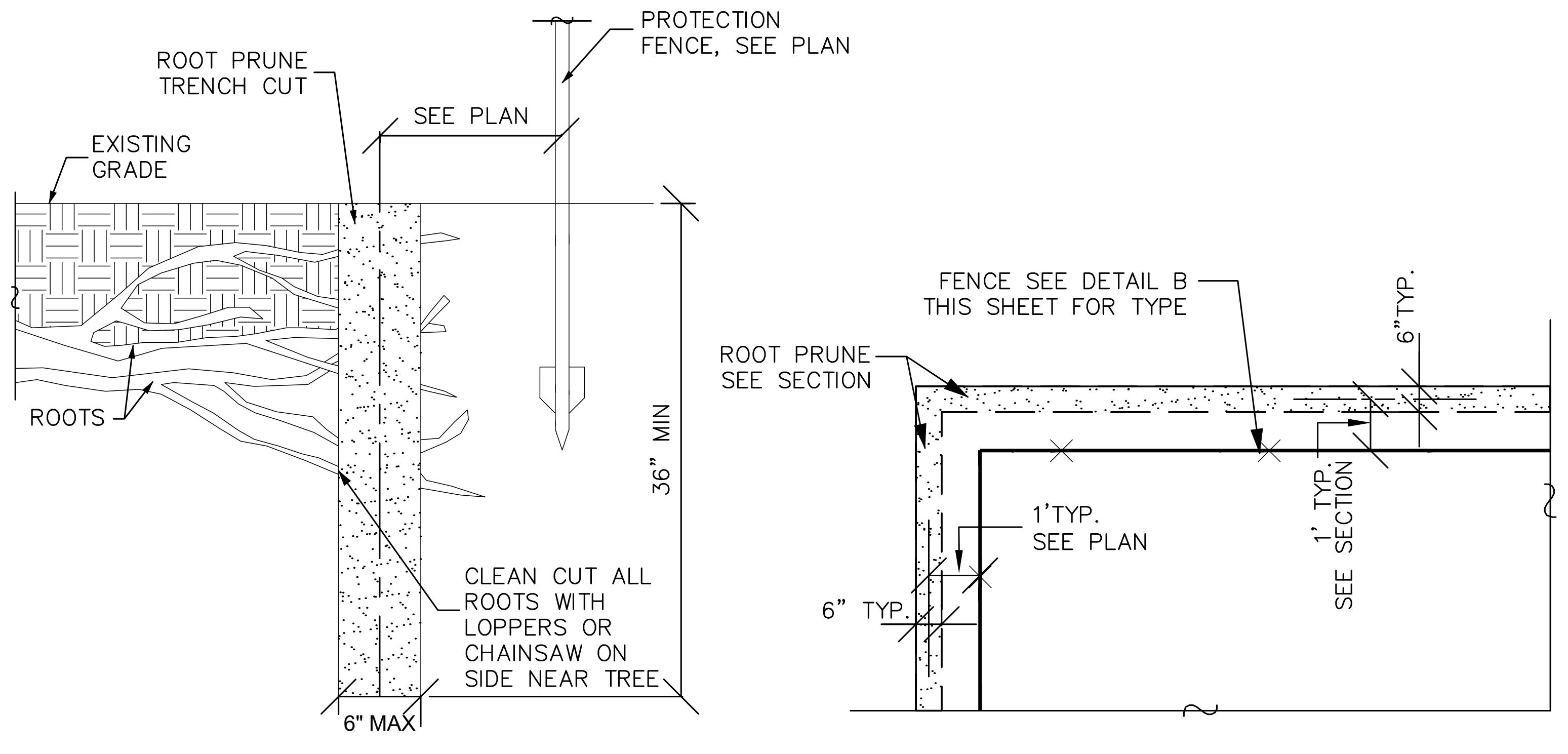
NOTES:

1. PRIOR TO DEMOLITION ACTIVITIES, COORDINATE WITH OWNER’S REPRESENTATIVE.
2. ALL TREE PROTECTION MEASURES MUST BE IN PLACE AND APPROVED BY OWNER’S REPRESENTATIVE PRIOR TO DEMOLITION ACTIVITIES.
3. OWNER’S REPRESENTATIVE TO APPROVE ANY CANOPY THINNING AND/OR CANOPY RAISING PRUNING TO ALLOW FOR DEMOLITION ACTIVITIES PRIOR TO CONSTRUCTION.

PLAN VIEW



A CURB AND SIDEWALK DEMOLITION W/ LANDSCAPE PROTECTION
SECTION
NTS



SECTION

PLAN

B ROOT PRUNING
SECTION
NTS

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NO.	RECORD	DATE
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DLR DATA CENTER
2825 LAFAYETTE STREET
SANTA CLARA, CA, 95050

PRELIMINARY
TREE
DISPOSITION
DETAILS

PRINCIPAL IN CHARGE MC	PROJECT NUMBER 197250001
PROJECT MANAGER CM	DATE 10/04/2019
PROJECT ENGINEER MJ	SHEET NUMBER L1.1
SCALE AS SHOWN	

TREE INVENTORY

Tree #	Species	Latin Name	DBH (in.)	TPZ radius (ideal; feet)	Project Feature(s) Impacting	Disposition
1	Evergreen pear	Pyrus kawakamii	17	21.3	Driveway	REMOVE
2	London plane	Platanus x acerifolia	8.9	8.9	Driveway	REMOVE
3	London plane	Platanus x acerifolia	8.5	8.5	Driveway	REMOVE
4	London plane	Platanus x acerifolia	11.9	11.9	Driveway	REMOVE
5	London plane	Platanus x acerifolia	8.2	8.2	Driveway	REMOVE
6	London plane	Platanus x acerifolia	8.6	8.6	Driveway	REMOVE
7	London plane	Platanus x acerifolia	13.4	13.4	None	Retain
8	London plane	Platanus x acerifolia	12.8	12.8	None	Retain
9	London plane	Platanus x acerifolia	9.2	9.2	None	Retain
10	London plane	Platanus x acerifolia	8.8	8.8	None	Retain
11	London plane	Platanus x acerifolia	11	11	None	Retain
12	London plane	Platanus x acerifolia	12.9	12.9	None	Retain
13	London plane	Platanus x acerifolia	13.1	13.1	None	Retain
14	London plane	Platanus x acerifolia	11.6	11.6	None	Retain
15	London plane	Platanus x acerifolia	12	12	Concrete Path	REMOVE
16	London plane	Platanus x acerifolia	11.9	11.9	None	Retain
17	London plane	Platanus x acerifolia	13.3	13.3	None	Retain
18	Purple-leaf plum	Prunus cerasifera	5.9	5.9	None	Retain
19	Purple-leaf plum	Prunus cerasifera	5.3	5.3	None	Retain
20	Purple-leaf plum	Prunus cerasifera	6.3	6.3	None	Retain
21	Purple-leaf plum	Prunus cerasifera	4.8	4.8	Substation	REMOVE
22	Purple-leaf plum	Prunus cerasifera	6.7	6.7	None	Retain
23	Purple-leaf plum	Prunus cerasifera	6.8	6.8	Substation	REMOVE
24	London plane	Platanus x acerifolia	13.1	13.1	Substation	REMOVE
25	London plane	Platanus x acerifolia	9.2	9.2	Substation	REMOVE
26	London plane	Platanus x acerifolia	8	8	None	Retain
27	London plane	Platanus x acerifolia	6.9	6.9	None	Retain
28	London plane	Platanus x acerifolia	11.1	11.1	None	Retain
29	London plane	Platanus x acerifolia	11	11	None	Retain
30	London plane	Platanus x acerifolia	11	11	None	Retain
31	London plane	Platanus x acerifolia	14.4	14.4	None	Retain
32	London plane	Platanus x acerifolia	12.5	15.6	None	Retain
33	London plane	Platanus x acerifolia	15.4	15.4	None	Retain
34	London plane	Platanus x acerifolia	13	13	None	Retain
35	London plane	Platanus x acerifolia	15.7	15.7	None	Retain
36	London plane	Platanus x acerifolia	15	15	None	Retain
37	London plane	Platanus x acerifolia	14.8	14.8	None	Retain
38	London plane	Platanus x acerifolia	14.1	14.1	None	Retain
39	London plane	Platanus x acerifolia	14.9	14.9	None	Retain
40	London plane	Platanus x acerifolia	11.1	11.1	None	Retain
41	London plane	Platanus x acerifolia	12.8	12.8	None	Retain
42	London plane	Platanus x acerifolia	5.9	5.9	Driveway	REMOVE
43	London plane	Platanus x acerifolia	7.6	7.6	Substation	REMOVE
44	Raywood ash	Fraxinus angustifolia 'Raywood'	10.4	13	Substation	REMOVE
45	Raywood ash	Fraxinus angustifolia 'Raywood'	13.5	16.9	Substation	REMOVE
46	Raywood ash	Fraxinus angustifolia 'Raywood'	10.8	13.5	Substation	REMOVE
47	Raywood ash	Fraxinus angustifolia 'Raywood'	12.1	15.1	Substation	REMOVE
48	Raywood ash	Fraxinus angustifolia 'Raywood'	12	15	Substation	REMOVE
49	Raywood ash	Fraxinus angustifolia 'Raywood'	10.1	12.6	Substation	REMOVE
50	Raywood ash	Fraxinus angustifolia 'Raywood'	12.6	15.8	Substation	REMOVE
51	London plane	Platanus x acerifolia	8.7	10.9	Substation	REMOVE
52	London plane	Platanus x acerifolia	7.2	9	Substation	REMOVE
53	London plane	Platanus x acerifolia	9.3	9.3	Substation	REMOVE
54	London plane	Platanus x acerifolia	6.8	6.8	Substation	REMOVE
55	Raywood ash	Fraxinus angustifolia 'Raywood'	9.8	12.3	Substation	REMOVE
56	Raywood ash	Fraxinus angustifolia 'Raywood'	13.4	16.8	Substation	REMOVE
57	Raywood ash	Fraxinus angustifolia 'Raywood'	13.1	16.4	Substation	REMOVE
58	Raywood ash	Fraxinus angustifolia 'Raywood'	7.5	9.4	Substation	REMOVE
59	Raywood ash	Fraxinus angustifolia 'Raywood'	2.1	2.1	Substation	REMOVE
60	London plane	Platanus x acerifolia	5.8	5.8	Substation	REMOVE
61	London plane	Platanus x acerifolia	5.1	5.1	Substation	REMOVE
62	London plane	Platanus x acerifolia	5.6	5.6	Substation	REMOVE
63	London plane	Platanus x acerifolia	7.5	7.5	Substation	REMOVE
64	Raywood ash	Fraxinus angustifolia 'Raywood'	3.8	4.8	Substation	REMOVE
65	Raywood ash	Fraxinus angustifolia 'Raywood'	3	3.8	Substation	REMOVE
66	Raywood ash	Fraxinus angustifolia 'Raywood'	5.6	7	Substation	REMOVE
67	Raywood ash	Fraxinus angustifolia 'Raywood'	7.8	9.8	Substation	REMOVE
68	Raywood ash	Fraxinus angustifolia 'Raywood'	8.7	10.9	Substation	REMOVE
69	Raywood ash	Fraxinus angustifolia 'Raywood'	8.1	10.1	Substation	REMOVE
70	Raywood ash	Fraxinus angustifolia 'Raywood'	9.2	11.5	Driveway	REMOVE
71	London plane	Platanus x acerifolia	6.4	8	Driveway	REMOVE
72	London plane	Platanus x acerifolia	8	8	Driveway	REMOVE
73	London plane	Platanus x acerifolia	9.5	9.5	Driveway	REMOVE
74	London plane	Platanus x acerifolia	8.7	8.7	Driveway	REMOVE
75	London plane	Platanus x acerifolia	6.9	6.9	Driveway	REMOVE
76	London plane	Platanus x acerifolia	9.9	9.9	Driveway	REMOVE
77	London plane	Platanus x acerifolia	9	9	Driveway	REMOVE
78	London plane	Platanus x acerifolia	7.7	7.7	Driveway	REMOVE
79	London plane	Platanus x acerifolia	10.1	10.1	Driveway	Retain
80	London plane	Platanus x acerifolia	10.9	10.9	Pedestrian path	REMOVE
81	London plane	Platanus x acerifolia	8.1	8.1	Driveway	REMOVE
82	London plane	Platanus x acerifolia	8.5	8.5	Driveway; PL fence	REMOVE
83	London plane	Platanus x acerifolia	8	8	Driveway; PL fence	REMOVE
84	London plane	Platanus x acerifolia	10	10	Driveway; PL fence	Retain
85	London plane	Platanus x acerifolia	9.6	9.6	Driveway; PL fence	Retain
86	London plane	Platanus x acerifolia	9.2	9.2	Driveway; PL fence	Retain
87	London plane	Platanus x acerifolia	10.9	10.9	Driveway;PL fence	Retain
88	London plane	Platanus x acerifolia	14.9	14.9	Driveway; PL fence	Retain
89	London plane	Platanus x acerifolia	8.2	8.2	Driveway; PL fence	Retain
90	London plane	Platanus x acerifolia	12.4	12.4	Driveway;PL fence	Retain
91	London plane	Platanus x acerifolia	14.6	14.6	Driveway; PL fence	Retain
92	London plane	Platanus x acerifolia	15	15	Driveway; PL fence	Retain
93	London plane	Platanus x acerifolia	15.6	15.6	Driveway; PL fence	Retain
94	London plane	Platanus x acerifolia	16.2	16.2	Driveway; PL fence	REMOVE
95	London plane	Platanus x acerifolia	19	19	Driveway; PL fence	REMOVE
96	London plane	Platanus x acerifolia	12	12	Driveway	REMOVE
97	London plane	Platanus x acerifolia	16	16	Driveway	REMOVE
98	Weeping willow	Salix babylonica	35.5	26.6	Property line fence	Retain
99	Hackberry	Celtis sp.	9.4	7.1	Building	REMOVE
100	Crape myrtle	Lagerstroemia indica	6.8	5.1	Building	REMOVE
101	Crape myrtle	Lagerstroemia indica	6.8	5.1	Building	REMOVE
102	Callery pear	Pyrus calleryana	8.5	6.4	Building	REMOVE
103	African fern pine	Afrocarpus gracilior	9.7	4.9	Building	REMOVE
104	Callery pear	Pyrus calleryana	7.4	5.6	Building	REMOVE
105	Callery pear	Pyrus calleryana	7.3	5.5	Building	REMOVE
106	Crape myrtle	Lagerstroemia indica	3.6	3.6	Building	REMOVE
107	Ornamental cherry	Prunus sp.	4.6	5.8	Building	REMOVE
108	Crape myrtle	Lagerstroemia indica	5.5	4.1	Generator yard	REMOVE
109	African fern pine	Afrocarpus gracilior	8.4	4.2	Generator yard	REMOVE
110	Crape myrtle	Lagerstroemia indica	5.4	4.1	Generator yard	REMOVE
111	Callery pear	Pyrus calleryana	7.8	5.9	Generator yard	REMOVE
112	Crape myrtle	Lagerstroemia indica	6.2	4.7	Generator yard	REMOVE
113	Callery pear	Pyrus calleryana	10.3	7.7	Generator yard	REMOVE
114	London plane	Platanus x acerifolia	15.5	19.4	Generator yard	REMOVE
115	London plane	Platanus x acerifolia	10	10	Generator yard	REMOVE
116	London plane	Platanus x acerifolia	14.9	18.6	Building	REMOVE
117	London plane	Platanus x acerifolia	10.2	12.8	Building	REMOVE
118	London plane	Platanus x acerifolia	9.7	9.7	Building	REMOVE
119	London plane	Platanus x acerifolia	8.9	8.9	Building	REMOVE
120	Green ash	Fraxinus pennsylvanica	12.8	9.6	Building	REMOVE
121	Green ash	Fraxinus pennsylvanica	12.8	9.6	Building	REMOVE
122	Green ash	Fraxinus pennsylvanica	10.7	8	Building	REMOVE
123	Green ash	Fraxinus pennsylvanica	8.4	6.3	Building	REMOVE
124	Green ash	Fraxinus pennsylvanica	8.5	6.4	Building	REMOVE
125	London plane	Platanus x acerifolia	4.8	7.2	Building	REMOVE
126	London plane	Platanus x acerifolia	14.7	14.7	Building	REMOVE
127	London plane	Platanus x acerifolia	13.1	13.1	Generator yard	REMOVE
128	London plane	Platanus x acerifolia	13.2	13.2	Generator yard	REMOVE
129	London plane	Platanus x acerifolia	7.9	7.9	Generator yard	REMOVE
130	London plane	Platanus x acerifolia	9.2	9.2	Building	REMOVE
131	London plane	Platanus x acerifolia	14.6	14.6	Generator yard	REMOVE
132	London plane	Platanus x acerifolia	11.9	11.9	Generator yard	REMOVE
133	London plane	Platanus x acerifolia	8.3	8.3	Building	REMOVE
134	London plane	Platanus x acerifolia	13	13	Building	REMOVE
135	London plane	Platanus x acerifolia	11.9	11.9	Building	REMOVE
136	Green ash	Pinus sabiniana	11.6	8.7	Building	REMOVE
137	Green ash	Fraxinus pennsylvanica	13.5	10.1	Building	REMOVE
138	Green ash	Fraxinus pennsylvanica	9.9	7.4	Building	REMOVE
139	Green ash	Fraxinus pennsylvanica	18.3	9.2	Building	REMOVE
140	Green ash	Fraxinus pennsylvanica	12.3	9.2	Driveway	REMOVE
141	Green ash	Fraxinus pennsylvanica	12.8	9.6	Driveway	REMOVE
142	London plane	Platanus x acerifolia	10	10	Driveway	REMOVE
143	London plane	Platanus x acerifolia	15.3	15.3	Building	REMOVE
144	London plane	Platanus x acerifolia	7.2	7.2	Building	REMOVE
145	London plane	Platanus x acerifolia	12.3	12.3	Building	REMOVE
146	London plane	Platanus x acerifolia	9.5	9.5	Driveway	REMOVE
147	London plane	Platanus x acerifolia	8.9	8.9	Driveway	REMOVE
148	London plane	Platanus x acerifolia	9.9	9.9	Driveway	REMOVE
149	London plane	Platanus x acerifolia	9.5	9.5	Driveway	REMOVE
150	London plane	Platanus x acerifolia	13.9	13.9	Building	REMOVE
151	London plane	Platanus x acerifolia	10.1	10.1	Driveway	REMOVE
152	London plane	Platanus x acerifolia	10.5	10.5	Driveway	REMOVE
153	London plane	Platanus x acerifolia	12.1	12.1	Driveway	REMOVE
154	London plane	Platanus x acerifolia	6.3	6.3	Driveway	REMOVE
155	London plane	Platanus x acerifolia	10.3	10.3	Driveway	REMOVE
156	Green ash	Fraxinus pennsylvanica	15.3	7.7	Driveway	REMOVE
157	Green ash	Fraxinus pennsylvanica	6.4	4.8	Driveway	REMOVE
158	London plane	Platanus x acerifolia	11.2	11.2	Building	REMOVE
159	London plane	Platanus x acerifolia	7.5	7.5	Building	REMOVE
160	London plane	Platanus x acerifolia	12.2	12.2	Building	REMOVE
161	London plane	Platanus x acerifolia	13.9	13.9	Building	REMOVE
162	London plane	Platanus x acerifolia	13.7	13.7	Building	REMOVE
163	London plane	Platanus x acerifolia	8.7	8.7	Driveway	REMOVE
164	London plane	Platanus x acerifolia	15.9	15.9	Building	REMOVE
165	London plane	Platanus x acerifolia	11.9	11.9	Building	REMOVE
166	London plane	Platanus x acerifolia	8.5	8.5	Building	REMOVE
167	London plane	Platanus x acerifolia	15.4	15.4	Building	REMOVE
168	London plane	Platanus x acerifolia	11	11	Building	REMOVE
169	Crape myrtle	Lagerstroemia indica	5.2	3.9	Building	REMOVE
170	Crape myrtle	Lagerstroemia indica	5.9	4.4	Building	REMOVE
171	African fern pine	Afrocarpus gracilior	10	5	Building	REMOVE
172	Bay laurel	Laurus nobilis	12.8	9.6	Building	REMOVE
173	Eastern redbud	Cercis canadensis	9.7	7.3	Building	REMOVE
174	Eastern redbud	Cercis canadensis	12.3	9.2	Building	REMOVE
175	Hackberry	Celtis sp.	7	5.3	Building	REMOVE
176	Hackberry	Celtis sp.	6.8	5.1	Building	REMOVE
177	Japanese maple	Acer palmatum	4.5	3.4	Building	REMOVE
178	Japanese maple	Acer palmatum	5	3.8	Building	REMOVE
179	Japanese maple	Acer palmatum	6.7	5	Building	REMOVE
180	Japanese maple	Acer palmatum	8.8	6.6	Building	REMOVE
181	Philodendron	Philodendron sp.	9	6.8	Building	REMOVE
182	Japanese maple	Acer palmatum	4.5	3.4	Building	REMOVE
183	Weeping cherry	Prunus subhirtella 'Pendula'	5	6.3	Building	REMOVE
184	Weeping cherry	Prunus subhirtella 'Pendula'	6	0	N/A (dead)	REMOVE
185	Weeping cherry	Prunus subhirtella 'Pendula'	4.8	3.6	Building	REMOVE
186	Japanese maple	Acer palmatum	4.9	3.7	Building	REMOVE
187	Japanese maple	Acer palmatum	6.3	4.7	Building	REMOVE
188	Japanese maple	Acer palmatum	6.7	5	Building	REMOVE
189	Hackberry	Celtis sp.	5.4	4.1	Building	REMOVE
190	Hackberry	Celtis sp.	7.8	5.9	Building	REMOVE
191	Hackberry	Celtis sp.	4.2	3.2	Building	REMOVE
192	Eastern redbud	Cercis canadensis	11.5	8.6	Building	REMOVE
193	Eastern redbud	Cercis canadensis	11	8.3	Building	REMOVE
194	bay laurel	Laurus nobilis	7.3	5.5	Building	REMOVE
195	Crape myrtle	Lagerstroemia indica	6.6	5	Building	REMOVE
196	Crape myrtle	Lagerstroemia indica	6.6	5	Building	REMOVE
197	Hackberry	Celtis sp.	7	5.3	Building	REMOVE
198	African fern pine	Afrocarpus gracilior	9.9	5	Building	REMOVE
199	Hackberry	Celtis sp.	11	8.3	Building	REMOVE
200	Evergreen pear	Pyrus kawakamii	13.1	16.4	Building	REMOVE
201	Evergreen pear	Pyrus kawakamii	12.7	15.9	Building	REMOVE
202	Raywood ash	Fraxinus angustifolia 'Raywood'	10	12.5	Building	REMOVE
203	Chinese pistache	Pistacia chinensis	9.3	4.7	Building	REMOVE
204	Raywood ash	Fraxinus angustifolia 'Raywood'	8.5	10.6	Building	REMOVE
205	Raywood ash	Fraxinus angustifolia 'Raywood'	9.5	11.9	Building	REMOVE
206	Evergreen pear	Pyrus kawakamii	11.8	17.7	Building	REMOVE
207	Evergreen pear	Pyrus kawakamii	10.1	12.6	Building	REMOVE
208	Evergreen pear	Malus, sp.	11.9	14.9	Building	REMOVE
209	Evergreen pear	Pyrus kawakamii	10.2	15.3	Building	REMOVE
210	Unknown	Unknown sp.	6.3	6.3	Building	REMOVE
211	Unknown	Unknown sp.	5.1	5.1	Building	REMOVE
212	White birch	Betula pendula	7.2	9	Building	REMOVE
213	White birch	Betula pendula	9.1	9.1	Building	REMOVE
214	White birch	Betula pendula	5.4	5.4	Building	REMOVE
215	White birch	Betula pendula	7	7	Building	REMOVE
216	Japanese maple	Acer palmatum	6	4.5	Building	REMOVE
217	Japanese maple	Acer palmatum	5.4	4.1	Building	REMOVE
218	Japanese maple	Acer palmatum	6	4.5	Building	REMOVE
219	Weeping cherry	Prunus subhirtella 'Pendula'	6	4.5	Building	REMOVE
220	Japanese maple	Acer palmatum	4.3	3.2	Building	REMOVE
221	Japanese maple	Pinus sabiniana	7	5.3	Building	REMOVE
222	Weeping cherry	Prunus subhirtella 'Pendula'	4.5	3.4	Building	REMOVE
223	Ornamental cherry	Prunus sp.	4.8	4.8	Building	REMOVE
224	White birch	Betula pendula	6.6	6.6	Building	REMOVE
225	White birch	Betula pendula	8.1	8.1	Building	REMOVE
226	Japanese maple	Acer palmatum	5	3.8	Building	REMOVE
227	White birch	Betula pendula	6.6	6.6	Building	REMOVE
228	White birch	Betula pendula	7.1	7.1	Building	REMOVE
229	Japanese maple	Acer palmatum	5.9	5.9	Building	REMOVE
230	Japanese maple	Acer palmatum	4.4	4.4	Building	REMOVE
231	Japanese maple	Acer palmatum	6	4.5	Building	REMOVE
232	Crape myrtle	Lagerstroemia indica	5.8	4.4	Building	REMOVE
233	Crape myrtle	Lagerstroemia indica	5.6	4.2	Building	REMOVE
234	Raywood ash	Fraxinus angustifolia 'Raywood'	9.8	12.3	Building	REMOVE
235	Raywood ash	Fraxinus angustifolia 'Raywood'	13.2	16.5	Building	REMOVE
236	Raywood ash	Fraxinus angustifolia 'Raywood'	8.2	10.3	Driveway	REMOVE
237	Raywood ash	Fraxinus angustifolia 'Raywood'	8.5	10.6	Driveway	REMOVE
238	Evergreen pear	Pyrus kawakamii	5.3	6.6	Building	REMOVE
239	Evergreen pear	Pyrus kawakamii	12	15	Building	REMOVE
240	Evergreen pear	Pyrus kawakamii	12.8	16	Building	REMOVE
241	Raywood ash	Fraxinus angustifolia 'Raywood'	14.7	18.4	Building	REMOVE
242	Raywood ash	Fraxinus angustifolia 'Raywood'	12.9	16.1	Building	REMOVE
243	Green ash	Fraxinus pennsylvanica	8	4	Driveway	REMOVE
244	Raywood ash	Fraxinus angustifolia 'Raywood'	5.5	6.9	Driveway	REMOVE
245	London plane	Platanus x acerifolia	16.8	16.8	Driveway	REMOVE
246	Evergreen pear	Pyrus kawakamii	13.2	16.5	Building	REMOVE
247	Chinese pistache	Pistacia chinensis	4.8	2.4	Building	REMOVE
248	Chinese pistache	Pistacia chinensis	5.6	2.8	Building	REMOVE
249	Chinese pistache	Pistacia chinensis	5.6	2.8	Generator yard	REMOVE
250	Raywood ash	Fraxinus angustifolia 'Raywood'	10.7	13.4	Driveway	REMOVE
251	Raywood ash	Fraxinus angustifolia 'Raywood'	12.2	15.3	Driveway	REMOVE
252	London plane	Platanus x acerifolia	9.7	12.1	Demolition	Retain
253	Evergreen pear	Pyrus kawakamii	8.7	10.9	Driveway	REMOVE
254	Chinese pistache	Pistacia chinensis	3.5	1.8	Generator yard	REMOVE
255	Chinese pistache	Pistacia chinensis	4.6	2.3	Generator yard	REMOVE

DIGITAL REALTY
Data Center Solutions

2825 LAFAYETTE STREET
SANTA CLARA, CA
95050-2627

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PEOPLES ASSOCIATES
STRUCTURAL ENGINEERS

CIVIL ENGINEER

Kimley»Horn

NO.	RECORD	DATE
1	PCC ISSUANCE	10.07.19

DLR DATA CENTER
2825 LAFAYETTE STREET
SANTA CLARA, CA, 95050

TREE
INVENTORY

PRINCIPAL IN CHARGE
MC

PROJECT NUMBER
197250001

PROJECT MANAGER
CM

DATE
10/04/2019

PROJECT ENGINEER
MJ

SHEET NUMBER
L1.2

SCALE
AS SHOWN

256	Raywood ash	Fraxinus angustifolia 'Raywood'	16.8	21	Generator yard	REMOVE
257	Raywood ash	Fraxinus angustifolia 'Raywood'	13.1	16.4	Generator yard	REMOVE
258	Raywood ash	Fraxinus angustifolia 'Raywood'	6.8	8.5	Retention area	Retain
259	Evergreen pear	Pyrus kawakamii	14.7	18.4	Civil Improvement	REMOVE
260	Evergreen pear	Pyrus kawakamii	11.6	14.5	Civil Improvement	REMOVE
261	Evergreen pear	Pyrus kawakamii	16.6	20.8	Driveway	REMOVE
262	Evergreen pear	Pyrus kawakamii	15.8	19.8	Driveway	REMOVE
263	Raywood ash	Fraxinus angustifolia 'Raywood'	16.6	20.8	Driveway	REMOVE
264	Raywood ash	Fraxinus angustifolia 'Raywood'	8.2	10.3	Retention area	Retain
265	London plane	Platanus x acerifolia	8.2	10.3	Retention area	Retain
266	Evergreen pear	Pyrus kawakamii	15.1	18.9	Retention area	Retain
267	Evergreen pear	Pyrus kawakamii	12.6	15.8	Retention area	Retain
268	Evergreen pear	Pyrus kawakamii	4.8	6	Driveway	REMOVE
269	Evergreen pear	Pyrus kawakamii	14.3	17.9	Driveway	REMOVE
270	Raywood ash	Fraxinus angustifolia 'Raywood'	16.1	20.1	Driveway	REMOVE
271	Raywood ash	Fraxinus angustifolia 'Raywood'	13.8	20.7	Retention area	Retain
272	Raywood ash	Fraxinus angustifolia 'Raywood'	13.6	17	Retention area	Retain
273	London plane	Platanus x acerifolia	8.9	8.9	Retention area	Retain
274	Raywood ash	Fraxinus angustifolia 'Raywood'	13	16.3	Retention area	Retain
275	Raywood ash	Fraxinus angustifolia 'Raywood'	9.2	13.8	Retention area	Retain
276	Raywood ash	Fraxinus angustifolia 'Raywood'	12.1	15.1	Retention area	Retain
277	Crape myrtle	Lagerstroemia indica	5.1	3.8	Building	REMOVE
278	Crape myrtle	Lagerstroemia indica	5.4	4.1	Building	REMOVE
279	Crape myrtle	Lagerstroemia indica	5.9	4.4	Building	REMOVE
280	Crape myrtle	Lagerstroemia indica	4.3	3.2	Building	REMOVE
281	Crape myrtle	Lagerstroemia indica	5.5	4.1	Building	REMOVE
282	African fern pine	Afrocarpus gracilior	6.2	3.1	Building	REMOVE
283	African fern pine	Afrocarpus gracilior	8.1	4.1	Building	REMOVE
284	African fern pine	Afrocarpus gracilior	8.5	4.3	Building	REMOVE
285	African fern pine	Afrocarpus gracilior	8.9	4.5	Building	REMOVE
286	African fern pine	Afrocarpus gracilior	7.7	3.9	Building	REMOVE
287	Ornamental cherry	Prunus sp.	4	4	Building	REMOVE
288	Ornamental cherry	Prunus sp.	4.4	4.4	Building	REMOVE
289	Smoke tree	Cotinus coggygria	5.8	4.4	Building	REMOVE
290	Smoke tree	Cotinus coggygria	6	4.5	Building	REMOVE
291	Crape myrtle	Lagerstroemia indica	6.1	4.6	Building	REMOVE
292	Crape myrtle	Lagerstroemia indica	5.1	3.8	Building	REMOVE
293	Crape myrtle	Lagerstroemia indica	6	4.5	Generator yard	REMOVE
294	African fern pine	Afrocarpus gracilior	9	4.5	Generator yard	REMOVE
295	Crape myrtle	Lagerstroemia indica	5.8	4.4	Generator yard	REMOVE
296	Crape myrtle	Lagerstroemia indica	7.2	5.4	Generator yard	REMOVE
297	African fern pine	Afrocarpus gracilior	8.9	4.5	Generator yard	REMOVE
298	African fern pine	Afrocarpus gracilior	9	4.5	Generator yard	REMOVE
299	African fern pine	Afrocarpus gracilior	6.9	3.5	Generator yard	REMOVE
300	Crape myrtle	Lagerstroemia indica	5.7	4.3	Generator yard	REMOVE
301	Crape myrtle	Lagerstroemia indica	5.1	3.8	Generator yard	REMOVE
302	Crape myrtle	Lagerstroemia indica	5.2	3.9	Generator yard	REMOVE
303	Ornamental cherry	Prunus sp.	4.2	3.2	Generator yard	REMOVE
304	African fern pine	Afrocarpus gracilior	10.8	5.4	Driveway	REMOVE
305	Pygmy date palm	Phoenix robelenii	4.6	4.6	Driveway	REMOVE
306	Pygmy date palm	Phoenix robelenii	4.5	4.5	Driveway	REMOVE
307	Raywood ash	Fraxinus angustifolia 'Raywood'	8.2	10.3	Driveway	REMOVE
308	Chinese pistache	Pistacia chinensis	14.1	7.1	Driveway	REMOVE
309	Evergreen pear	Pyrus kawakamii	14.7	18.4	Driveway	REMOVE
310	Evergreen pear	Pyrus kawakamii	15	18.8	Driveway	REMOVE
311	Evergreen pear	Pyrus kawakamii	10.8	13.5	Driveway	REMOVE
312	Evergreen pear	Pyrus kawakamii	15.4	19.3	Driveway	REMOVE
313	Raywood ash	Fraxinus angustifolia 'Raywood'	18.3	22.9	Driveway	REMOVE
314	Chinese pistache	Pistacia chinensis	5.1	2.6	None	Retain
315	Crape myrtle	Lagerstroemia indica	4.5	3.4	Driveway	REMOVE
316	Weeping willow	Salix babylonica	15.8	11.9	Driveway	REMOVE
317	Ornamental cherry	Prunus sp.	8.9	6.7	Driveway	REMOVE
318	Ornamental cherry	Prunus sp.	11.2	8.4	Driveway	REMOVE
319	Ornamental cherry	Prunus sp.	7.4	5.6	Driveway	REMOVE
320	Ornamental cherry	Prunus sp.	6.2	4.7	Concrete path	REMOVE
321	Ornamental cherry	Prunus sp.	5.4	4.1	Civil Improvement	REMOVE
322	Ornamental cherry	Prunus sp.	9	6.8	Driveway	REMOVE
323	Ornamental cherry	Prunus sp.	8.8	6.6	Driveway	REMOVE
324	Ornamental cherry	Prunus sp.	10.1	7.6	Driveway	REMOVE
325	White birch	Betula pendula	10.3	10.3	Driveway	REMOVE
326	China doll tree	Radermachera sinica	5.5	5.5	Driveway	REMOVE
327	China doll tree	Radermachera sinica	4.8	4.8	Driveway	REMOVE
328	China doll tree	Radermachera sinica	6	6	Civil Improvement	REMOVE
329	Ornamental cherry	Prunus sp.	11.1	8.3	None	Retain
330	Ornamental cherry	Prunus sp.	17.8	13.4	Concrete path	REMOVE
331	Ornamental cherry	Prunus sp.	7.9	5.9	Concrete path	REMOVE
332	Ornamental cherry	Pinus thunbergii	7.8	5.9	Concrete path	REMOVE
333	Ornamental cherry	Prunus sp.	12	9	Concrete path	Retain
334	Ornamental cherry	Prunus sp.	12.5	9.4	Concrete path	Retain

335	Ornamental cherry	Prunus sp.	8.5	6.4	Driveway	REMOVE
336	Hackberry	Celtis sp.	4.1	3.1	Driveway	REMOVE
337	Peruvian pepper	Schinus molle	12	9	Driveway	REMOVE
338	London plane	Platanus x acerifolia	24	24	Driveway	Retain
339	Red ironbark	Eucalyptus sideroxylon	15.1	15.1	Demolition	Retain
340	Red ironbark	Eucalyptus sideroxylon	19	0	N/A (dead)	REMOVE
341	Holly oak	Quercus ilex	10.2	5.1	None	Retain
342	Red ironbark	Eucalyptus sideroxylon	18.8	18.8	Demolition	Retain
343	Peruvian pepper	Schinus molle	11.2	8.4	None	Retain
344	Red ironbark	Eucalyptus sideroxylon	19.2	19.2	Demolition	Retain
345	Red ironbark	Eucalyptus sideroxylon	19.3	14.5	Demolition	Retain
346	Red ironbark	Eucalyptus sideroxylon	23.7	11.9	Demolition	Retain
347	Red ironbark	Eucalyptus sideroxylon	24.7	12.4	Demolition	Retain
348	Blackwood acacia	Acacia melanoxylon	15.6	7.8	Demolition	Retain
349	Red ironbark	Eucalyptus sideroxylon	25.1	12.6	Demolition	Retain
350	Red ironbark	Eucalyptus sideroxylon	18.9	14.2	Demolition	Retain
351	Red ironbark	Eucalyptus sideroxylon	30	15	Demolition	Retain
352	Red ironbark	Eucalyptus sideroxylon	25.6	19.2	Demolition	Retain
353	Evergreen pear	Pyrus kawakamii	18	18	None	Retain
354	Italian cypress	Cupressus sempervirens	12	9	Demolition	Retain
355	Italian cypress	Cupressus sempervirens	13.8	10.4	Demolition	Retain
356	Italian cypress	Cupressus sempervirens	12.5	9.4	Demolition	Retain
357	Italian cypress	Cupressus sempervirens	11.5	8.6	Demolition	Retain
358	Italian cypress	Cupressus sempervirens	9.5	7.1	Demolition	Retain
359	Italian cypress	Cupressus sempervirens	8	6	Demolition	Retain
360	Red ironbark	Eucalyptus sideroxylon	32.1	16.1	Demolition	Retain
361	Italian cypress	Cupressus sempervirens	8	6	Demolition	Retain
362	Italian cypress	Cupressus sempervirens	10	7.5	Demolition	Retain
363	Italian cypress	Cupressus sempervirens	12	9	Demolition	Retain
364	Italian cypress	Cupressus sempervirens	2	1.5	Demolition	Retain
365	Italian cypress	Cupressus sempervirens	3	2.3	Demolition	Retain
366	Italian cypress	Cupressus sempervirens	2	1.5	None	Retain
367	Italian cypress	Cupressus sempervirens	12	9	None	Retain
368	Italian cypress	Cupressus sempervirens	13	9.8	None	Retain
369	Italian cypress	Cupressus sempervirens	12	9	None	Retain
370	Italian cypress	Cupressus sempervirens	2	1.5	None	Retain
371	Italian cypress	Cupressus sempervirens	2	1.5	None	Retain
372	Italian cypress	Cupressus sempervirens	13.5	10.1	None	Retain
373	Italian cypress	Cupressus sempervirens	12.3	9.2	None	Retain
374	Italian cypress	Cupressus sempervirens	11.3	8.5	None	Retain
375	Italian cypress	Cupressus sempervirens	11.7	8.8	None	Retain
376	Italian cypress	Cupressus sempervirens	12.1	9.1	None	Retain
377	Italian cypress	Cupressus sempervirens	12.2	9.2	None	Retain
378	Italian cypress	Cupressus sempervirens	11.1	8.3	None	Retain
379	Italian cypress	Cupressus sempervirens	10.9	8.2	None	Retain
380	Italian cypress	Cupressus sempervirens	10.5	7.9	None	Retain
381	Italian cypress	Pinus sabiniana	12	9	None	Retain
382	Italian cypress	Cupressus sempervirens	11.2	8.4	None	Retain
383	Italian cypress	Cupressus sempervirens	12	9	None	Retain
384	Italian cypress	Cupressus sempervirens	11.5	8.6	None	Retain
385	Italian cypress	Cupressus sempervirens	9.9	7.4	None	Retain
386	Italian cypress	Cupressus sempervirens	6.7	5	None	Retain
387	Italian cypress	Cupressus sempervirens	7.4	5.6	None	Retain
388	Italian cypress	Cupressus sempervirens	8.9	6.7	None	Retain
389	Italian cypress	Cupressus sempervirens	10.4	7.8	None	Retain
390	Italian cypress	Cupressus sempervirens	11.5	8.6	None	Retain
391	Italian cypress	Cupressus sempervirens	12	9	None	Retain
392	Italian cypress	Cupressus sempervirens	11.7	8.8	None	Retain
393	Italian cypress	Cupressus sempervirens	13	9.8	None	Retain
394	Italian cypress	Cupressus sempervirens	11.4	8.6	None	Retain
395	Italian cypress	Cupressus sempervirens	12.5	9.4	None	Retain
396	Italian cypress	Cupressus sempervirens	11	8.3	None	Retain
397	Italian cypress	Cupressus sempervirens	11.5	8.6	None	Retain
398	Italian cypress	Cupressus sempervirens	8.7	6.5	None	Retain
399	Blackwood acacia	Acacia melanoxylon	12	6	None	Retain
400	Blackwood acacia	Acacia melanoxylon	8	4	None	Retain
401	Blackwood acacia	Acacia melanoxylon	14.6	7.3	None	Retain
402	Italian cypress	Cupressus sempervirens	7.1	5.3	None	Retain
403	Blackwood acacia	Acacia melanoxylon	11.1	5.6	None	Retain
404	Blackwood acacia	Acacia melanoxylon	4.6	2.3	None	Retain
405	Blackwood acacia	Acacia melanoxylon	7.3	3.7	None	Retain
406	Blackwood acacia	Acacia melanoxylon	6.2	3.1	None	Retain
407	Red ironbark	Eucalyptus sideroxylon	31.2	15.6	None	Retain
408	Blackwood acacia	Acacia melanoxylon	5.7	2.9	None	Retain
409	Blackwood acacia	Acacia melanoxylon	18.8	9.4	None	Retain
410	Blackwood acacia	Acacia melanoxylon	8.7	4.4	None	Retain
411	Red ironbark	Eucalyptus sideroxylon	24	0	N/A (dead)	REMOVE
412	Red ironbark	Eucalyptus sideroxylon	23.4	11.7	None	Retain
413	Blackwood acacia	Acacia melanoxylon	21.8	10.9	None	Retain
414	Red ironbark	Eucalyptus sideroxylon	24	0	N/A (dead)	REMOVE
415	Blackwood acacia	Acacia melanoxylon	22.5	11.3	None	Retain
416	Red ironbark	Eucalyptus sideroxylon	28.7	14.4	None	Retain
417	London plane	Platanus x acerifolia	8.4	8.4	None	Retain
418	London plane	Platanus x acerifolia	10.5	10.5	None	Retain
419	London plane	Platanus x acerifolia	10.2	10.2	None	Retain

421	Callery pear	Pyrus calleryana	10.5	7.9	Driveway	REMOVE
422	Callery pear	Pyrus calleryana	10.7	8	Driveway	REMOVE
423	Callery pear	Pyrus calleryana	10	10	Driveway	REMOVE
424	Callery pear	Pyrus calleryana	8.4	6.3	Driveway	REMOVE
425	Callery pear	Pyrus calleryana	11.6	8.7	Driveway	REMOVE
426	Crape myrtle	Lagerstroemia indica	7.6	5.7	Driveway	REMOVE
427	Crape myrtle	Lagerstroemia indica	7.3	5.5	Driveway	REMOVE
428	Crape myrtle	Lagerstroemia indica	6.5	4.9	Driveway	REMOVE
429	Crape myrtle	Lagerstroemia indica	7.6	5.7	Driveway	REMOVE
430	Ornamental cherry	Prunus sp.	4.1	5.1	Driveway	REMOVE
431	Crape myrtle	Lagerstroemia indica	7.4	5.6	Driveway	REMOVE
432	Crape myrtle	Lagerstroemia indica	5.4	4.1	Driveway	REMOVE
433	Crape myrtle	Lagerstroemia indica	7.1	5.3	Driveway	REMOVE
434	White birch	Betula pendula	6.4	6.4	None	Retain
435	White birch	Betula pendula	8.8	8.8	None	Retain
436	Japanese maple	Acer palmatum	6.1	4.6	None	Retain
437	White birch	Betula pendula	8.1	8.1	None	Retain
438	White birch	Betula pendula	9.9	9.9	None	Retain
439	White birch	Betula pendula	10.6	10.6	None	Retain
440	Weeping willow	Salix babylonica	21.8	16.4	None	Retain
441	Eastern redbud	Cercis canadensis	6.2	4.7	None	Retain
442	Eastern redbud	Cercis canadensis	6.5	4.9	None	Retain
443	Eastern redbud	Cercis canadensis	5.3	4	None	Retain
444	Eastern redbud	Cercis canadensis	6.2	4.7	None	Retain
445	Japanese maple	Acer palmatum	4.7	3.5	None	Retain
446	Ornamental cherry	Prunus sp.	9.2	6.9	Generator yard	REMOVE
447	Ornamental cherry	Prunus sp.	5.9	4.4	Generator yard	REMOVE
448	Weeping willow	Salix babylonica	21.4	16.1	Generator yard	REMOVE
449	White birch	Betula pendula	12.8	12.8	Driveway	Retain
450	Ornamental cherry	Prunus sp.	7.8	5.9	Driveway	REMOVE
451	Ornamental cherry	Prunus sp.	7.5	5.6	Driveway	REMOVE
452	Ornamental cherry	Prunus sp.	7.4	5.6	Driveway	REMOVE
453	Ornamental cherry	Prunus sp.	5.4	4.1	Driveway	REMOVE
454	Eastern redbud	Cercis canadensis	6.8	5.1	Concrete path	Retain
455	Eastern redbud	Cercis canadensis	5.2	3.9	None	Retain
456	Ornamental cherry	Prunus sp.	6	4.5	Generator yard	REMOVE
457	Ornamental cherry	Prunus sp.	7	5.3	Generator yard	REMOVE
458	White birch	Betula pendula	4.8	4.8	Building	REMOVE
459	White birch	Betula pendula	7.1	7.1	Building	REMOVE
460	White birch	Betula pendula	4.7	4.7	Building	REMOVE
461	Eastern redbud	Cercis canadensis	5.5	4.1	Building	REMOVE
462	Eastern redbud	Cercis canadensis	4.2	3.2	Building	REMOVE
463	Eastern redbud	Cercis canadensis	4.9	3.7	Generator yard	REMOVE
464	Ornamental cherry	Prunus sp.	7.5	5.6	Generator yard	REMOVE
465	Crape myrtle	Lagerstroemia indica	5.1	3.8	Generator yard	REMOVE
466	Crape myrtle	Lagerstroemia indica	5	3.8	Generator yard	REMOVE
467	Crape myrtle	Lagerstroemia indica	4.9	3.7	Generator yard	REMOVE
468	Ornamental cherry	Prunus sp.	6.1	4.6	Generator yard	REMOVE
469	Ornamental cherry	Prunus sp.	5.1	3.8	Generator yard	REMOVE
470	Ornamental cherry	Prunus sp.	9.1	6.8	Generator yard	REMOVE
471	White birch	Betula pendula	7.4	7.4	None	Retain
472	Crape myrtle	Lagerstroemia indica	5	3.8	None	Retain
473	Crape myrtle	Lagerstroemia indica	5.1	3.8	None	Retain
474	Crape myrtle	Lagerstroemia indica	5.1	3.8	None	Retain
475	Crape myrtle	Lagerstroemia indica	5.9	4.4	Driveway	REMOVE
476	Crape myrtle	Lagerstroemia indica	6.3	4.7	Driveway	REMOVE

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Kimley»Horn

NO.	RECORD	DATE
1	PCC ISSUANCE	10.07.19

DLR DATA CENTER
2825 LAFAYETTE STREET
SANTA CLARA, CA, 95050

TREE INVENTORY

PRINCIPAL IN CHARGE MC	PROJECT NUMBER 197250001
PROJECT MANAGER CM	DATE 10/04/2019
PROJECT ENGINEER MJ	SHEET NUMBER
SCALE AS SHOWN	L1.3

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10/3/2019

Chad Mendell
Vice President
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Re: Tree Impacts from Proposed Development Project at 2825 Lafayette Street in Santa Clara

Dear Chad,

At your request, I have visited the property referenced above to evaluate the trees present with respect to the proposed construction project. The report below contains my analysis.

Summary

There are 476 trees on the project site, of which 321 are recommended for removal. Three hundred seventeen of these conflict directly with project features, two are dead, and two are stumps of trees which were removed in the past, not in connection with this project.

Other trees may need to be removed for utility installation; however, no utilities are shown on the plans provided to me.

Assignment:

We have been asked to write a report detailing impacts to trees from construction of the proposed building, substation, and parking lot redesign at this address.

Introduction:

Many factors influence how a tree will respond to impacts from construction activities, including the extent of the activity; tree species; and tree vigor. Construction plans should accommodate trees insofar as practical, with the intent of preserving as many trees as reasonably possible.

Limits of the Assignment:

All observations were made from the ground. No root collar excavations or aerial inspections were performed.

No utilities, grading, or feature specifications are shown on the plans provided to me. I expect additional tree impacts will result from some or all of these factors.

No project features had been staked at the time of my site visit.

Purpose & Use of the Report:

This report is intended to inform tree management decisions for this project.

Observations:

Trees

Four hundred seventy-six trees are present. The five most common species are: London plane (*Platanus* x *acerifolia*), with 121 (25%); Italian cypress (*Cupressus sempervirens*), with 44 (9%); Raywood ash (*Fraxinus angustifolia* 'Raywood'), with 44 (9%); crape myrtle (*Lagerstroemia indica*), with 41 (9); and ornamental cherries (*Prunus* spp.), with 32 (7%).

Four trees are dead. Two of these were removed prior to my site visit, though their stumps remain.

Many trees are in small planters surrounded by hardscape.

Orange tape was present around several tree trunks at the time of my site visit, as noted in the Tree Table. I do not know the significance of this tape; it is possible that the trees are slated for removal or pruning by others.

Project Features

A new building will be constructed in the north part of the property, with a generator yard to the south. A new substation will be constructed in the southwest part of the property. Most parking lot and driving areas will be redesigned.

The existing building in the south part of the property will remain.

Tree Impacts

Three hundred seventeen trees conflict directly with proposed project features (not including dead trees). Conflicting features are listed in the following table:

Conflicting Feature	Live Trees to be Removed	%
Building	137.0	43%
Concrete path	5.0	2%
Driveway	93.0	29%
Generator yard	42.0	13%
Retention area	13.0	4%
Substation	27.0	9%

Of the 155 trees to remain, most are in good condition, as shown in the following table:

Vigor Rating (1 = low, 3 = high)	Trees to be Retained	%
3	137	88%
2	13	8%
1	5	3%

Many of the trees to remain will likely be impacted by project activities as detailed in the following tables:

Impacting Feature	Trees to be Retained	%
Concrete path	3.0	2%
Demolition	24.0	15%
Driveway	12.0	8%
None	104.0	67%
Property line fence	1.0	1%
Retention area	11.0	7%

Likely Impact level	Trees to be Retained	%
Minor	142	92%
Minor-moderate	1	1%
Moderate	1	1%
Unknown	11	7%

Please note that all trees with "unknown" impacts are in or near retention areas. As details for retention areas have not been provided, it is unclear whether these trees will undergo impacts, and if so, how severe the impacts will be.

Testing & Analysis:

Tree DBHs[1] were taken using a diameter tape measure if trunks were accessible. The DBHs of trees with non-accessible trunks were estimated visually. All trees over four inches in DBH were inventoried, with some smaller trees included if prominently located.

Vigor ratings are based on tree appearance and experiential knowledge of each species.

Tree location data was collected using a GPS smartphone application and processed in GIS software to create the maps included in this report. Due to slight differences between GPS data and CAD drawings, tree locations shown on the map below are approximate.

I visited the site on 5/31/2019, 6/1/2019, and 6/3/2019. All observations and photographs in this report were taken at those site visits.

This report is based on sheet A1.1 of the plan set titled "Master Plan: Proposed New Site Plan," provided to me electronically by the client. No utilities, grading, or feature specifications were provided.

---

[1] Diameter at breast height, a standard arboricultural metric

Discussion:

Critical Root Zone (CRZ)

Tree roots grow where conditions are favorable, and their spatial arrangement is therefore unpredictable. Favorable conditions vary among species, but generally include the presence of moisture, and soft soil texture with low compaction.

Contrary to popular belief, roots of all tree species grow primarily in the top two feet of soil, with a small number of roots sometimes occurring at greater depths. Some species have taproots when young, but these almost universally disappear with age. At maturity, a tree's root system may extend out from the trunk farther than the tree is tall.

The optimal size of the area around a tree which should be protected from disturbance depends on the tree's size, species, and vigor, as shown in the following table (adapted from *Trees & Construction*, Matheny and Clark, 1998)[2]:

Species tolerance	Tree vigor	Distance from trunk (feet per inch trunk diameter)
Good	High	0.5
	Moderate	0.75
	Low	1
Moderate	High	0.75
	Moderate	1
	Low	1.25
Poor	High	1
	Moderate	1.25
	Low	1.5

Species-Specific Issues

Some tree species on this property exhibit disease symptoms that, while unsightly, indicate common issues which can be managed with proper ongoing care. These trees were given higher health ratings than may appear reasonable without knowledge of these issues.

---

[2] Matheny and Clark use tree age instead of vigor; however, vigor is a stronger predictor of a tree's response to wounding.

Raywood ash - these trees are susceptible to a syndrome called ash dieback. Though the exact causes remain unknown, disease susceptibility and drought stress appear to be major factors. This syndrome cannot be cured, but can only be managed through irrigation and regular removal of deadwood.

Callery pear - all pear trees, but especially Callery pear (*Pyrus calleryana*), are susceptible to a bacterial disease called fireblight (*Erwinia amylovora*). Fireblight infection causes progressive dieback, starting with buds and spreading to entire limbs.

Evergreen pear - a disease called leaf spot (*Entomosporium mespili*) causes copious black spots on the leaves of evergreen pear trees (*Pyrus kawakamii*). This disease is primarily aesthetic, though some infected trees may drop of one or more crops of leaves per year.

Conclusions:

Three hundred seventeen trees must be removed in order for the project to move forward as currently proposed. Two others must be removed irrespective of project features, as they are dead. Another two were removed prior to my site visit, and only the stumps remain.

The remaining 155 trees can reasonably be protected, with a high likelihood of survival during and after construction.

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NO.	RECORD	DATE
1	PCC ISSUANCE	10.07.19

DLR DATA CENTER
2825 LAFAYETTE STREET
SANTA CLARA, CA, 95050

ARBORIST
REPORT

PRINCIPAL IN CHARGE: MC
PROJECT NUMBER: 197250001
PROJECT MANAGER: CM
DATE: 10/04/2019
PROJECT ENGINEER: MJ
SHEET NUMBER: L1.4
SCALE: AS SHOWN

Recommendations:

1. Remove trees #1-6, 15, 21, 23-25, 42-78, 80-83, 94-97, 99-251, 253-257, 259-263, 268-270, 277-313, 315-328, 330-332, 335-338, 340, 411, 414, 420-433, 446-448, 450-453, 456-470, 475, and 476, upon approval from the City of Santa Clara.
2. Remove deadwood from remaining Callery pears and Raywood ashes. This will benefit both tree health and worker safety.
3. All tree work must be performed by trained tree care personnel under the direction of an International Society of Arboriculture Certified Arborist.
4. Alert the Project Arborist when new drawings are available showing grading, utilities, retention area details, or material changes to project features.
5. Install tree protection fencing prior to any demolition equipment coming onsite.
    a. Install fencing at or outside the tree protection areas of all trees to be retained, shown on the map below.
    b. Where existing pavement is within tree protection zones, install tree protection fencing at the edge of pavement. After demolition, move tree protection fencing to the edge of the tree protection area.
    c. Where proposed features shown on the map included below lie within tree protection areas, install tree protection fencing at the edge of the features.
    d. For areas where no construction will occur, tree protection fencing may be installed at the perimeter of the area instead of around each tree individually.
    e. Spread wood chips at least four inches thick within tree protection fencing.
6. For existing hardscape to be demolished within tree protection zones:
    a. Demolish the area nearest the tree first, and work outwards.
    b. Do not operate machinery on unpaved areas within tree protection zones.
    c. Upon completion of demolition, move tree protection fencing to be at or outside the tree protection area.
7. Minimize grading near trees. Do not perform any grading inside tree protection fencing.
8. If live roots over one inch in diameter are encountered at any time, in any location, they must be pruned with a sharp saw or bypass pruners, as close to the edge of the excavation as possible. If roots over three inches in diameter are encountered, do not prune, but instead contact the Project Arborist to determine the best course of action.
9. Irrigate all trees to be retained on a monthly basis with potable water, in the absence of heavy rain.
    a. Irrigate using a soaker hose placed as close to tree driplines as practical. Irrigate for 2-4 hours at a very low flow. If this causes runoff, reduce the flow rate. If this is impractical for any tree for any reason, contact the Project Arborist.

ASSUMPTIONS AND LIMITING CONDITIONS

1. Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.
2. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other government regulations.
3. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however the consultant/appraiser can neither guarantee nor be responsible for the accuracy of information provided by others.
4. The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
5. Loss, alteration, or reproduction of any part of this report invalidates the entire report.
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8. This report and the values expressed herein represent the opinion of the consult/appraiser, and the consult/appraiser's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
9. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
10. Unless expressed otherwise - 1) information in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in future.

Respectfully submitted,

Katherine Naegele
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Anderson's Tree Care Specialists, Inc.
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ISA Certified Arborist #WE-9658A
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NO.	RECORD	DATE
1	PCC ISSUANCE	10.07.19

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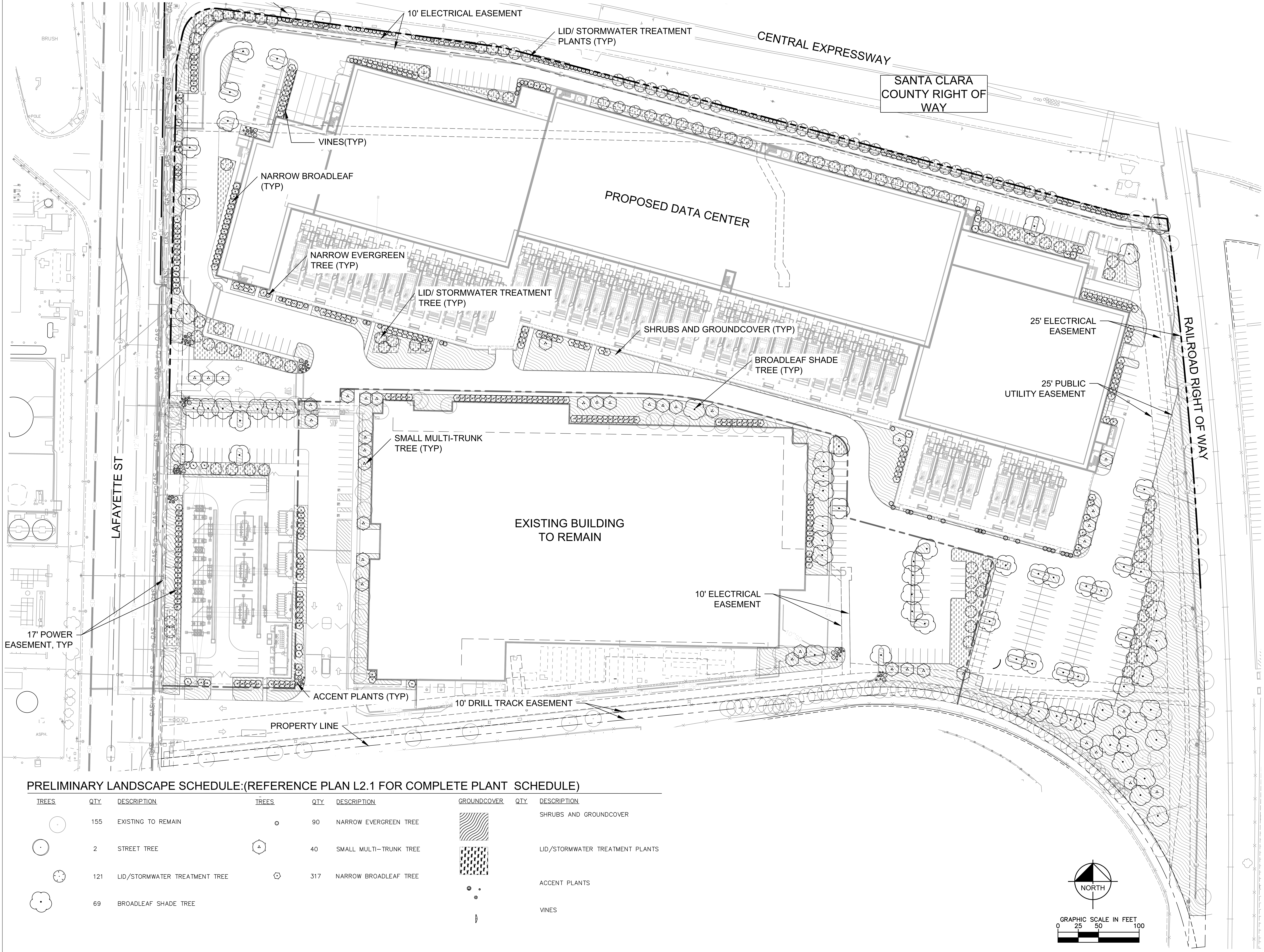
SANTA CLARA, CA, 95050

ARBORIST
REPORT

PRINCIPAL IN CHARGE: MC
PROJECT NUMBER: 197250001
PROJECT MANAGER: CM
DATE: 10/04/2019
PROJECT ENGINEER: MJ
SHEET NUMBER: L1.5
SCALE: AS SHOWN



PRELIMINARY LANDSCAPE SCHEDULE:(REFERENCE PLAN L2.1 FOR COMPLETE PLANT SCHEDULE)

TREES	QTY	DESCRIPTION	TREES	QTY	DESCRIPTION	GROUNDCOVER	QTY	DESCRIPTION
○	155	EXISTING TO REMAIN	⚙	90	NARROW EVERGREEN TREE	▨		SHRUBS AND GROUNDCOVER
◎	2	STREET TREE	⊛	40	SMALL MULTI–TRUNK TREE	▩		LID/STORMWATER TREATMENT PLANTS
✿	121	LID/STORMWATER TREATMENT TREE	⬡	317	NARROW BROADLEAF TREE	❀		ACCENT PLANTS
❀	69	BROADLEAF SHADE TREE				◊		VINES

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NO.	RECORD	DATE
1	PCC ISSUANCE	10.07.19

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SANTA CLARA, CA, 95050

PRELIMINARY
LANDSCAPE
PLAN

PRINCIPAL IN CHARGE MC	PROJECT NUMBER 197250001
PROJECT MANAGER CM	DATE 10/04/2019
PROJECT ENGINEER MJ	SHEET NUMBER L2.0
SCALE AS SHOWN	

\\sjcfp01\ca_sjc\Project\BAY_LDEV\197250001 - dlr data center (lafayette st.) - mrj\CAD\Exhibits\Entitlement Drawings\L2.0 PRELIM LANDSCAPE PLAN.dwg 10/7/2019 6:14 PM Michael.Thomsen

LANDSCAPE DATA TABLE		
CITY OF SANTA CLARA MUNICIPAL CODE	REQUIRED	PROVIDED
ZONE: LIGHT INDUSTRIAL		
TOTAL SITE AREA: 991, 425 SF (22.76 ACRES)		
TOTAL LANDSCAPE AREA: 206, 445 SF (4.74 ACRES)		
TOTAL BUILDING PAD AREA: 369, 811 SF (8.49 ACRES)		
TOTAL VUA (VEHICULAR USE AREA): 213, 418 (4.90 ACRES)		
DEVELOPMENT CRITERIA - LANDSCAPE PROVISIONS		
TOTAL LANDSCAPE AREA COVERAGE	10% (OF TOTAL VUA AREA SPREAD EVENLY ACROSS VUA AND BUILDING FRONTAGE) 213,418 SF X 0.10 = 21,342 SF LANDSCAPE AREA	206, 445 SF LANDSCAPE AREA
TREE MITIGATION	320 TREES REMOVED REPLACE AT 2:1 MIN. 24" BOX SIZE, OR 1:1 MIN. 36" BOX SIZE	REPLACED WITH: 640 TREES 24" BOX SIZE (REPLACES 319 TREES) SURPLUS OF 1 ADDITIONAL NEW TREES
DEVELOPMENT CRITERIA - VEHICULAR USE AREA (VUA)		
PARKING LOT SCREENING	30" HEIGHT MINIMUM LANDSCAPED BERM	LIMITED AREA FOR GRADING WITHIN THE BUILDING FRONTAGE. A DENSE LANDSCAPE SCREEN OF 24" HEIGHT MINIMUM WILL PROVIDE A BUFFER FROM THE STREET (CPTED REQUIRES MAX 24" HEIGHT SHRUBS)

PRELIMINARY LANDSCAPE SCHEDULE

TREES	QTY	BOTANICAL NAME / COMMON NAME	CONT.	SPACING	WUCOLS
○	154	EXISTING TO REMAIN	N/A	N/A	N/A
		STREET TREES MAY CONSIST OF THE FOLLOWING:			
○	2	CEDRUS DEODARA / DEODAR CEDAR	24" BOX	AS SHOWN	LOW
		LID/STORMWATER TREATMENT TREE MAY CONSIST OF THE FOLLOWING:			
○	121	CERCIS OCCIDENTALIS / WESTERN REDBUD MULTI–TRUNK	24" BOX	AS SHOWN	V. LOW
		BROADLEAF SHADE TREE MAY CONSIST OF THE FOLLOWING:			
○	70	CINNAMOMUM CAMPHORA / CAMPHOR TREE	24" BOX	AS SHOWN	MOD
		PISTACIA CHINENSIS / CHINESE PISTACHE	24" BOX	AS SHOWN	LOW
		TILIA CORDATA / LITTLELEAF LINDEN	24" BOX	AS SHOWN	MOD
		QUERCUS ILEX / HOLLY OAK	24" BOX	AS SHOWN	LOW
		NARROW EVERGREEN TREE MAY CONSIST OF THE FOLLOWING:			
○	90	CUPRESSUS SEMPERVIRENS / ITALIAN CYPRESS	24" BOX	AS SHOWN	LOW
		SMALL MULTI–TRUNK TREE MAY CONSIST OF THE FOLLOWING			
○	40	CERCIS OCCIDENTALIS / WESTERN REDBUD MULTI–TRUNK	24" BOX	AS SHOWN	V. LOW
		LAGERSTROEMIA X 'TUSKEGEE' / TUSKEGEE CRAPE MYRTLE	24" BOX	AS SHOWN	LOW
		NARROW BROADLEAF TREE MAY CONSIST OF THE FOLLOWING:			
○	317	ACER RUBRUM 'BOWHALL' / BOWHALL RED MAPLE	24" BOX	AS SHOWN	MOD
		CARPINUS BETULUS 'FATIGIATA' / FASTIGIATE EUROPEAN HORNBEAM	24" BOX	AS SHOWN	MOD
		GINKGO BILOBA 'PRINCETON SENTRY' / PRINCETON SENTRY GINKGO	24" BOX	AS SHOWN	MOD
		MAGNOLIA GRANDIFLORA 'ALTA' / ALTA MAGNOLIA	24" BOX	AS SHOWN	MOD
		QUERCUS ROBUR FASTIGIATA / FASTIGIATE ENGLISH OAK	24" BOX	AS SHOWN	MOD

SHRUBS	BOTANICAL NAME / COMMON NAME	CONT.	SPACING	WUCOLS
	SHRUBS AND GROUNDCOVER:			
	SHRUBS MAY CONSIST OF:			
▨	ASCLEPIAS FASCICULARIS / CALIFORNIA NARROWLEAF MILKWEED	1 GAL	30" OC	LOW
	ERIOPHYLLUM CONFERTIFLORUM / GOLDEN YARROW	1 GAL	30" OC	LOW
	LIGUSTRUM JAPONICUM 'TEXANIUM/ GLOSSY LEAF PRIVET	1 GAL	30" OC	MOD
	MYRTUS COMMUNIS 'COMPACTA' / DWARF MYRTLE	1 GAL	30" OC	MOD
	RHAMNUS CALIFORNICA / CALIFORNIA COFFEEBERRY	1 GAL	30" OC	LOW
	ROSA CALIFORNICA / CALIFORNIA WILD ROSE	1 GAL	30" OC	LOW
	ZAUSCHNERIA CALIFORNICA / CALIFORNIA FUCHSIA	1 GAL	30" OC	LOW
	GROUNDCOVER MAY CONSIST OF:			
	ARCTOSTAPHYLOS 'EMERALD CARPET'/ EMERALD CARPET MANZANITA	1 GAL	30" OC	LOW
	CARISSA MACROCARPA 'GREEN CARPET' / NATAL PLUM	1 GAL	30" OC	LOW
	MYOPORUM PARVIFOLIUM / MYOPORUM	1 GAL	30" OC	LOW
	SALVIA GRACIAS / GRACIAS SAGE	1 GAL	30" OC	LOW
	SENECIO SERPENS / BLUE CHALK STICKS	1 GAL	30" OC	LOW
	LID/STORMWATER TREATMENT PLANTS MAY CONSIST OF A MIX OF THE FOLLOWING:			
▨	BOUTELOUA GRACILIS 'BLONDE AMBITION' / BLUE GRAMA OATS	1 GAL	30" OC	MOD
	CAREX TUMULICOLA / BERKELEY SEDGE	1 GAL	30" OC	LOW
	CARPEX PANSA / CALIFORNIA FIELD SEDGE	1 GAL	30" OC	MOD
	CHONDROPETALUM TECTORUM / SMALL CAPE RUSH	1 GAL	30" OC	LOW
	JUNCUS PATENS / CALIFORNIA GRAY RUSH	1 GAL	36" OC	LOW
	MUHLENBERGIA RIGENS / DEER GRASS	1 GAL	30" OC	LOW
	ACCENT PLANTS MAY CONSIST OF A MIX OF THE FOLLOWING:			
	AGAVE ATTENUATA / FOXTAIL AGAVE	1 GAL	40" OC	LOW
	CARPENTERIA CALIFORNICA / BUSH ANEMONE	1 GAL	40 "OC	MOD
○	EUPHORBIA RIGIDA / GOPHER SPURGE	1 GAL	40" OC	LOW
	HESPERALOE PARVIFLORA / RED YUCCA	1 GAL	40" OC	LOW
	PHORMIUM 'DUSKY MAIDEN / DUSKY MAIDEN NZ FLAX	1 GAL	40" OC	LOW
	PHORMIUM 'JACK SPRATT' / JACK SPRATT NZ FLAX	1 GAL	40" OC	LOW
	SALVIA SPATHACEA / HUMMINGBIRD SAGE	1 GAL	40" OC	LOW
	VINE: FICUS PUMILA / CREEPING FIG	1 GAL	30' OC	LOW

STATE OF CALIFORNIA ESTIMATED WATER USE						
TOTAL WATER USE IS CALCULATED BY SUMMING THE AMOUNT OF WATER ESTIMATED FOR EACH HYDROZONE. WATER USE FOR EACH HYDROZONE IS ESTIMATED WITH THE FOLLOWING FORMULA:						
ESTIMATED TOTAL WATER USE (ETWU) = GAL / YEAR PER HYDROZONE						
ET ADJUSTMENT FACTOR (ETAF) = 0.55 ETAF FOR RESIDENTIAL LANDSCAPE 0.45 ETAF FOR NON-RESIDENTIAL LANDSCAPE 0.8 ETAF FOR EXISTING NON-REHABILITATED LANDSCAPE SPECIAL LANDSCAPE SHALL NOT EXCEED 1.0 ETAF						
PLANT FACTOR (PF) = WATER USE CLASSIFICATION OF LANDSCAPE SPECIES						
HYDROZONE AREA (HA) = (SF OF LANDSCAPE) OR (32 SF / TREE)						
CONVERSION FACTOR (CONVERTS ACRE-INCHES PER ACRE PER YEAR TO GALLONS PER SQUARE FOOT PER YEAR = 0.62						
IRRIGATION EFFICIENCY (IE) = 0.75 (OVERHEAD SPRAY) 0.81 (DRIP)						
SPECIAL LANDSCAPE AREA (SLA) = SF OF EDIBLE PLANTS, RECREATIONAL AREAS, AREAS IRRIGATED WITH RECYCLED WATER, OR WATER FEATURS USING RECYCLED WATER						
EVAPOTRANSPIRATION RATE (ETo) = QUANTITY OF WATER EVAPORATED FROM ADJ. SOIL AND TRANSPIRED BY PLANTS OVER A SPECIFIED TIME						
ETWU = [(ETo) * (PF) * (HA) * (0.62)] / (IE)						
MAWA = (ETo) * (0.62) [ETAF) * (SUM OF SLA & HA)] + [(1-ETAF) * (SLA)]						
HYDROZONE "A" (SUBSURFACE DRIP)						
ETO	PF	HA	CONVERSION FACTOR	IE	SLA	ETWU (GAL/YEAR)
45.30	0.30	140,778	0.62	0.81		1,464,404.04
HYDROZONE "B" (BUBBLERS)						
ETO	PF	HA	CONVERSION FACTOR	IE	SLA	ETWU (GAL/YEAR)
45.30	0.45	23,392	0.62	0.81		364,993.17
ESTIMATED TOTAL WATER USE (GAL/YEAR)						**1,829,397.21**
MAXIMUM APPLIED WATER ALLOWANCE (MAWA)						
ETO	SUM OF HA		CONVERSION FACTOR	ETAF	SUM OF SLA	MAWA(GAL/YEAR)
45.30	164,170.00		0.62	0.45	-	2,074,895.38
MAXIMUM APPLIED WATER ALLOWANCE (GAL/YEAR)						**2,074,895.38**
MAXIMUM APPLIED WATER ALLOWANCE PERCENT OF ESTIMATED TOTAL WATER USE						**88.17%**

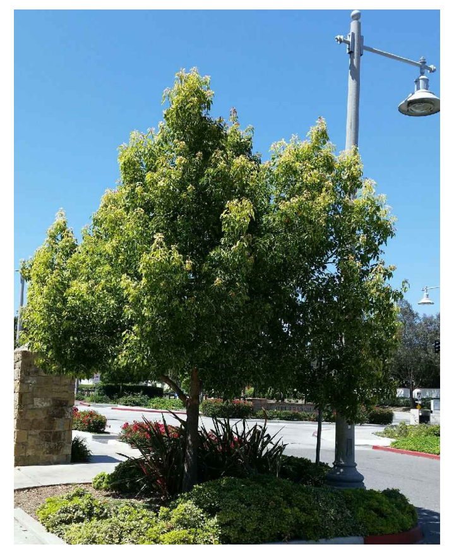
NOTE:
SUM OF HYDROZONE AREA INCLUDES TOTAL OF NEW LANDSCAPE AREA TO BE IRRIGATED

PRELIMINARY PLANT PALETTE

TREES


CEDRUS DEODARA
DEODAR CEDAR


CERCIS OCCIDENTALIS
WESTERN REDBUD


CINNAMOMUM CAMPHORA
CAMPHOR TREE


PISTACIA CHINENSIS
CHINESE PISTACHE


TILIA CORDATA
LITTLELEAF LINDEN


QUERCUS ILEX
HOLLY OAK


CUPRESSUS SEMPERVIRENS
ITALIAN CYPRESS


LAGERSTROEMIA X 'TUSKEGEE'
TUSKEGEE CRAPE MYRTLE


MAGNOLIA GRANDIFLORA 'ALTA'
ALTA SOUTHERN MAGNOLIA


ACER RUBRUM 'BOWHALL'
BOWHALL RED MAPLE

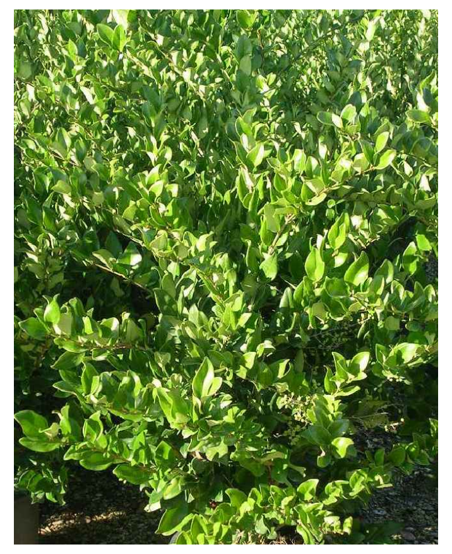

CARPINUS BETULUS 'FATIGIATA'
FASTIGIATE EUROPEAN HORNBEAM


GINKCO BILOBA 'PRINCETON SENTRY' / GINKGO

SHRUBS

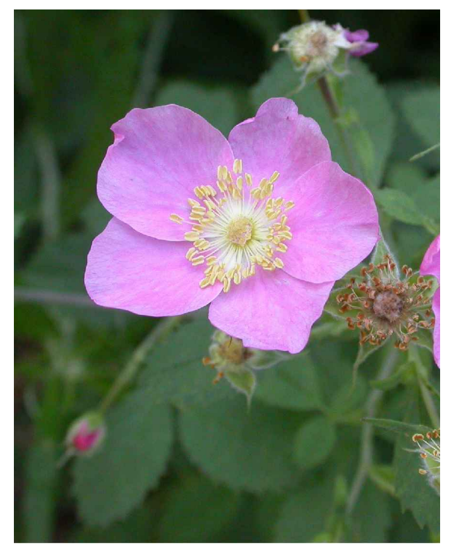

ERIOPHYLLUM CONFERTIFLORUM
YELLOW YARROW

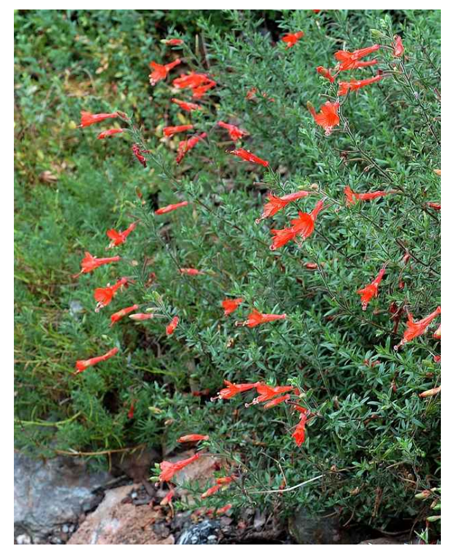

ASCLEPIAS FASCICULARIS
NARROWLEAF MILKWEED


LIGUSTRUM JAPONICUM 'TEXANUM'
GLOSSY LEAF PRIVET

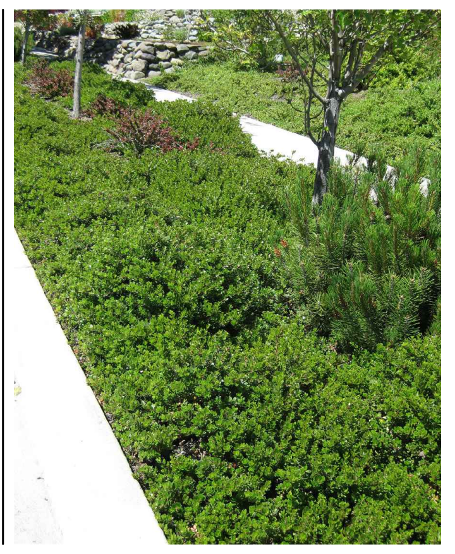

MYRTUS COMMUNIS 'COMPACTA'
DWARF MYRTLE


RHAMNUS CALIFORNICA
CALIFORNIA COFFEEBERRY


ROSA CALIFORNICA
CALIFORNIA WILD ROSE


ZAUSCHNERIA CALIFORNICA
CALIFORNIA FUCHSIA

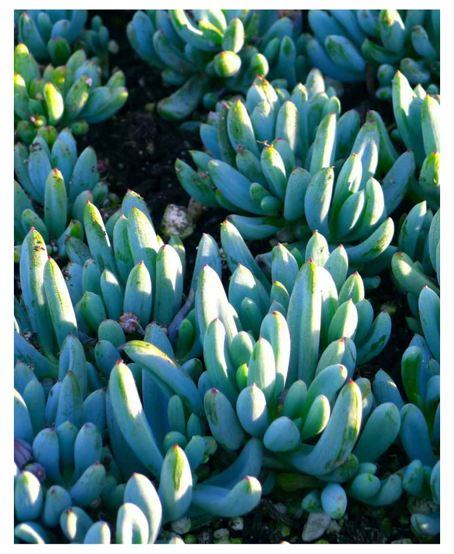
GROUNDCOVER


ARCTOSTAPHYLOS 'EMERALD CARPET' / MANZANITA

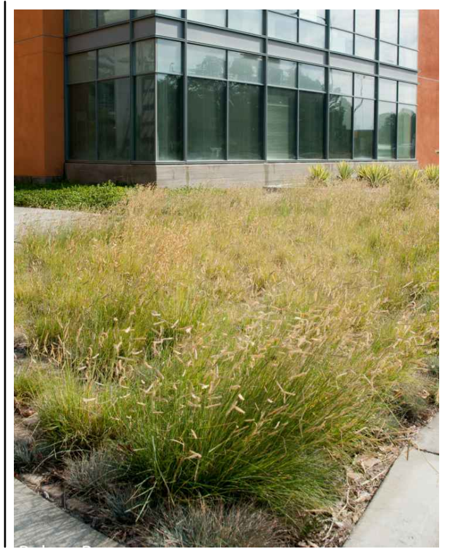

CARISSA MACROCARPA 'GREEN CARPET' / NATAL PLUM


MYOPORUM PARVIFOLIUM
MYOPORUM

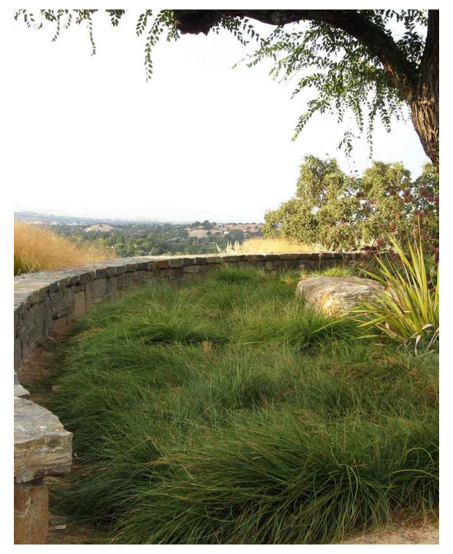

SALVIA 'GRACIAS'
GRACIAS SAGE


SENECIO SERPENS
BLUE CHALK STICKS

LID


BOUTELOUA GRACILIS 'BLONDE AMBITION' / BLUE GRAMA OATS


CAREX PANSA
CALIFORNIA FIELD SEDGE

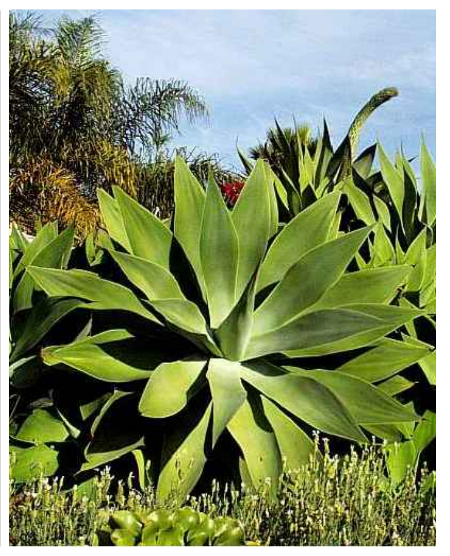

CAREX PANSA
CALIFORNIA FIELD SEDGE


CHONDROPETALUM TECTORUM
SMALL CAPE RUSH


JUNCUS PATENS
CALIFORNIA GRAY RUSH


MUHLENBERGIA RIGENS
DEER GRASS

ACCENT


AGAVE ATTENUATA
FOXTAIL AGAVE


CARPENTERIA CALIFORNICA
BUSH ANEMONE


EUPHORBIA RIGIDA
GOPHER SPURGE


HESPERALOE PARVIFLORA
RED YUCCA


PHORMIUM 'JACK SPRATT'
JACK SPRAT NZ FLAX

VINE


FICUS REPENS
CREEPING FIG

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NO.	RECORD	DATE
1	PCC ISSUANCE	10.07.19

DLR DATA CENTER
2825 LAFAYETTE STREET
SANTA CLARA, CA, 95050

PRELIMINARY LANDSCAPE SCHEDULE AND IMAGERY

PRINCIPAL IN CHARGE: MC
PROJECT NUMBER: 197250001
PROJECT MANAGER: CM
DATE: 10/04/2019
PROJECT ENGINEER: MJ
SHEET NUMBER: L2.1
SCALE: AS SHOWN

LANDSCAPE NOTES

1. THE SELECTION OF PLANT MATERIAL IS BASED ON CLIMATIC, AESTHETIC, AND MAINTENANCE CONSIDERATIONS.
2. GROUND COVER SHALL BE PLANTED AT A MAX SPACING OF 12" ON CENTER TO RESULT IN MAX COVERAGE WITHIN ONE YEAR OF INITIAL PLANTING.
3. ALL PLANTING AREAS SHALL BE PREPARED WITH APPROPRIATE SOIL AMENDMENTS, FERTILIZERS AND APPROPRIATE SUPPLEMENTS BASED UPON A SOILS REPORT FROM AN AGRICULTURAL SUITABILITY SOIL SAMPLE TAKEN FROM THE SITE.
4. GROUNDCOVERS OR ORGANIC SHREDDED BARK MULCH SHALL FILL IN BETWEEN SHRUBS TO SHIELD THE SOIL FROM THE SUN, EVAPOTRANSPIRATION, AND RUN–OFF.
5. ALL SHRUB BEDS SHALL BE MULCHED WITH ORGANIC SHREDDED BARK MULCH TO A 3" MINIMUM DEPTH TO HELP CONSERVE WATER, LOWER SOIL TEMPERATURE, AND REDUCE WEED GROWTH. THE SHRUBS SHALL BE ALLOWED TO GROW IN THEIR NATURAL FORMS.
6. ALL LANDSCAPE IMPROVEMENTS SHALL FOLLOW THE GUIDELINES SET FORTH BY THE CITY OF SANTA CLARA AND COUNTY OF SANTA CLARA.
7. ALL VEGETATION SHALL BE MAINTAINED FREE OF PHYSICAL DAMAGE OR INJURY FROM LACK OF WATER, EXCESS CHEMICAL FERTILIZER OR OTHER TOXIC CHEMICAL, BLIGHT OR DISEASE. ANY VEGETATION WHICH SHOWS SIGNS OF SUCH DAMAGE OR INJURY AT ANY TIME SHALL BE REPLACED BY THE SAME, SIMILAR, OR SUBSTITUTE VEGETATION OF A SIZE, FORM, AND CHARACTER WHICH WILL BE COMPARABLE AT FULL GROWTH.
9. ANY COMPACTED SOILS IN PLANTING AREAS SHALL BE RETURNED TO A "FRIABLE" CONDITIONS PRIOR TO THE INSTALLATION OF PLANT MATERIALS. FRIABLE CONDITION IS DEFINED AS AN EASILY CRUMBLED OR LOOSELY COMPACTED CONDITION WHEREBY THE ROOT STRUCTURE OF NEWLY PLANTED MATERIAL WILL BE ALLOWED TO SPREAD UNIMPEDED.
10. APPROXIMATE PLANT QUANTITIES ARE PROVIDED IN THE LEGEND FOR CONVENIENCE ONLY. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE CORRECT QUANTITY OF PLANT MATERIAL REGARDLESS OF THE QUANTITIES INDICATED IN THE LEGEND.
11. PROVIDE WEED CONTROL PER SPECIFICATIONS.
12. PROVIDE AGRICULTURAL SUITABILITY AND FERTILITY TESTS. LANDSCAPE CONTRACTOR SHALL INCORPORATE ALL SOILS LAB RECOMMENDATIONS. FOR BIDDING PURPOSES, ASSUME THE FOLLOWING:
    AMEND TOPSOIL TO 6" DEPTH WITH:
    A.) 4 CUBIC YARDS NITROLIZED SOIL AMENDMENT
    B.) 15 LBS. 6–20–20 COMMERCIAL FERTILIZER
    C.) 15 LBS AGRICULTURAL GYPSUM
    D.) 10 LBS GRO POWER PLUS SOIL CONDITIONER OR APPROVED EQUAL
    PREPARE ALL BACKFILL SOIL AS RECOMMENDED BUT NO LESS PER CUBIC YARD THAN AS FOLLOWS:
    A.) 6–20–20 FERTILIZER
    B.) 4/5 CUBIC YARD SCREENED TOPSOIL
    C.) 1/5 CUBIC YARD NITROLIZED SOIL AMENDMENT
    D.) 1 LBS ORGANIC GYPSUM
    E.) 2 LBS GRO POWER PLUS SOIL CONDITIONER OR APPROVED EQUAL
13. FOR SOILS LESS THAN 6% ORGANIC MATTER IN THE TOP 6 INCHES OF SOIL, COMPOST AT A RATE OF A MINIMUM OF FOUR CUBIC YARDS PER 1,000 SQUARE FEET OF PERMEABLE AREA SHALL BE INCORPORATED TO A DEPTH OF SIX INCHES INTO THE SOIL.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL PLANT MATERIAL AND IRRIGATION SYSTEMS PROPOSED AND EXISTING–TO–REMAIN FOR A PERIOD OF 90–DAYS AFTER COMPLETION OF CONSTRUCTION. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE EXISTING AND PROPOSED PLANT MATERIAL FOR A ONE–YEAR PERIOD STARTING AT FINAL ACCEPTANCE OF THE IMPROVEMENTS. DURING THIS PERIOD THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ANY DEAD OR IN–DECLINE PLANT MATERIAL OR DAMAGED IRRIGATION COMPONENTS IN–KIND.

I HAVE COMPLIED WITH THE CRITERIA OF THE WATER EFFICIENT LANDSCAPE ORDINANCE AND APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE LANDSCAPE CONCEPT DESIGN.

MATTHEW J. MORGAN, PLA 6256

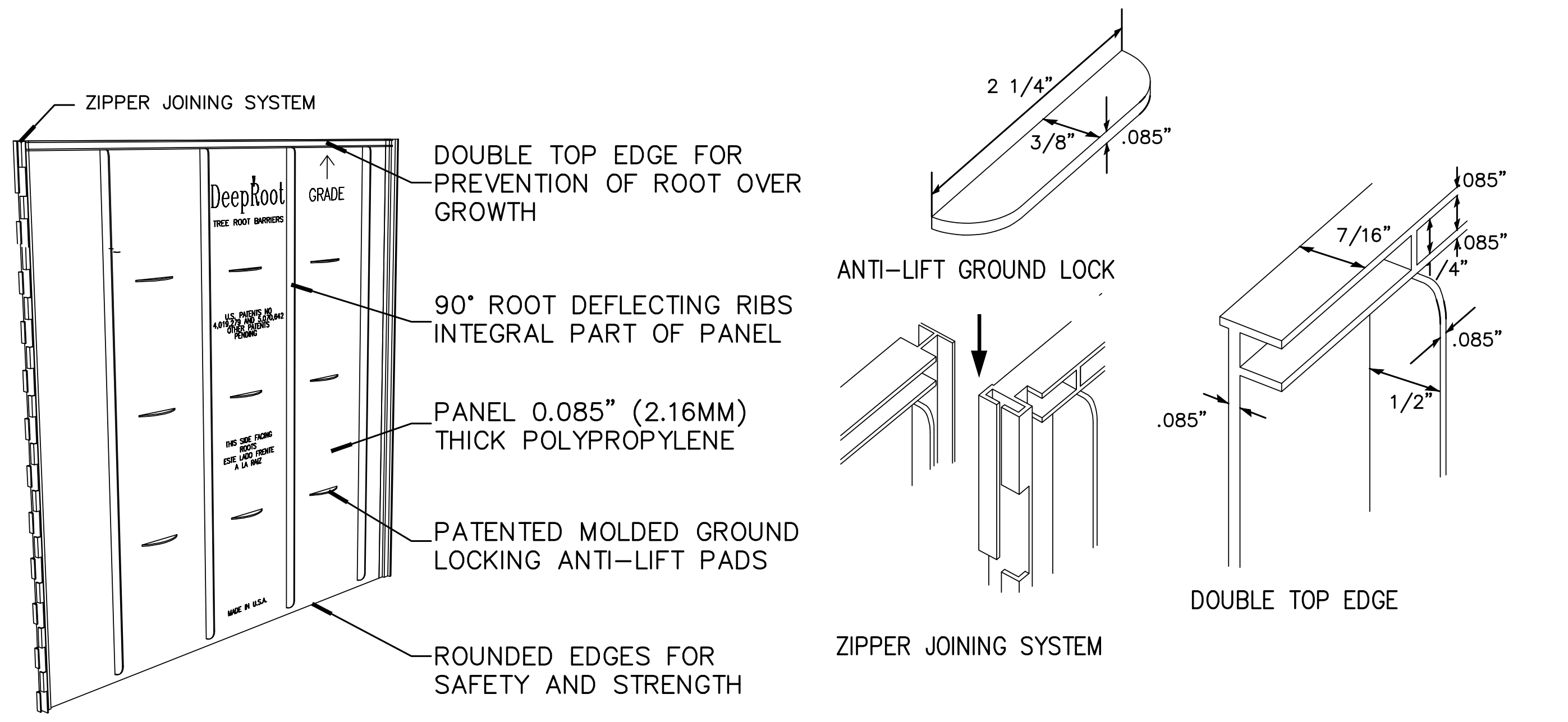
SPECIFIED TREE ROOT BARRIERS ARE A MECHANICAL BARRIER AND ROOT DEFLECTOR TO PREVENT TREE ROOTS FROM DAMAGING HARDSCAPES AND LANDSCAPES. ASSEMBLED IN 2' LONG MODULES LINEAR APPLICATIONS DIRECTLY BESIDE A HARDSCAPE ADJACENT TO ONE SIDE OF THE TREES (LINEAR PLANTING STYLE).

A. MATERIALS

1. THE CONTRACTOR SHALL FURNISH AND INSTALL TREE ROOT BARRIERS AS SPECIFIED. THE TREE ROOT BARRIERS SHALL BE PRODUCT # UB 48–2 AS MANUFACTURED BY DEEP ROOT PARTNERS, L.P. 530 WASHINGTON STREET, SAN FRANCISCO, CA 94111 (800–458–7668), OR APPROVED EQUAL. THE BARRIER SHALL BE BLACK, INJECTION MOLDED PANELS, OF 0.085" WALL THICKNESS IN MODULES 24" LONG BY 48" DEEP; MANUFACTURED WITH A MINIMUM 50% POST CONSUMER RECYCLED POLYPROPYLENE PLASTIC WITH ADDED ULTRAVIOLET INHIBITORS; RECYCLABLE. EACH PANEL SHALL HAVE:

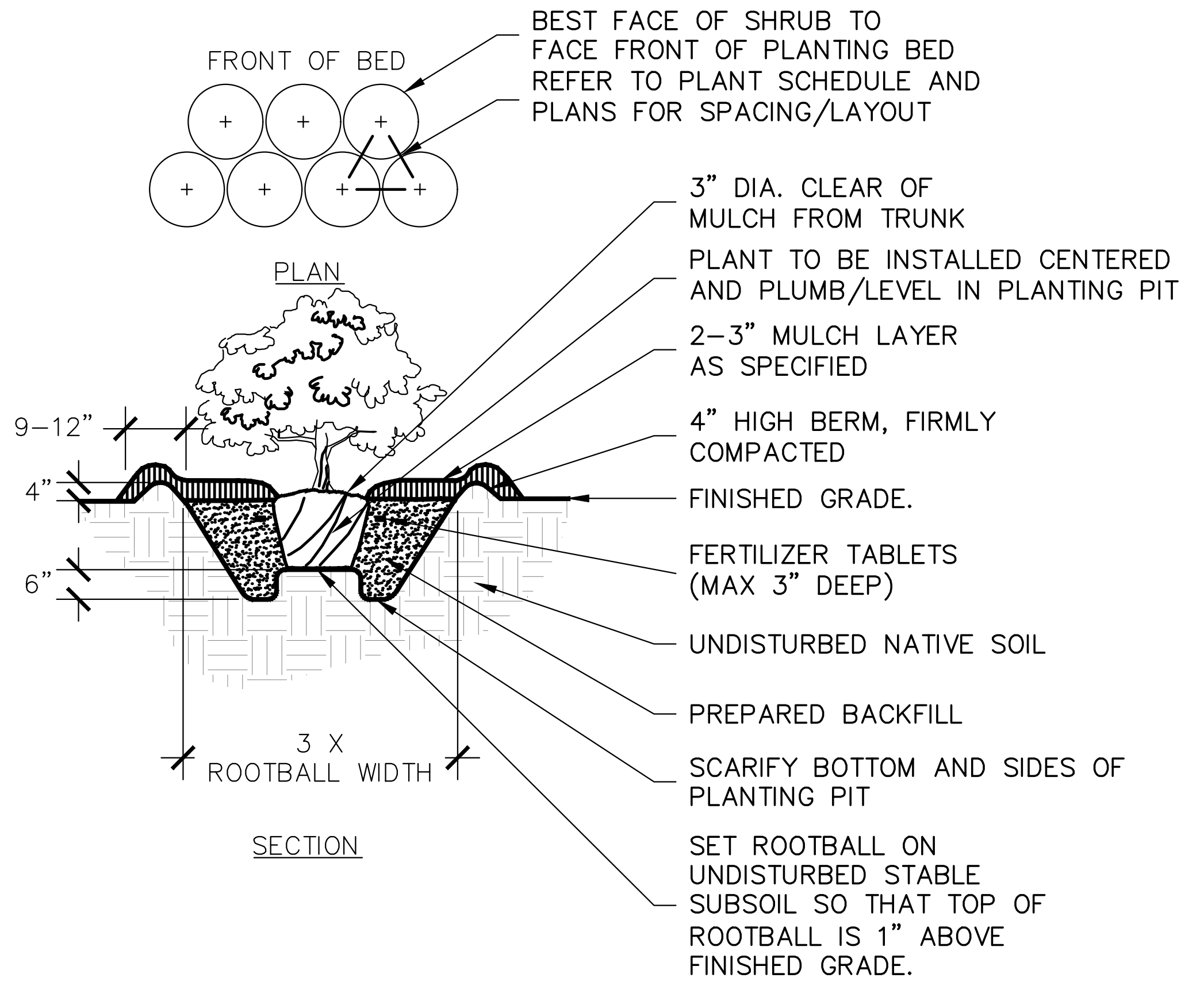
B. CONSTRUCTION AND INSTALLATION

1. THE CONTRACTOR SHALL INSTALL THE TREE ROOT BARRIERS WITH THE REQUIRED NUMBER OF PANELS FOR THE LENGTH SHOWN AND IN THE MANNER SHOWN ON THE DRAWINGS. ROOT BARRIER SHALL EXTEND 10' IN EACH DIRECTION FROM THE TRUNK OF THE TREE. VERTICAL ROOT DEFLECTING RIBS SHALL BE FACING INWARDS TO THE ROOT BALL AND THE TOP OF THE DOUBLE EDGE SHALL BE 1/2" ABOVE GRADE. EACH OF THE REQUIRED NUMBER OF PANELS SHALL BE CONNECTED IN A LINEAR FASHION AND PLACED ALONG THE ADJACENT HARDSCAPE.
2. EXCAVATION AND SOIL PREPARATION SHALL CONFORM TO THE DRAWINGS
3. THE TREE ROOT BARRIERS SHALL BE BACKFILLED ON THE OUTSIDE WITH 3/4" TO 1 1/2" GRAVEL OR CRUSHED ROCK AS SHOWN ON THE DRAWINGS. NO GRAVEL BACKFILL IS REQUIRED FOR A LINEAR PLANTING



A 24" DEEP ROOT TREE BARRIER

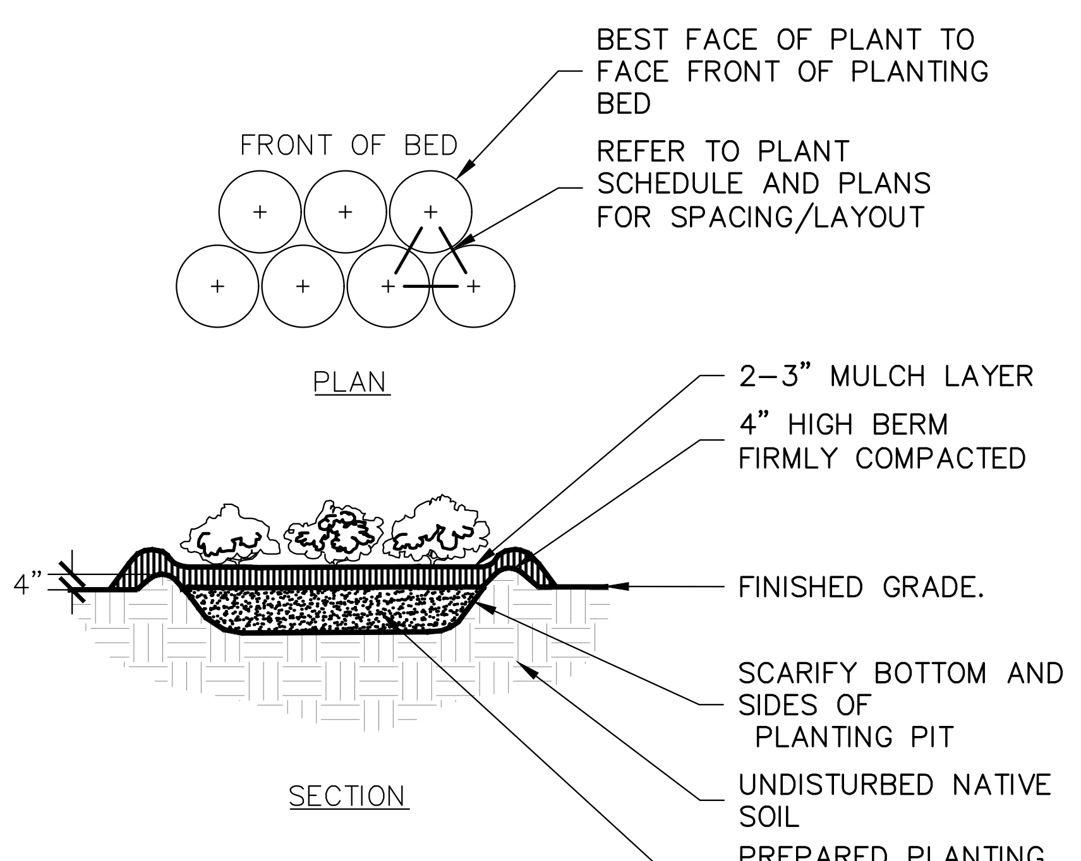
NTS



NOTES:
1. REFERENCE PLANTING SPECIFICATIONS/ SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.
2. WHEN SHRUBS MASSED WITH GROUNDCOVER BEDS, ENTIRE BED TO BE AMENDED.
3. WHEN SHRUBS ARE USED IN MASSES, PRUNE ALL SHRUBS TO ACHIEVE UNIFORM MASS/HEIGHT

B TYPICAL SHRUB PLANTING

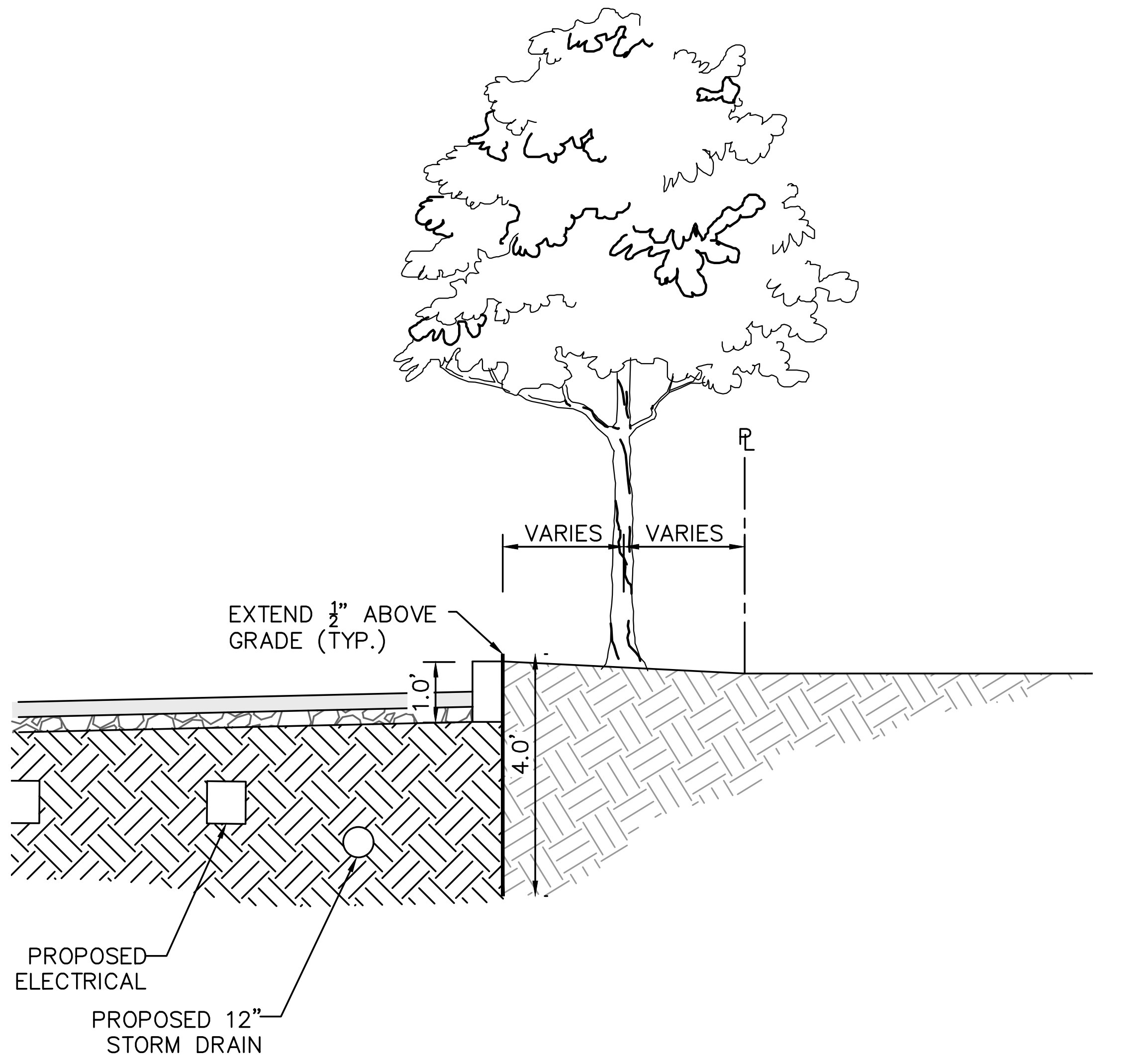
NTS



NOTES:
1. REFERENCE PLANTING SPECIFICATIONS/ SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

C TYPICAL GROUNDCOVER PLANTING

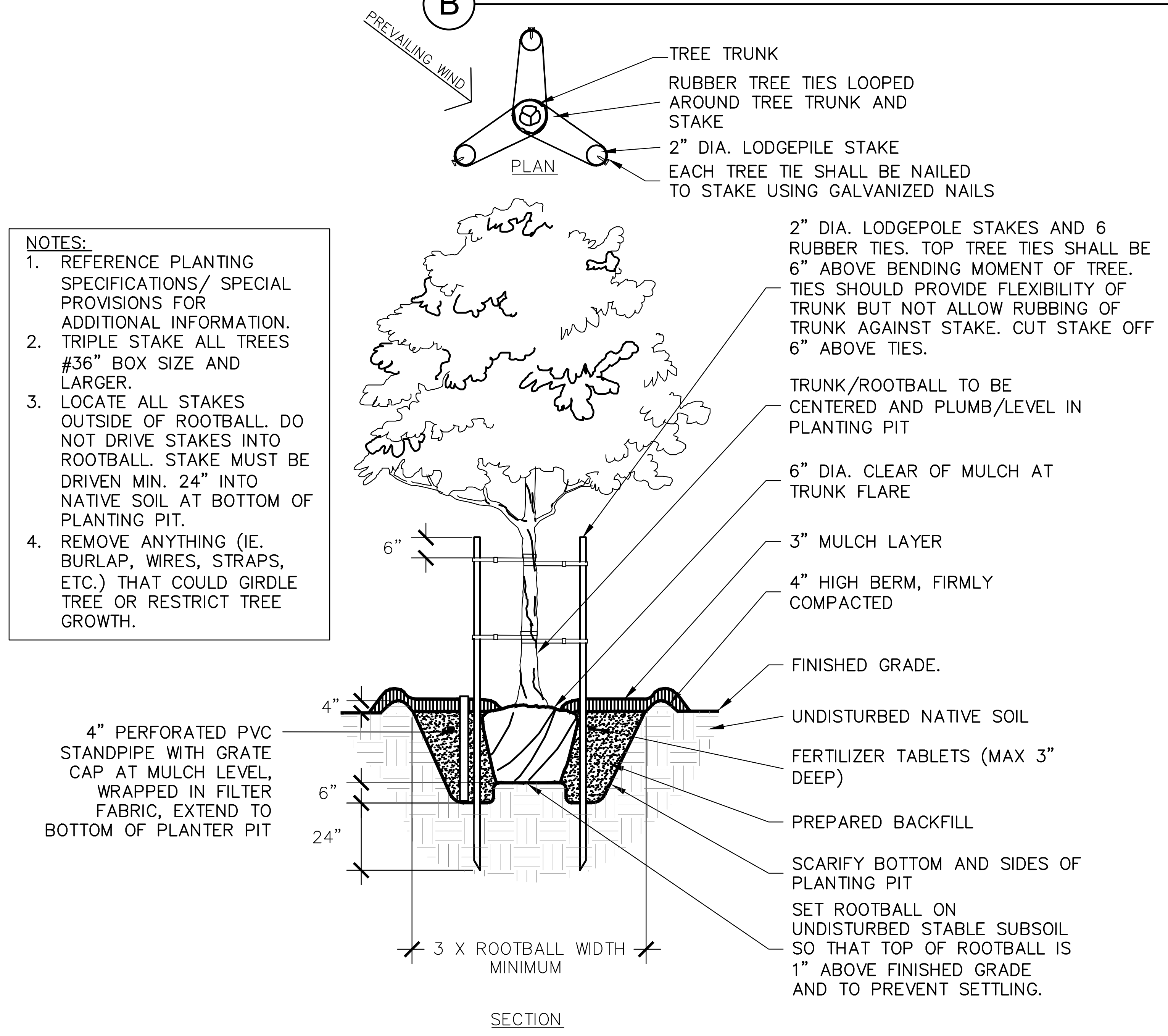
NTS



D TYPICAL SECTION (ROOT BARRIER AT UTILITY EASEMENTS)

NTS

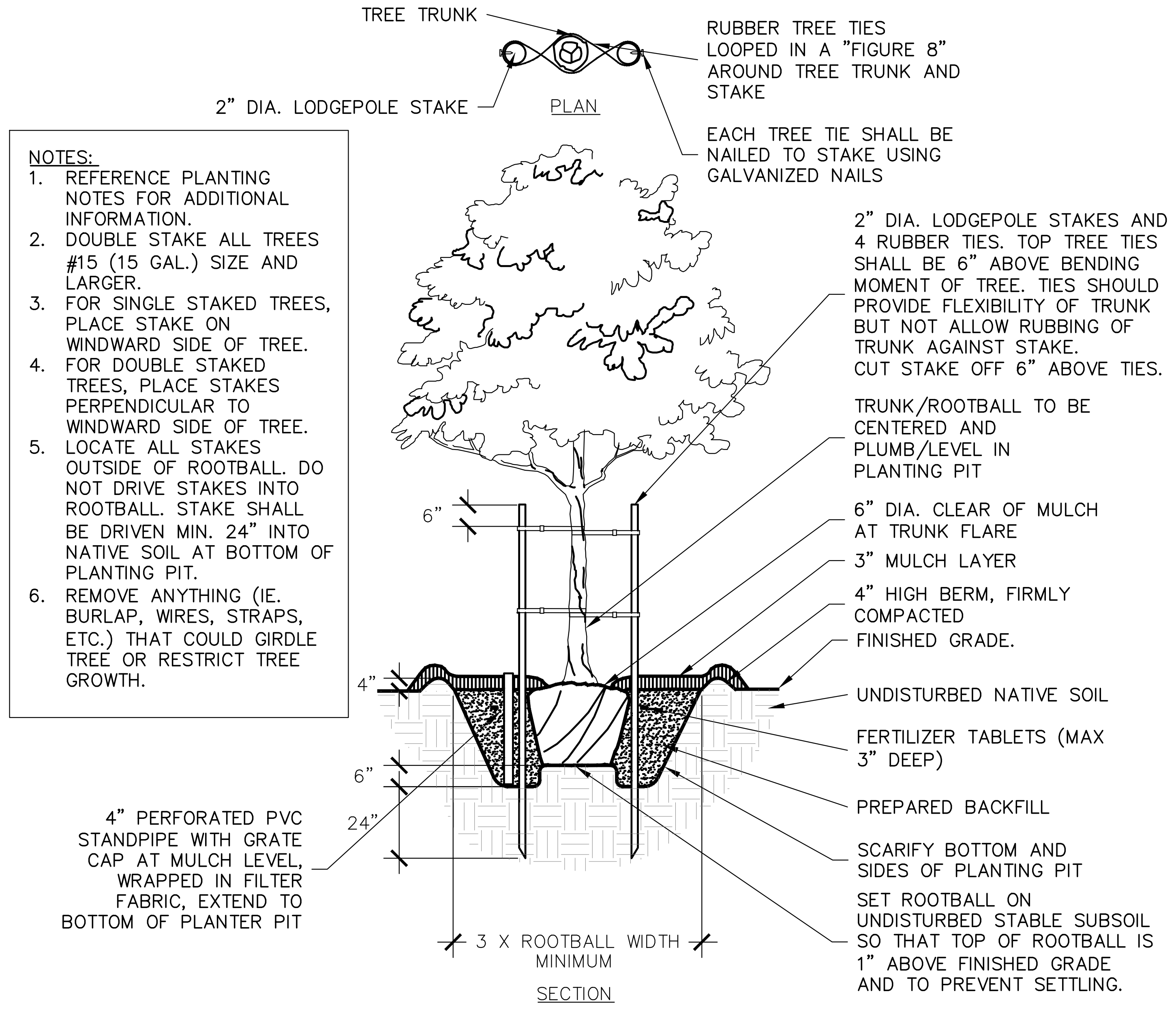
NOTES:
1. REFERENCE PLANTING SPECIFICATIONS/ SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.
2. TRIPLE STAKE ALL TREES #36" BOX SIZE AND LARGER.
3. LOCATE ALL STAKES OUTSIDE OF ROOTBALL. DO NOT DRIVE STAKES INTO ROOTBALL. STAKE MUST BE DRIVEN MIN. 24" INTO NATIVE SOIL AT BOTTOM OF PLANTING PIT.
4. REMOVE ANYTHING (IE. BURLAP, WIRES, STRAPS, ETC.) THAT COULD GIRDLE TREE OR RESTRICT TREE GROWTH.



E HIGH WIND EXPOSURE TREE PLANTING

NTS

NOTES:
1. REFERENCE PLANTING NOTES FOR ADDITIONAL INFORMATION.
2. DOUBLE STAKE ALL TREES #15 (15 GAL.) SIZE AND LARGER.
3. FOR SINGLE STAKED TREES, PLACE STAKE ON WINDWARD SIDE OF TREE.
4. FOR DOUBLE STAKED TREES, PLACE STAKES PERPENDICULAR TO WINDWARD SIDE OF TREE.
5. LOCATE ALL STAKES OUTSIDE OF ROOTBALL. DO NOT DRIVE STAKES INTO ROOTBALL. STAKE SHALL BE DRIVEN MIN. 24" INTO NATIVE SOIL AT BOTTOM OF PLANTING PIT.
6. REMOVE ANYTHING (IE. BURLAP, WIRES, STRAPS, ETC.) THAT COULD GIRDLE TREE OR RESTRICT TREE GROWTH.



F TYPICAL TREE PLANTING (UP TO 24" BOX)

NTS

DIGITAL REALTY
Data Center Solutions

2825 LAFAYETTE STREET
SANTA CLARA, CA
95050-2627

MEP ENGINEER
ESD
Environmental Systems Design, Inc.
233 South Wacker Drive, Suite 5300
Chicago, Illinois 60606
312.372.1200
www.esdglobal.com
DPR License No. 184-000892 IL

ARCHITECT
HKS

STRUCTURAL ENGINEER
PEOPLES ASSOCIATES
STRUCTURAL ENGINEERS

CIVIL ENGINEER
Kimley»Horn

1	PCC ISSUANCE	10.07.19
NO.	RECORD	DATE

DLR DATA CENTER
2825 LAFAYETTE STREET
SANTA CLARA, CA, 95050

PRELIMINARY LANDSCAPE NOTES AND DETAILS

PRINCIPAL IN CHARGE: MC
PROJECT NUMBER: 197250001
PROJECT MANAGER: CM
DATE: 10/04/2019
PROJECT ENGINEER: MJ
SHEET NUMBER: L2.2
SCALE: AS SHOWN

Appendix C

Letters to Tribes

DAVID J. POWERS
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS & PLANNERS

November 8, 2019

Monica Arellano
Muwekma Ohlone Indian Tribe of the SF Bay Area
20885 Redwood Road, Suite 232
Castro Valley, CA 94546
VIA Email to: marellano@muwekma.org

RE: Digital Realty Lafayette Small Power Plant Project, City of Santa Clara; San José West USGS Quadrangle, Santa Clara County

Dear Ms. Arellano:

David J, Powers & Associates, Inc. (DJP&A) has been contracted by Digital Realty for the Lafayette Data Center Small Power Plant Exemption Project, located in the City of Santa Clara.

Holman & Associates, Inc, under contract with DJP&A, has completed a Records Search with the Northwest Information Center (NWIC) of the proposed project area and a 1/4-mile radius to identify known cultural resource sites and previous surveys in or near the project area. The project is located in Township 6 South, Range 1 West, Section 1 of the San José West 7.5' Topographic Map (1980).

DJP&A contacted the Native American Heritage Commission (NAHC) on October 22, 2019 with a request that they search their Sacred Lands File (SLF) for the project vicinity. On November 4, 2019 a response from Nancy Gonzales-Lopez of the NAHC stated, a record search of the NAHC SLF was completed for the information submitted for the above referenced project. The results were negative.

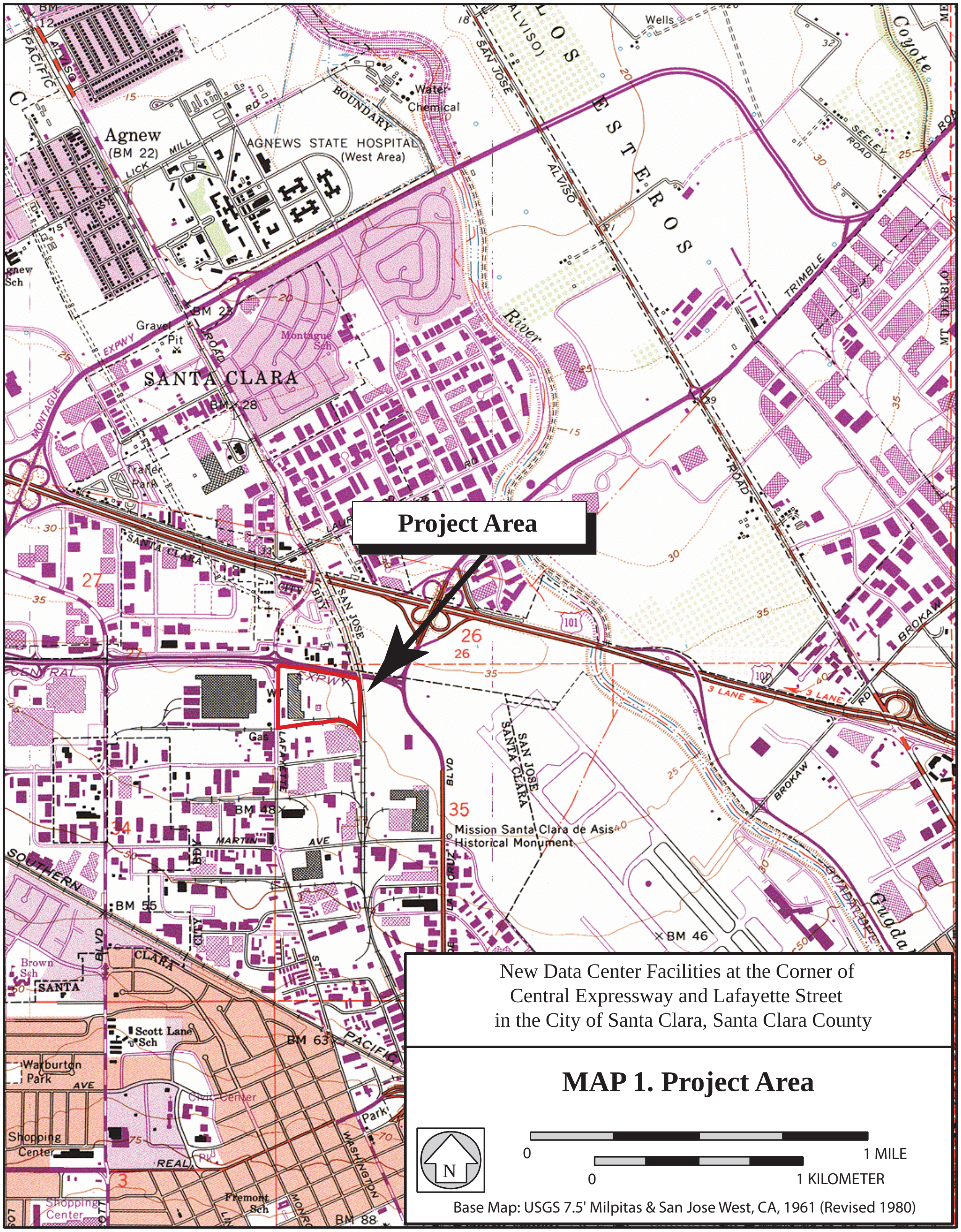
We would appreciate receiving any comments, concerns, or information you wish to share regarding cultural resources or sacred sites within the immediate project area. If you could provide your response in writing, at your earliest convenience, to the address below, we will make sure the relevant information is considered in preparing our report. Should you have any questions, I can be reached by e-mail at jwright@davidjpowers.com or by telephone at (408) 454-3434.

Thank you again for your assistance.

Sincerely,

Julie Wright

Julie Wright
Senior Project Manager
Attachment: Map



New Data Center Facilities at the Corner of
Central Expressway and Lafayette Street
in the City of Santa Clara, Santa Clara County

MAP 1. Project Area

Base Map: USGS 7.5' Milpitas & San Jose West, CA, 1961 (Revised 1980)

Aerial Source: Google Earth Pro, Apr. 30, 2019. Photo Date: Aug. 2018

AERIAL PHOTOGRAPH AND SURROUNDING LAND USES

FIGURE 3

DAVID J. POWERS
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS & PLANNERS

November 8, 2019

Irenne Zwierlein
Amah Mutsun Tribal Band of Mission San Juan Bautista
789 Canada Road
Woodside, CA 94062
VIA Email to: amahmutsuntribal@gmail.com

RE: Digital Realty Lafayette Small Power Plant Project, City of Santa Clara; San José West USGS Quadrangle, Santa Clara County

Dear Ms. Zwierlein:

David J, Powers & Associates, Inc. (DJP&A) has been contracted by Digital Realty for the Lafayette Data Center Small Power Plant Exemption Project, located in the City of Santa Clara.

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Thank you again for your assistance.

Sincerely,

Julie Wright

Julie Wright
Senior Project Manager
Attachment: Map

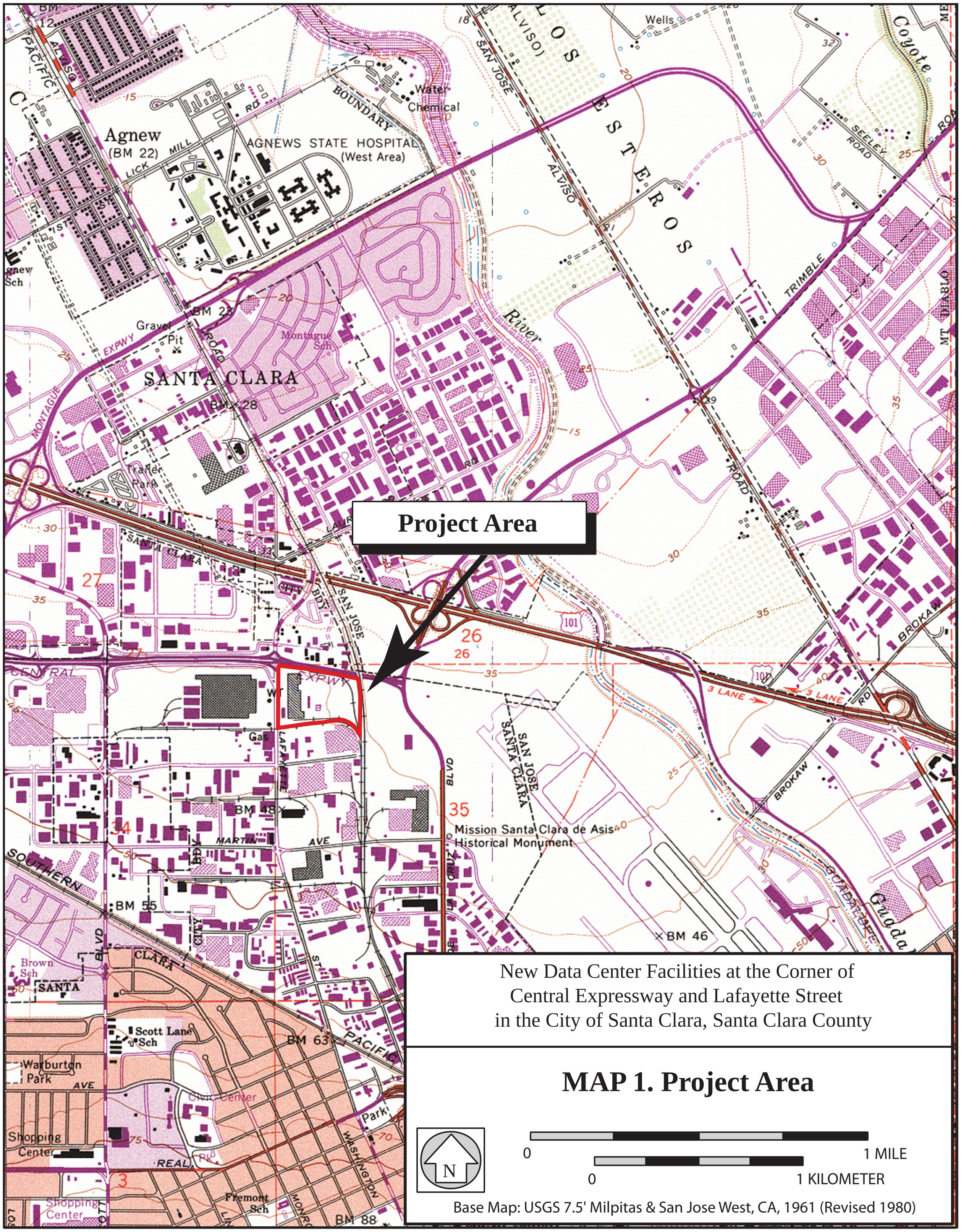

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FIGURE 3

DAVID J. POWERS
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS & PLANNERS

November 8, 2019

Valentin Lopez
Amah Mutsun Tribal Band
P.O. Box 5272
Galt, CA 95632
VIA Email to: vlopez@amahmutsun.org

RE: Digital Realty Lafayette Small Power Plant Project, City of Santa Clara; San José West USGS Quadrangle, Santa Clara County

Dear Mr. Lopez:

David J, Powers & Associates, Inc. (DJP&A) has been contracted by Digital Realty for the Lafayette Data Center Small Power Plant Exemption Project, located in the City of Santa Clara.

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Sincerely,

Julie Wright

Julie Wright
Senior Project Manager
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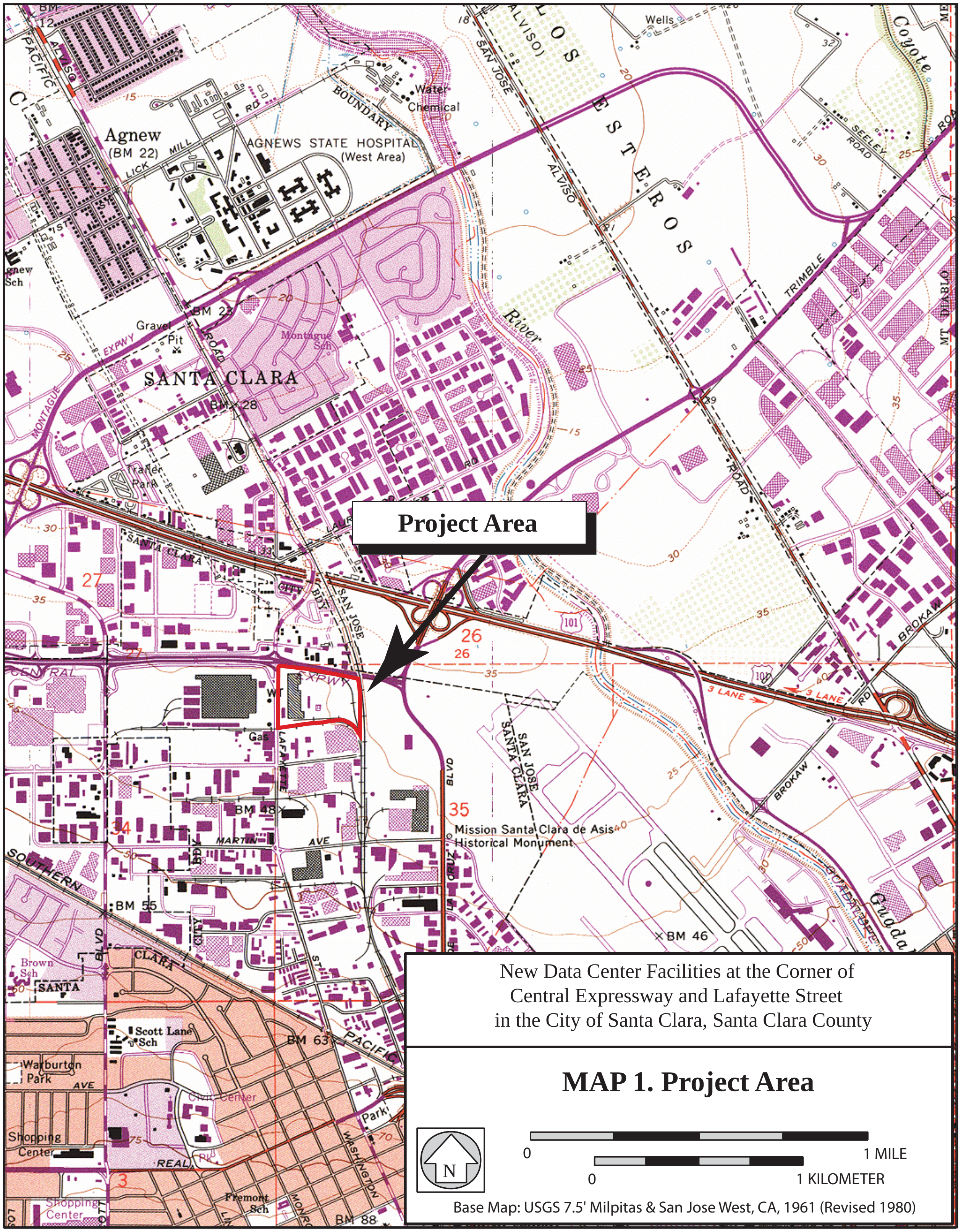

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AERIAL PHOTOGRAPH AND SURROUNDING LAND USES

FIGURE 3

DAVID J. POWERS
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS & PLANNERS

November 8, 2019

Ann Marie Sayers
Indian Canyon Mutsun Band of Costanoan
P.O. Box 28
Hollister, CA 95024
VIA Email to: ams@indiancanyon.org

RE: Digital Realty Lafayette Small Power Plant Project, City of Santa Clara; San José West USGS Quadrangle, Santa Clara County

Dear Ms. Sayers:

David J, Powers & Associates, Inc. (DJP&A) has been contracted by Digital Realty for the Lafayette Data Center Small Power Plant Exemption Project, located in the City of Santa Clara.

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Julie Wright
Senior Project Manager
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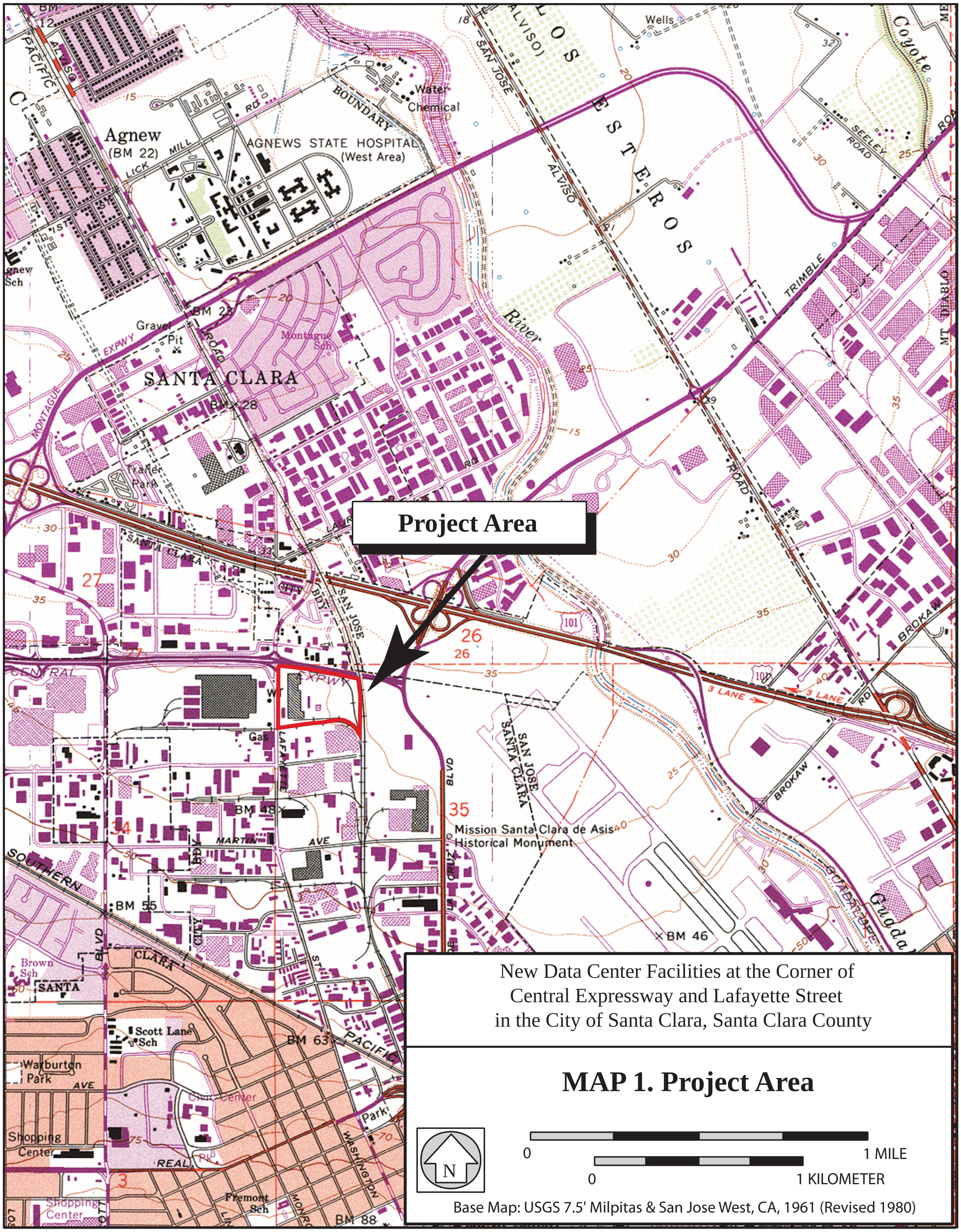

New Data Center Facilities at the Corner of
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in the City of Santa Clara, Santa Clara County

MAP 1. Project Area

N

0 1 MILE

0 1 KILOMETER

Base Map: USGS 7.5' Milpitas & San Jose West, CA, 1961 (Revised 1980)

AERIAL PHOTOGRAPH AND SURROUNDING LAND USES

FIGURE 3

DAVID J. POWERS
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS & PLANNERS

November 8, 2019

Andrew Galvan
The Ohlone Indian Tribe
P.O. Box 3388
Fremont, CA 94539
VIA Email to: chochenyo@aol.com

RE: Digital Realty Lafayette Small Power Plant Project, City of Santa Clara; San José West USGS Quadrangle, Santa Clara County

Dear Mr. Galvan:

David J, Powers & Associates, Inc. (DJP&A) has been contracted by Digital Realty for the Lafayette Data Center Small Power Plant Exemption Project, located in the City of Santa Clara.

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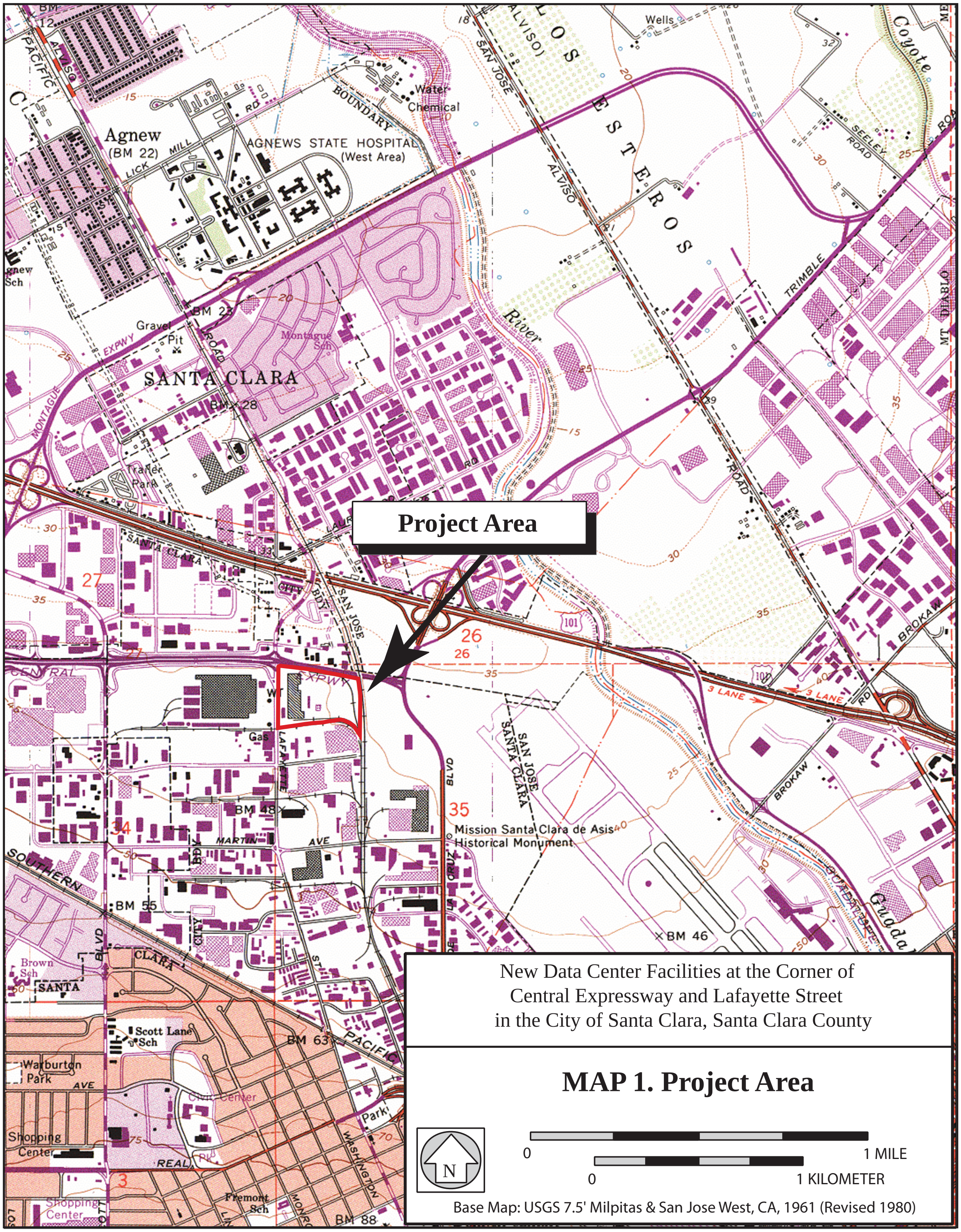

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FIGURE 3

DAVID J. POWERS
& ASSOCIATES, INC.
ENVIRONMENTAL CONSULTANTS & PLANNERS

November 8, 2019

Katherine Perez
North Valley Yokuts Tribe
P.O. Box 717
Linden, CA 95236
VIA Email to: canutes@verizon.net

RE: Digital Realty Lafayette Small Power Plant Project, City of Santa Clara; San José West USGS Quadrangle, Santa Clara County

Dear Ms. Perez:

David J, Powers & Associates, Inc. (DJP&A) has been contracted by Digital Realty for the Lafayette Data Center Small Power Plant Exemption Project, located in the City of Santa Clara.

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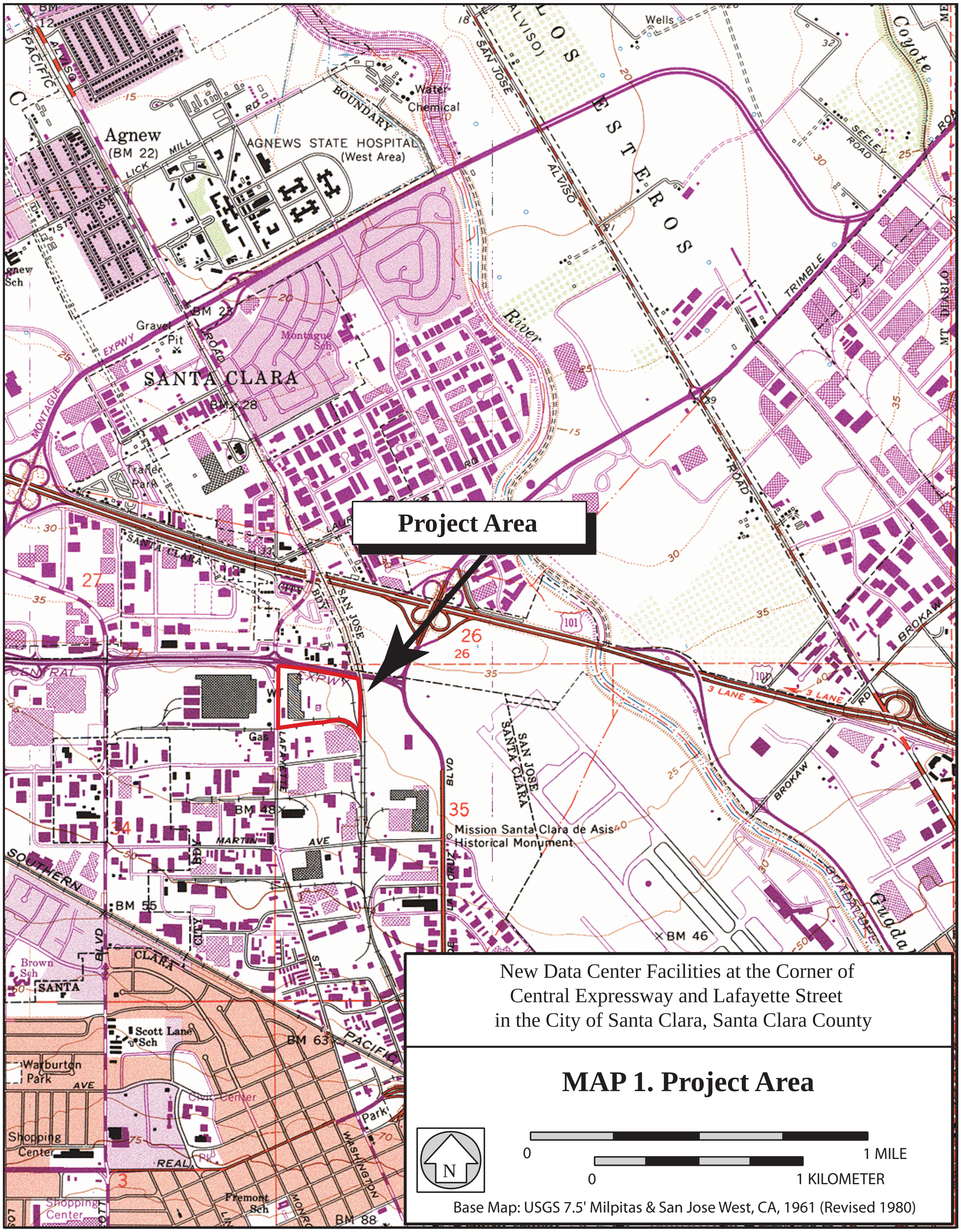

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