ENVIRONMENTAL NOISE & VIBRATION ASSESSMENT

Gilroy Backup Generating Facility
Amazon Data Services, Inc.
Gilroy, CA

Prepared By:

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1. EXECUTIVE SUMMARY

Trinity Consultants, Inc. (Trinity) prepared an environmental noise and vibration assessment to evaluate potential noise and vibration impacts associated with the proposed construction and operation of the Gilroy Backup Generating Facility (GBGF) and the Gilroy Data Center (GDC) (the Project) proposed by Amazon Data Services, Inc., wholly owned by Amazon.com, Inc. (the Applicant). This assessment report supports the Applicant's application for a Small Power Plant Exemption (SPPE) pursuant to Public Resources Code Section 25541 and Section 1934 et seq. of the Commission regulations for the GBGF. The GBGF will be located within the jurisdiction of the City of Gilroy, as such, this assessment was prepared in accordance with City of Gilroy guidelines and the California Natural Resources Agency's California Environmental Quality Act (CEQA) Guidelines.

This report assesses the noise and vibration impacts resulting from the construction and operation of the Project. The site of the proposed Project is an undeveloped parcel generally located east of Arroyo Circle and between the two segments of Camino Arroyo within the City of Gilroy, APN 841-69-039. The parcel is approximately 56 acres in size and up until recently was in active agricultural production and now awaiting industrial development. The Applicant proposes to construct two, data center buildings totaling approximately 438,500 square feet (sf). The site is currently vacant and zoned for industrial use. The construction would be carried out in two phases. Phase I would consist of an approximately 218,000 sf data center building on the southwestern portion of the site. Phase II would consist of a second approximately 218,000 sf data center building on the northeastern portion of the site. The Applicant also proposed to construct a security building on the northern end of the property and a substation in the southwestern portion of the site during Phase I of construction.

Phase I will include the installation of 26 critical backup generators to support the GDC western building, one life safety generator to support the GDC western building and one security building generator. Phase II will include the installation of 24 critical backup generators and one life safety generator to support the GDC eastern building. Noise and vibration emissions from the construction of the Project will result from demolition activities, ground preparation, grading activities, building erection, parking lot construction activities, and use of onsite construction equipment. The main noise sources involved in the operational phase will be rooftop mechanical equipment such as exhaust fans, air handling units and cooling equipment.

Trinity obtained equipment sound data from the manufacturer specifications for the rooftop equipment provided by the Applicant. Sound data for construction equipment was obtained from the U.S Department of Transportation – Federal Highway Administration – Roadway Construction Noise Model User Guide. Sound levels were entered into Cadna-A acoustic modelling software to determine the noise impacts at sensitive receptors located near the GBGF. The worst-case day-night average sound levels (Ldn) at sensitive receptors were determined. Noise impacts were assessed against the Ldn limits provided in the City of Gilroy Noise Policy – General Plan Section: 26, for each land use category. Trinity also completed an ambient noise monitoring survey to document existing noise conditions.

Based on the results of the acoustic assessment for the operational phase of the Project, it can be concluded that the noise impacts at the sensitive points of reception are below the applicable criteria. Noise mitigation measures are therefore not required for the operational phase of the Project. However, during the construction phase, Project Design Measures Noise-1 and Noise-2 are required in the form of temporary sound barriers or utilization of auger cast piles instead of driven piles during the concrete/foundation construction stage. As such, the Project would result in a *less than significant impact with mitigation incorporated.*

2. INTRODUCTION

Trinity Consultants, Inc. (Trinity) has prepared an environmental noise and vibration assessment, to evaluate potential noise and vibration impacts associated with the proposed construction and operation of the Gilroy Backup Generating Facility (GBGF) and the Gilroy Data Center (GDC) (the Project) proposed by Amazon Data Services, Inc., wholly owned by Amazon.com, Inc. (the Applicant). This assessment report supports the Applicant's application for a Small Power Plant Exemption (SPPE) pursuant to Public Resources Code Section 25541 and Section 1934 et seq. of the Commission regulations for the GBGF. The GBGF will be located within the jurisdiction of the City of Gilroy, as such, this assessment was prepared in accordance with City of Gilroy guidelines and the California Natural Resources Agency's California Environmental Quality Act (CEQA) Guidelines.

This report assesses the noise and vibration impacts resulting from the construction and operation of the proposed Project. The site of the proposed Project is an undeveloped parcel generally located east of Arroyo Circle and between the two segments of Camino Arroyo within the city of Gilroy, APN 841-69-039.

Figure 1 in **Appendix A** shows the proposed Project location and sensitive receptors. The City of Gilroy zoning map was reviewed to identify residential, commercial and industrial zones to apply representative noise criteria for every noise sensitive receptor.

The scope of the acoustic assessment involved the following aspects:

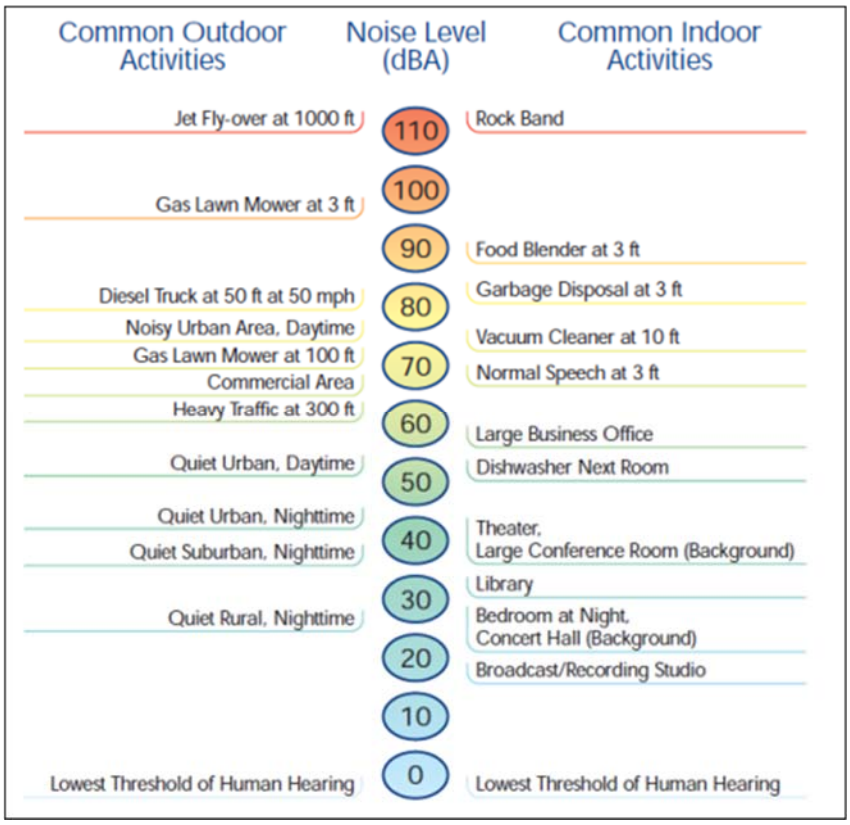
- Collected sound measurements at the current site to quantify the existing ambient sound levels.
- Identified all sources of noise associated with the construction and operational phases of the Project.
- Obtained sound data for the proposed mechanical equipment at the facility from manufacturer data provided by the Applicant.
- Obtained sound data for the proposed construction equipment at the facility from the U.S Department of Transportation – Federal Highway Administration – Roadway Construction Noise Model User Guide.
- Predicted the overall noise impact at sensitive points of reception during the worst-case operating scenarios.
- Assessed whether the noise impacts at the points of reception met the applicable noise limit criteria.

Fundamentals of Environmental Noise

Sound is caused by vibrations that generate waves of minute pressure fluctuations in the surrounding air. Sound levels are typically measured using a logarithmic decibel (dB) scale. Sound that causes disturbance or annoyance, or unwanted sound, is often called "noise." The terms sound and noise are used interchangeably in this analysis.

Human hearing varies in sensitivity for different sound frequencies. The ear is most sensitive to sound frequencies between 800 and 8,000 Hertz (Hz) and is least sensitive to sound frequencies below 400 Hz or above 12,500 Hz. Consequently, several different frequency weighting schemes have been used to approximate the way the human ear responds to noise levels. The "A-weighted" decibel scale (dBA) is the most widely used for this purpose. A list of typical sound levels for example sound sources is presented in **Figure A1** below.

Figure A1 -Sound Levels of Typical noise Sources



Source: Caltrans2014

Varying sound levels often are described in terms of an equivalent constant decibel level. Equivalent sound levels (Leq) are not a simple averaging of decibel values but are based on the cumulative acoustical energy associated with the variable sound levels. Leq values sometimes are referred to as energy-averaged sound levels. As a consequence of the calculation procedure, high dB events contribute more to the Leq value than do low dB events. Leq values are used to develop single-value descriptions of average sound exposure over various periods of time. The Leq data used for average sound exposure descriptors are generally based on A-weighted sound level measurements (expressed as dBA), which include adjustments to the unweighted values to account for the variation in human hearing sensitivity across the audible frequencies.

Certain statistical noise values are sometimes used to describe the allowable sound levels, or limits, at noise-sensitive areas (NSAs). The L1, L10, and L50 statistical noise level descriptors are the noise levels that are equaled or exceeded a stated percentage of the time during a given hour. For example, an L10 = 60 dBA implies that in any hour of the day, a noise level of 60 dBA is equaled or exceeded 10 percent of the time, or for 6 minutes. The L50, the noise level exceeded 50 percent of the time, is commonly known as the "median noise level."

Sound intensity attenuates with distance as it propagates over a larger area, generally in a spherical spreading pattern, away from a point source where the sound waves were generated. Generally speaking, the sound pressure level emitted from a point source decreases by approximately 6 dBA for each doubling of distance from the source. Sound emitted from a line of point sources attenuates in a cylindrical spreading pattern and decreases approximately 3 dBA for each doubling of distance from the source.

3. SITE DESCRIPTION

The GBGF will be a backup power generating facility to ensure the power supply to the GDC's computer servers remains uninterrupted when utility power is unavailable. The GBGF will consist of 50 critical backup generators arranged in two generation yards, each designed to serve one of the two data center buildings that make up the GDC. Additionally, each data center building will be equipped with a life safety generator to support fire suppression and other emergency operations. One generator will support the security building when utility power is unavailable. In total, the GBGF will encompass 53 emergency generators.

The site of the proposed Project is an undeveloped parcel generally located east of Arroyo Circle and between the two segments of Camino Arroyo within the city of Gilroy, APN, 841-69-039. The parcel is approximately 56 acres in size and up until recently was in active agricultural production and now awaiting industrial development. The Applicant proposes to construct two, data center buildings totaling 438,500 square feet (sf). The site is currently vacant and zoned for industrial use. The construction would be carried out in two phases. Phase I would consist of an approximately 218,000 sf data center building on the southwestern portion of the site. Phase II would consist of a second approximately 218,000 sf data center building on the northeastern portion of the site. The Applicant also proposes to construct a security building on the northern end of the property and a substation in the southwestern portion of the site during Phase I of construction.

The site is located in a general industrial zone (M-2). The lands immediately surrounding the site to the south and north are also zoned for general industrial use. Further north are lands zoned for commercial use (C-3). The site is located east of Highway 101 and north of Gilman Road. The land west of Highway 101 is zoned for commercial and residential uses.

4. APPLICABLE NOISE LIMITS

The City of Gilroy zoning ordinance (Chapter 30, Section 41.31) and City of Gilroy Noise Policy (General Plan Section 26) contains quantitative noise limits for noise sources within the City of Gilroy based on the land use of the property receiving the noise. The noise ordinance establishes acceptable exterior noise levels and exemptions from the ordinance for special activities, such as emergency work. **Table 1** below summarizes the outdoor sound level limits.

Table 1 – City of Gilroy Noise Policy

Land Use Category	Maximum Outdoor L_{dn} (dBA)
Residential	60
Commercial	65
Industrial	76

As shown in **Table 1**, different sound level limits are provided for various land use categories. The City of Gilroy zoning map was reviewed to identify land uses are the proposed site to assess noise impacts appropriately. **Appendix B** provides the City of Gilroy zoning map. **Table 2** summarizes the identified points of reception (POR) for this assessment.

Table 2 – List of Sensitive Points of Noise Reception

POR ID	POR Description	Zoning Classification	Applicable Outdoor Noise Criteria L_{dn} (dBA)
R1	Residential Detached Dwelling	Residential	60
R2			
R3			
I1	Renz & Renz Investment & Commercial Brokerage Red Roots Baby Nutritional Care Williams Dental Lab	Industrial	76
I2	Kaiser Permanente Gilroy Medical Offices		
I3	Specialty Truck Parts		
I4	USA Sports Gilroy		
I5	Gilroy Unified School District		
I6	Ruggeri-Jensen-Azar		
I7	Spectrum		
I8	Morgan Hill Plastics Inc. of Gilroy		
C1	See Grins RV Sales	Commercial	65
C2	Multiple Retail Stores		
C3	Multiple Retail Stores		
C4	Days Inn by Wyndham Gilroy		
C5	Gilroy Healthcare and Rehabilitation Center		

5. NOISE SOURCE SUMMARY

5.1 Operational Phase

The proposed Project would include two generator yards located in the middle of the two proposed GDC buildings. The generator yard would include fifty (50) 3,634 brake horsepower (bhp) critical backup generators and two (2) 900 bhp life safety generators. One (1) 280 bhp security building generator will also be located at the northern portion of the proposed site. Each generator would be enclosed and only tested during daytime hours (defined as 7:00am to 10:00pm).

Various heating, ventilation, and air conditioning (HVAC) equipment would be located on the rooftops of both GDC buildings. Proposed rooftop mechanical equipment includes a total of two-Hundred thirty-eight (238) up-blast exhaust fans, with 124 on the western building (Phase 1) ,114 on the eastern building (Phase 2) and Dedicated Outdoor Units (DOAs).
An electrical distribution substation would be located at the southwestern portion of the site, containing two 112 MVA transformers[1]. Manufacturer specifications including sound power and sound pressure levels were provided by the Applicant and are provided in **Appendix C**. Locations of significant noise sources are shown in **Figure 2** in **Appendix A**.

Other mechanical and electrical equipment located inside the building would not be anticipated to emit audible noise outside. Both GDC buildings would have rooftop parapet walls reaching approximately five feet above the roof. Shielding from the parapet wall would be anticipated to provide additional noise reduction.

Sound power levels were used as input to the acoustic computer model Cadna-A (Computer Aided Noise Abatement). The model is based on ISO Standard 9613-2 "Acoustics – Attenuation of Sound during Propagation Outdoors". The ISO based model accounts for reduction in sound levels due to increased distance and geometrical spreading, air absorption, ground attenuation, and acoustical shielding by intervening structures, topography and brush. The model is considered conservative since it represents atmospheric conditions that promote propagation of sound from source to receiver.

5.2 Construction Phase

Section 16.38 of the City's Municipal Code limits construction activities to be within the hours of 7:00 a.m. and 7:00 p.m. on weekdays and 9:00 a.m. to 7:00 p.m. on Saturdays. No construction is permitted on Sundays or Holidays, which include: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas.

Construction activities for individual projects are typically carried out in stages. During each stage of construction, there would be a different mix of equipment operating, and noise levels would vary by stage and vary within stages, based on the amount of equipment in operation and the location at which the equipment is operating. Construction equipment used for each construction phase of the Project and the typical sound levels at a distance of 50 feet are shown in **Table 3**. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain can provide an additional 5 to 10 dBA noise reduction at distant receptors.

[1] The Applicant requested the assessment of either two 112 MVA or four 60 MVA transformers. Trinity selected the two 112 MVA transformer scenario due to more conservative sound impacts.

Project construction for the Phase I building is scheduled to begin in April 2021. Phase I exterior construction is expected to take approximately 11 months. Additional Phase I interior construction activities are expected to take approximately 25 months following exterior construction. Phase II construction is scheduled to begin in November 2023. Phase II exterior construction is expected to take approximately 10 months. Additional Phase II interior construction activities are expected to take approximately 30 months following exterior construction. **Table 3** provides the construction activities associated with Phase I and Phase II buildings, the corresponding equipment utilized, and the equipment sound levels. Sound levels were obtained from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM).

Table 3 – Construction Phases, Equipment and Sound Levels

Construction Activity	Equipment	Quantity of Equipment	Sound Pressure @ 50 feet Leq (dBA)	Sound Power Level (dBA)
Demolition	Concrete/Industrial Saws	1	90	122
	Scrapers	4	84	116
	Excavators	4	81	113
	Rubber-Tired Dozers	1	82	114
	Tractors/Loaders/Backhoes	4	84	116
Site Preparation & Grading	Scrapers	3	84	116
	Excavators	3	81	113
	Graders	3	85	117
	Rubber Tired Dozers	3	82	114
	Tractors/Loaders/Backhoes	3	84	116
	Dump & Delivery Trucks	4	76	108
	Rollers	3	80	112
Concrete/Foundation	Bore/Drill Rigs – Auger cast Piles	4	84	116
	Bore/Drill Rig - Driven Piles	4	101	133
	Concrete Mixer	4	80	112
	Concrete Pump	4	81	113
	Concrete Vibrator	4	80	112
	Excavators	3	81	113
	Tractors/Loaders/Backhoes	3	79	111
Structural/Building Exterior/Roof	Cranes	2	81	113
	Forklifts	3	NA	85
	Gradall	3	83	115
	Generator Sets	2	81	113
	Tractors/Loaders/Backhoes	1	79	111
	Welders	4	74	106
	Concrete Mixer	4	80	112
	Concrete Pump	4	81	113
	Concrete Vibrator	4	80	112
Site Work & Paving	Scrapers	2	84	116
	Excavators	2	81	113

	Graders	2	85	113
	Rubber Tired Dozers	2	82	117
	Tractors/Loaders/Backhoes	2	84	114
	Roller	2	80	116
	Plate Compactors	2	83	112
	Pavers	2	77	115
	Paving Equipment	2	77	109
	Pressure Washers	2	NA	85
Infrastructure Construction	Gradall	2	83	115
	Crane	2	81	113
	Forklifts	2	NA	85
	Generator Sets	2	81	113
	Welders	3	74	106
	Air Compressors	3	78	110
	Sweepers / Scrubbers	1	82	114
	Pressure Washer	2	78	85

Source: U.S. Department of Transportation – Federal Highway Administration (FHWA) – Roadway Construction Noise Model User Guide

NA: Sound levels not provided in FWHA construction model. Sound power levels obtained from Trinity Sound level library.

5.3 Permanent Noise Increases from Project Traffic

Neither the City of Gilroy nor the State of California define the traffic noise level increase that is considered substantial. Currently, the site of the proposed Project is used for agricultural use and minimal traffic is expected. For the proposed Project, vehicle traffic volumes are expected to increase from employees and other workers, with approximately 70 workers during the peak morning shift. The increase in vehicle traffic is not expected to be substantial when compared to the existing adjacent industrial and commercial establishments. In addition, any noise generated from the new traffic movements will not exceed the impact of Highway 101 traffic noise as that will be more clearly audible at the residential properties to the west. This is a less-than-significant impact.

6. NOISE IMPACT ANALYSIS & ACOUSTIC ASSESSMENT SUMMARY

To assess the noise impact of the proposed Project, it is important to define the various potential modes of operation. For example, during the operational phase, most of the equipment will operate 24/7, but emergency generators will only be tested during the daytime hours. Also, during the construction phases, different equipment will operate during the lifetime of the construction project and Phase I will be operational while Phase II is undergoing construction. The different operational scenarios are defined below:

Normal Operation: This scenario of operation includes all rooftop air handling units, exhaust fans, condensing units and substation transformers.

Maintenance Operation: Similar to the Normal Operation scenario, this scenario includes the same equipment with the addition of maintenance testing of one (1) generator during the daytime hours.

Phase I Construction: This scenario includes all the construction equipment associated with Phase I and is separated into sub-scenarios to represent equipment that will be used during the same time period as follows:

- Demolition, Site Preparation & Grading
- Concrete/Foundation, Structural/Building Exterior/Roof
- Site Work & Paving, Infrastructure Construction

Phase II Construction: This scenario includes Phase II construction equipment with the addition of Phase I operational equipment since Phase I will be constructed and operational before Phase II construction begins.

6.1 Procedure Used to Assess Noise Impacts at Each POR

Sound power levels were used as input to the acoustic computer model Cadna-A (Computer Aided Noise Abatement). The model is based on ISO Standard 9613-2 "Acoustics – Attenuation of sound during Propagation Outdoors" the ISO based model accounts for reduction in sound level due to increased distance and geometrical spreading, air absorption, ground attenuation, and acoustical shielding by intervening structures, topography and brush. The model is considered conservative since it represents atmospheric conditions that promote propagation of sound from source to receiver.

6.2 Predictable Worst-Case Impact Operating Scenario – Normal & Maintenance Operations

The proposed GDC will operate 24 hours per day. The worst-case operating scenarios were assessed for daytime and night-time operating periods and are summarized in **Table 4** for the Normal Operation scenario. **Table 5** provides the worst-case operating scenarios for the Maintenance Operation scenario.

Table 4 – Summary of Worst-Case Operating Scenarios – Normal Operation

Sources	Daytime Worst-Case 1-Hour Period	Night-time Worst-Case 1-Hour Period
Exhaust Fans	All exhaust fans operating continuously & simultaneously	All exhaust fans operating continuously & simultaneously
Air Handling Units (DAHUs), HVAC, DOAs & Roof-top Condensing Units	All air handling units & roof-top condensing units operating continuously & simultaneously	All air handling units & roof-top condensing units operating continuously & simultaneously
Substation Transformers	Substation Transformers operating continuously & simultaneously	Substation Transformers operating continuously & simultaneously
Critical Backup Generators	Not operating	Not operating
Life Safety Generator & Security Building Generator	Not operating	Not operating

Table 5 – Summary of Worst-Case Operating Scenarios – Maintenance Operation

Sources	Daytime Worst-Case 1-Hour Period	Night-time Worst-Case 1-Hour Period
Exhaust Fans	All exhaust fans operating continuously & simultaneously	All exhaust fans operating continuously & simultaneously
Air Handling Units (DAHUs), HVAC, DOAs & Roof-top Condensing Units	All air handling units & roof-top condensing units operating continuously & simultaneously	All air handling units & roof-top condensing units operating continuously & simultaneously
Substation Transformers	Substation Transformers operating continuously & simultaneously	Substation Transformers operating continuously & simultaneously
Critical Backup Generators	One (1) generator operating continuously and simultaneously	Not operating

6.3 Predictable Worst-Case Impact Operating Scenario – Construction Operations

The equipment used during each construction sub-scenario are provided in **Table 3**. **Table 6** and **Table 7** below provide the worst-case operating scenarios for the construction operations.

Table 6 – Summary of Worst-Case Operating Scenarios – Phase I Construction

Construction Phase	Daytime Worst-Case 1-Hour Period	Night-time Worst-Case 1-Hour Period
Demolition, Site Preparation & Grading	All construction equipment operating continuously & simultaneously	No construction activities
Concrete/Foundation, Structural/Building Exterior/Roof	All construction equipment operating continuously & simultaneously	No construction activities
Site Work & Paving, Infrastructure Construction	All construction equipment operating continuously & simultaneously	No construction activities

Table 7 – Summary of Worst-Case Operating Scenarios – Phase II Construction

Sources	Daytime Worst-Case 1-Hour Period	Night-time Worst-Case 1-Hour Period
Demolition, Site Preparation & Grading	All construction equipment operating continuously & simultaneously	No construction activities
Concrete/Foundation, Structural/Building Exterior/Roof	All construction equipment operating continuously & simultaneously	No construction activities
Site Work & Paving, Infrastructure Construction	All construction equipment operating continuously & simultaneously	No construction activities
Exhaust Fans (Phase I)	All exhaust fans operating continuously & simultaneously	All exhaust fans operating continuously & simultaneously
Air Handling Units & Roof-top Condensing Units (Phase I)	All air handling units & roof-top condensing units operating continuously & simultaneously	All air handling units & roof-top condensing units operating continuously & simultaneously
Substation Transformers (Phase I)	Substation Transformers operating continuously & simultaneously	Substation Transformers operating continuously & simultaneously
Critical Backup Generators (Phase I)	One (1) generator operating continuously and simultaneously	Not operating

7. RESULTS & DISCUSSION

7.1 Normal Operation

Figure 3.1 shows the sound level impact contours generated by the proposed Project under the Normal Operation scenario. Sound level impacts are summarized in **Table 8** for every POR and compared to the applicable noise criteria.

Table 8 – Sound Level Impacts – Normal Operation

POR ID	POR Description	Sound Level Impact L_{dn} (dBA)	Applicable Outdoor Noise Criteria L_{dn} (dBA)	Compliant with Noise Criteria?
R1	Residential Detached Dwelling	57	60	Yes
R2		58		Yes
R3		56		Yes
I1	Renz & Renz Investment & Commercial Brokerage Red Roots Baby Nutritional Care Williams Dental Lab	60	76	Yes
I2	Kaiser Permanente Gilroy Medical Offices	61		Yes
I3	Specialty Truck Parts	65		Yes
I4	USA Sports Gilroy	65		Yes
I5	Gilroy Unified School District	64		Yes
I6	Ruggeri-Jensen-Azar	62		Yes
I7	Spectrum	61		Yes
I8	Morgan Hill Plastics Inc. of Gilroy	58		Yes
C1	See Grins RV Sales	64	65	Yes
C2	Multiple Retail Stores	58		Yes
C3	Multiple Retail Stores	56		Yes
C4	Days Inn by Wyndham Gilroy	51		Yes
C5	Gilroy Healthcare and Rehabilitation Center	54		Yes

7.2 Maintenance Operation

Figure 3.2 shows the sound level impact contours generated by the proposed Facility under the Maintenance Operation scenario. For this scenario, a single generator was included in the model that represents the worst-case sound level impacts from the maintenance testing activity. Sound level impacts are summarized in **Table 9** for every POR and compared to the applicable noise criteria. Sound level impacts for each scenario are identical except for the increased impact at R3 due to the generator maintenance testing operation.

Table 9 – Sound Level Impacts – Maintenance Operation

POR ID	POR Description	Sound Level Impact L_{dn} (dBA)	Applicable Outdoor Noise Criteria L_{dn} (dBA)	Compliant with Noise Criteria?
R1	Residential Detached Dwelling	57	60	Yes
R2		58		Yes
R3		57		Yes
I1	Renz & Renz Investment & Commercial Brokerage Red Roots Baby Nutritional Care Williams Dental Lab	60	76	Yes
I2	Kaiser Permanente Gilroy Medical Offices	61		Yes
I3	Specialty Truck Parts	65		Yes
I4	USA Sports Gilroy	65		Yes
I5	Gilroy Unified School District	64		Yes
I6	Ruggeri-Jensen-Azar	62		Yes
I7	Spectrum	61		Yes
I8	Morgan Hill Plastics Inc. of Gilroy	58		Yes
C1	See Grins RV Sales	64	65	Yes
C2	Multiple Retail Stores	58		Yes
C3	Multiple Retail Stores	56		Yes
C4	Days Inn by Wyndham Gilroy	51		Yes
C5	Gilroy Healthcare and Rehabilitation Center	54		Yes

The sound level impacts from the proposed Project during normal and maintenance operations shown in **Table 8** and **Table 9** indicate that the Project will be compliant with the noise criteria. No mitigation measures are required to control noise during normal and maintenance operations.

7.3 Phase I Construction – Demolition, Site Preparation & Grading

Figure 4.1 shows the sound level impact contours generated by the proposed Facility under the Phase I Construction – Demolition, Site Preparation & Grading scenario. Sound level impacts are summarized in **Table 10** for every POR and compared to the applicable noise criteria.

Table 10 – Sound Level Impacts – Phase I Construction – Demolition, Site Preparation & Grading

POR ID	POR Description	Sound Level Impact L_{dn} (dBA)	Applicable Outdoor Noise Criteria L_{dn} (dBA)	Compliant with Noise Criteria?
R1	Residential Detached Dwelling	49	60	Yes
R2		53		Yes
R3		54		Yes
I1	Renz & Renz Investment & Commercial Brokerage Red Roots Baby Nutritional Care Williams Dental Lab	58	76	Yes
I2	Kaiser Permanente Gilroy Medical Offices	59		Yes
I3	Specialty Truck Parts	62		Yes
I4	USA Sports Gilroy	60		Yes
I5	Gilroy Unified School District	59		Yes
I6	Ruggeri-Jensen-Azar	60		Yes
I7	Spectrum	59		Yes
I8	Morgan Hill Plastics Inc. of Gilroy	54		Yes
C1	See Grins RV Sales	63	65	Yes
C2	Multiple Retail Stores	56		Yes
C3	Multiple Retail Stores	46		Yes
C4	Days Inn by Wyndham Gilroy	42		Yes
C5	Gilroy Healthcare and Rehabilitation Center	52		Yes

7.4 Phase I Construction – Site Work & Paving and Infrastructure Construction

Figure 4.2 shows the sound level impact contours generated by the proposed Facility under the Phase I Construction – Site Work & Paving and Infrastructure Construction scenario. Sound level impacts are summarized in **Table 11** for every POR and compared to the applicable noise criteria.

Table 11 – Sound Level Impacts – Phase I Construction – Site Work & Paving and Infrastructure Construction

POR ID	POR Description	Sound Level Impact L_{dn} (dBA)	Applicable Outdoor Noise Criteria L_{dn} (dBA)	Compliant with Noise Criteria?
R1	Residential Detached Dwelling	49	60	Yes
R2		49		Yes
R3		50		Yes
I1	Renz & Renz Investment & Commercial Brokerage Red Roots Baby Nutritional Care Williams Dental Lab	55	76	Yes
I2	Kaiser Permanente Gilroy Medical Offices	56		Yes
I3	Specialty Truck Parts	60		Yes
I4	USA Sports Gilroy	58		Yes
I5	Gilroy Unified School District	58		Yes
I6	Ruggeri-Jensen-Azar	58		Yes
I7	Spectrum	56		Yes
I8	Morgan Hill Plastics Inc. of Gilroy	49		Yes
C1	See Grins RV Sales	62	65	Yes
C2	Multiple Retail Stores	54		Yes
C3	Multiple Retail Stores	44		Yes
C4	Days Inn by Wyndham Gilroy	41		Yes
C5	Gilroy Healthcare and Rehabilitation Center	48		Yes

7.5 Phase I Construction – Concrete/Foundation and Structural/Building Exterior/Roof

Figure 4.3 shows the sound level impact contours generated by the proposed Facility under the Phase I Construction – Concrete/Foundation and Structural/Building Exterior/Roof scenario. Sound level impacts are summarized in **Table 12** for every POR and compared to the applicable noise criteria. For this scenario, Pile Drivers were selected instead of auger cast piles. Note that project design control measures are discussed further in section 7.9 for this construction scenario.

Table 12 – Sound Level Impacts – Phase I Construction – Concrete/Foundation and Structural/ Building Exterior/Roof

POR ID	POR Description	Sound Level Impact L_{dn} (dBA)	Applicable Outdoor Noise Criteria L_{dn} (dBA)	Compliant with Noise Criteria?
R1	Residential Detached Dwelling	60	60	**No**
R2		57		Yes
R3		61		**No**
I1	Renz & Renz Investment & Commercial Brokerage Red Roots Baby Nutritional Care Williams Dental Lab	68	76	Yes
I2	Kaiser Permanente Gilroy Medical Offices	68		Yes
I3	Specialty Truck Parts	70		Yes
I4	USA Sports Gilroy	69		Yes
I5	Gilroy Unified School District	67		Yes
I6	Ruggeri-Jensen-Azar	67		Yes
I7	Spectrum	65		Yes
I8	Morgan Hill Plastics Inc. of Gilroy	60		Yes
C1	See Grins RV Sales	71	65	**No**
C2	Multiple Retail Stores	63		Yes
C3	Multiple Retail Stores	55		Yes
C4	Days Inn by Wyndham Gilroy	52		Yes
C5	Gilroy Healthcare and Rehabilitation Center	56		Yes

7.6 Phase II Construction – Demolition, Site Preparation & Grading

Figure 4.4 shows the sound level impact contours generated by the proposed Facility under the Phase II Construction – Demolition, Site Preparation & Grading scenario. Sound level impacts are summarized in **Table 13** for every POR and compared to the applicable noise criteria.

Table 13 – Sound Level Impacts – Phase I Construction – Demolition, Site Preparation & Grading

POR ID	POR Description	Sound Level Impact L_{dn} (dBA)	Applicable Outdoor Noise Criteria L_{dn} (dBA)	Compliant with Noise Criteria?
R1	Residential Detached Dwelling	56	60	Yes
R2		57		Yes
R3		55		Yes
I1	Renz & Renz Investment & Commercial Brokerage Red Roots Baby Nutritional Care Williams Dental Lab	59	76	Yes
I2	Kaiser Permanente Gilroy Medical Offices	60		Yes
I3	Specialty Truck Parts	64		Yes
I4	USA Sports Gilroy	64		Yes
I5	Gilroy Unified School District	63		Yes
I6	Ruggeri-Jensen-Azar	63		Yes
I7	Spectrum	62		Yes
I8	Morgan Hill Plastics Inc. of Gilroy	56		Yes
C1	See Grins RV Sales	64	65	Yes
C2	Multiple Retail Stores	59		Yes
C3	Multiple Retail Stores	55		Yes
C4	Days Inn by Wyndham Gilroy	49		Yes
C5	Gilroy Healthcare and Rehabilitation Center	52		Yes

7.7 Phase II Construction – Site Work & Paving and Infrastructure Construction

Figure 4.5 shows the sound level impact contours generated by the proposed Facility under the Phase II Construction – Site Work & Paving and Infrastructure Construction scenario. Sound level impacts are summarized in **Table 14** for every POR and compared to the applicable noise criteria.

Table 14 – Sound Level Impacts – Phase I Construction – Site Work & Paving and Infrastructure Construction

POR ID	POR Description	Sound Level Impact L_{dn} (dBA)	Applicable Outdoor Noise Criteria L_{dn} (dBA)	Compliant with Noise Criteria?
R1	Residential Detached Dwelling	56	60	Yes
R2		57		Yes
R3		55		Yes
I1	Renz & Renz Investment & Commercial Brokerage Red Roots Baby Nutritional Care Williams Dental Lab	59	76	Yes
I2	Kaiser Permanente Gilroy Medical Offices	60		Yes
I3	Specialty Truck Parts	64		Yes
I4	USA Sports Gilroy	64		Yes
I5	Gilroy Unified School District	63		Yes
I6	Ruggeri-Jensen-Azar	53		Yes
I7	Spectrum	62		Yes
I8	Morgan Hill Plastics Inc. of Gilroy	56		Yes
C1	See Grins RV Sales	64	65	Yes
C2	Multiple Retail Stores	59		Yes
C3	Multiple Retail Stores	55		Yes
C4	Days Inn by Wyndham Gilroy	49		Yes
C5	Gilroy Healthcare and Rehabilitation Center	52		Yes

7.8 Phase II Construction – Concrete/Foundation and Structural/Building Exterior/Roof

Figure 4.6 shows the sound level impact contours generated by the proposed Facility under the Phase II Construction – Concrete/Foundation and Structural/Building Exterior/Roof scenario. Sound level impacts are summarized in **Table 15** for every POR and compared to the applicable noise criteria. For this scenario, Pile Drivers were selected instead of auger cast piles. Note that project design control measures are discussed further in Section 7.9 for this construction scenario.

Table 15 – Sound Level Impacts – Phase I Construction – Concrete/Foundation and Structural/Building Exterior/Roof

POR ID	POR Description	Sound Level Impact L_{dn} (dBA)	Applicable Outdoor Noise Criteria L_{dn} (dBA)	Compliant with Noise Criteria?
R1	Residential Detached Dwelling	61	60	**No**
R2		57		Yes
R3		60		**No**
I1	Renz & Renz Investment & Commercial Brokerage Red Roots Baby Nutritional Care Williams Dental Lab	65	76	Yes
I2	Kaiser Permanente Gilroy Medical Offices	65		Yes
I3	Specialty Truck Parts	64		Yes
I4	USA Sports Gilroy	64		Yes
I5	Gilroy Unified School District	63		Yes
I6	Ruggeri-Jensen-Azar	70		Yes
I7	Spectrum	70		Yes
I8	Morgan Hill Plastics Inc. of Gilroy	58		Yes
C1	See Grins RV Sales	69	65	**No**
C2	Multiple Retail Stores	65		Yes
C3	Multiple Retail Stores	57		Yes
C4	Days Inn by Wyndham Gilroy	51		Yes
C5	Gilroy Healthcare and Rehabilitation Center	54		Yes

7.9 Construction Phase Project Design Control Measures Concrete/Foundation & Structural/Building Exterior/Roof

As shown in **Table 10** – **Table 15**, almost all construction phases are compliant with the noise criteria. However, **Table 12** & **Table 15** indicate that the Phase I Foundation & Building Exterior construction phase and Phase II Foundation & Building Exterior phase will exceed the noise criteria at receptors R1, R3 & C1. The main contributor to the noise criteria exceedance is the use of driven piles instead auger cast piles. The proposed Project can continue to utilize the driven Piles if temporary sound barriers can be implemented to shield the noise impact of driven Piles.

Project Design Measure Noise-1: Only in the event that the Concrete/Foundation and Structural/Building Exterior/Roof phase of Phase I utilizes driven piles, pile driving construction must include a barrier for the duration of the pile driving activities with the following specifications, or alternatively utilize auger cast piles instead of driven piles.

1. Barrier #1:
    - Total Length: 330 ft, Minimum Height: 10 ft

2. Barrier #2:
    - Total Length: 165 ft, Minimum Height: 10 ft

At the barrier locations shown in **Figure 4.7**.

Project Design Measure Noise-2: Only in the event that the Concrete/Foundation and Structural/Building Exterior/Roof phase of Phase II utilizes driven piles, pile driving construction must include a barrier for the duration of pile driving activities with the following specifications, or alternatively utilize auger cast piles instead of driven piles:

3. Barrier #3:
    - Total Length: 560 ft, Minimum Height: 13 ft

At the barrier locations shown in **Figure 4.9**.

Figure 4.11 & **Figure 4.12** provide the sound level impact contours as a result of utilizing the auger cast piles and indicates compliance with noise criteria at every sensitive noise receptor in the vicinity.

8. CONSTRUCTION VIBRATION

Construction activity can result in various levels of ground vibration, depending on the equipment and methods used. Operation of construction equipment causes ground vibration which permeates through the ground and diminishes in strength with increasing distance. Buildings constructed on soil within the vicinity of the construction site respond to the vibrations, with varying results ranging from no perceptible effects at the lowest levels, low rumbling sounds and feelable vibrations at moderate levels and some damage at the highest levels. Ground vibrations from construction activities very rarely reach the levels that can damage structures, but can achieve the audible and feelable ranges in buildings very close to the site. One exception is the case of old, fragile buildings where special care must be taken to avoid damage. The construction vibration criteria include special consideration for fragile historic buildings. The construction activities that typically generate the most severe vibrations are blasting and impact pile driving.

Vibration levels for construction equipment have been published based on measured data near various types of equipment (see **Table 16**). Since the primary concern with regard to construction vibration is building damage, construction vibration is generally assessed in terms of peak particle velocity (PPV).

8.1 Vibration Source Levels from Construction Equipment

Vibration levels for common types of construction equipment have been measured under a wide variety of construction activities with an average of source levels reported in terms of velocity levels as shown in **Table 16**. Although the table gives one PPV value for each piece of equipment, there can be considerable variation in reported ground vibration levels from construction activities. The data provide a reasonable estimate for a wide range of soil conditions.

Table 16 – PPV Levels for Typical Construction Equipment

Equipment		PPV at 25 ft (in/sec)[2]
Pile Driver (impact)	Upper range	1.518
	Typical	0.644
Pile Driver (sonic)	Upper range	0.734
	Typical	0.170
Clam shovel drop (slurry wall)		0.202
Hydromill (slurry wall)	In soil	0.008
	In rock	0.017
Vibratory Roller		0.21
Hoe Ram		0.089
Large bulldozer		0.089
Caisson drilling		0.089
Loaded trucks		0.076
Jackhammer		0.035
Small bulldozer		0.003

8.2 Construction Vibration Assessment

Construction vibration should be assessed when there is a significant potential for impact from construction activities. Such activities include blasting, pile driving, demolition and drilling or excavation in close proximity to fragile structures. According to the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual, the recommended procedure for estimating vibration impact from construction activities is as follows:

- Select the equipment and associated vibration source levels at a reference distance of 25 feet from **Table 16**

- Make the propagation adjustment according to the following formula (this formula is based on point sources with normal propagation conditions):

$$PPV_{equip} = PPV_{ref} \times \left(\frac{25}{D}\right)^{1.5} \quad [3]$$

Where: PPV (equip) is the peak particle velocity in in/sec of the equipment adjusted for distance
PPV (ref) is the reference vibration level in in/sec at 25 feet from **Table 16**
D is the distance from the equipment to the receiver.

- Apply the vibration damage threshold criterion of 0.20 in/sec for non-engineered timber and masonry building (i.e. fragile buildings), or 0.12 in/sec for buildings extremely susceptible to vibration damage.

[2] John A. Volpe National Transportation Center, Federal Transit Adminstration – Transit Noise and Vibration Impact Assessment Manual, Equation 7-2: Peak Particle Velocity propagation adjustment for distance, September 2018, Table 7-4 Vibration Source Levels for Construction Equipment

Table 16 indicates the pile driver (impact) is the most powerful source of vibration during construction with a 1.518 (in/sec) at 25 feet. **Table 17** below provides the anticipated vibration levels experienced by each receptor as a result of operating the pile driver during construction.

Table 17 – Pile Driver Vibration Impacts

POR ID	Approximate Separation Distance (feet)	Vibration Impact (in/sec)	Vibration Damage Threshold (in/sec)	Vibration Impact below Damage Threshold?
R1	1400	0.0036	0.12	Yes
R2	1300	0.0040		Yes
R3	1700	0.0027		Yes
I1	850	0.0077		Yes
I2	650	0.0115		Yes
I3	520	0.0160		Yes
I4	520	0.0160		Yes
I5	520	0.0160		Yes
I6	590	0.0132		Yes
I7	820	0.0081		Yes
I8	1110	0.0051		Yes
C1	330	0.0317		Yes
C2	1200	0.0046		Yes
C3	1300	0.0040		Yes
C4	2600	0.0014		Yes
C5	1700	0.0027		Yes

As shown in **Table 17**, vibration impacts at all receptors are significantly lower than the vibration damage threshold for extremely fragile buildings.

9. EXISTING NOISE ENVIRONMENT

A noise monitoring survey was performed within multiple locations of the proposed Facility between Friday, August 21, 2020 and Thursday, August 27, 2020 to quantify and characterize ambient noise levels at the site and in the surrounding area. The survey included 2 long-term measurement locations and 6 short-term measurement locations, as shown in **Figure 4.13**. The predominant sources of noise in the project vicinity included traffic on Highway 101 and nearby industrial and commercial facilities. Long-term and short-term measurements are summarized in **Table 18** – **Table 20**, respectively.

Table 18 – Summary of Long-Term Measurements

Location	Date	Hourly-Average Noise Level, L_{eq} (dBA)		Ldn (dBA)
		Daytime	Night-time	
Long-term #1	Monday 8/24/2020[1]	-	54	-
	Tuesday 8/25/2020	54	67	73
	Wednesday 8/26/2020	55	53	60
	Thursday 8/27/2020	56	51	59
Long-term #2	Friday 8/21/2020	59	52	59
	Saturday 8/22/2020	53	53	60
	Sunday 8/23/2020	56	54	60
	Monday 8/24/2020[1]	55	-	-

1 – Measurements on Monday, August 24, 2020 were not 24 hours in duration and therefore cannot be used to determine a 24-hour average or Ldn level.

Table 19 – Summary of Short-Term Measurements – Daytime

Location	L_{max}	$L_{(5)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	Leq
Location #1	64	57	57	54	51	54
Location #2	62	56	55	53	52	54
Location #3	67	52	51	50	49	50
Location #4	62	53	53	52	51	52
Location #5	62	52	51	50	49	50

Table 20 – Summary of Short-Term Measurements – Night-time

Location	L_{max}	$L_{(5)}$	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	Leq
Location #1	65	56	56	54	51	54
Location #2	67	58	58	56	55	56
Location #3	63	54	54	52	51	53
Location #4	71	56	56	54	52	54
Location #5	70	52	51	47	45	49

10. CONCLUSIONS

Trinity prepared an environmental noise and vibration assessment, to evaluate potential noise and vibration impacts associated with the proposed construction and operation of the GBGF proposed by the Applicant.

Sound levels were entered into Cadna-A acoustic modelling software to determine the noise impacts at sensitive receptors located near the Facility. The worst-case Day-night average sound levels (Ldn) at sensitive receptors were determined. Noise impacts were assessed against the Ldn limits provided in the City of Gilroy Noise Policy – General Plan Section: 26, for each land use category. Trinity also completed an ambient noise monitoring survey to document existing noise conditions.

Based on the results of the acoustic assessment for the operational phase, it can be concluded that the noise impacts at the sensitive points of reception are below the applicable criteria. Noise mitigation measures are therefore not required for the Project operational phase. However, during the construction phase, project design measures Noise-1 and Noise-2 are required in the form of temporary sound barriers or utilization of auger cast piles instead of driven piles during the Concrete/Foundation and Structural/Building Exterior/Roof construction stage.

Table 21 summarizes the checklist questions from Appendix G of the California State CEQA Guidelines for noise impacts and determinations resulting from the proposed Project analysis.

Table 21 - Environmental Impact Significance Determinations

Noise				
Would the project result in:	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?		**X**		
b. Generation of excessive groundborne vibration or groundborne noise levels?			**X**	
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				**X**

The operational phase of the Project will not generate temporary or permanent increases in noise in excess of applicable standards provided in the City of Gilroy and will not require any mitigation measures. However,

for some Project construction phases, project design measure Noise-1 and Noise-2 are required to ensure temporary increases in noise remain below applicable standards. Generation of groundborne vibration and groundborne noise levels from the Project are below acceptable limits as established by the Federal Transit Administration, and as such will have a less than significant impact. The proposed Project site is not located within 2 miles of a public airport or within the vicinity of a private airstrip. Additionally, the Project site is not located within an area covered by an airport land use plan. Overall, the Project is not anticipated to expose people residing in the area to excessive noise levels. It can be concluded from **Table 21** that the Project noise impacts will be *less than significant with mitigation incorporated*.

APPENDIX A: FIGURES



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Figure 1

Scaled Area Location Plan

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

Building

Receiver



Trinity Consultants

Figure 2

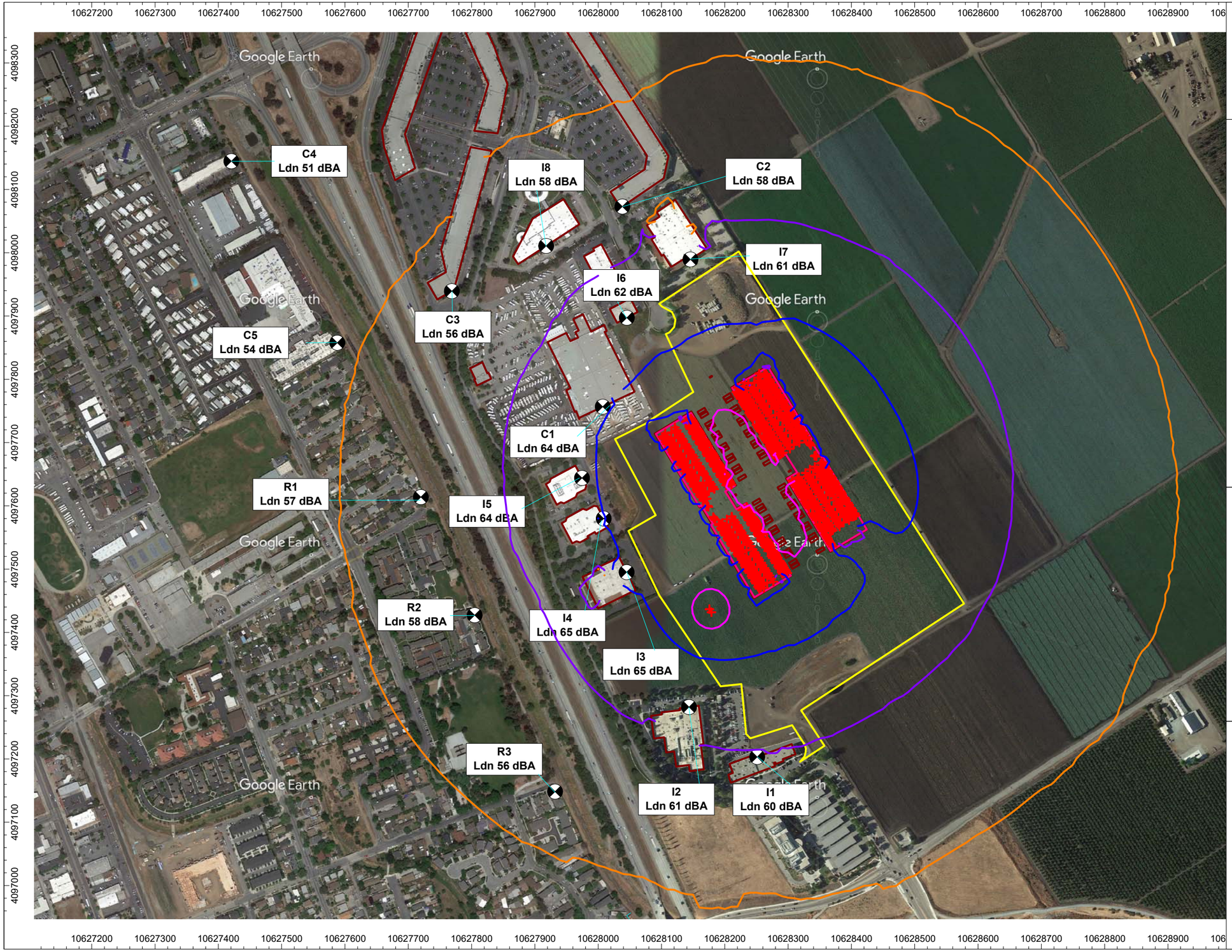
Location of Significant Noise Sources

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

+ Point Source
Area Source
vert. Area Source
Building
Receiver



Trinity Consultants

Figure 3.1

Sound Level Impact Contours @ 4.5 m Above Ground

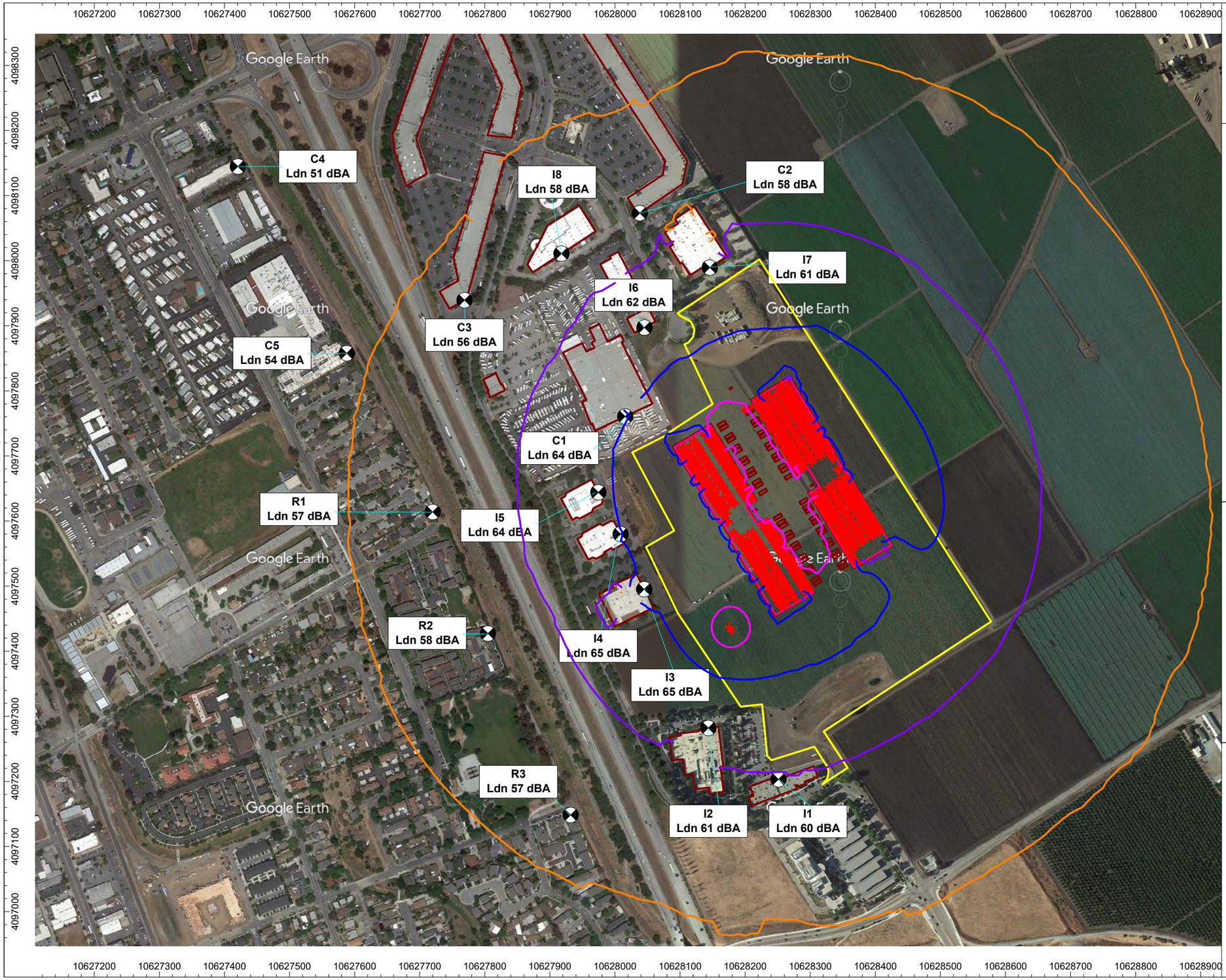
Normal Operation

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

55 dBA
60 dBA
65 dBA
70 dBA



Trinity Consultants

Figure 3.2

Sound Level Impact Contours @ 4.5 m Above Ground

Normal Operation & Single Generator Tested Under Full Load

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

55 dBA
60 dBA
65 dBA
70 dBA

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Figure 4.1

Sound Level Impact Contours @ 4.5 m Above Ground

Phase 1 Construction Demolition, Site Preparation & Grading

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility



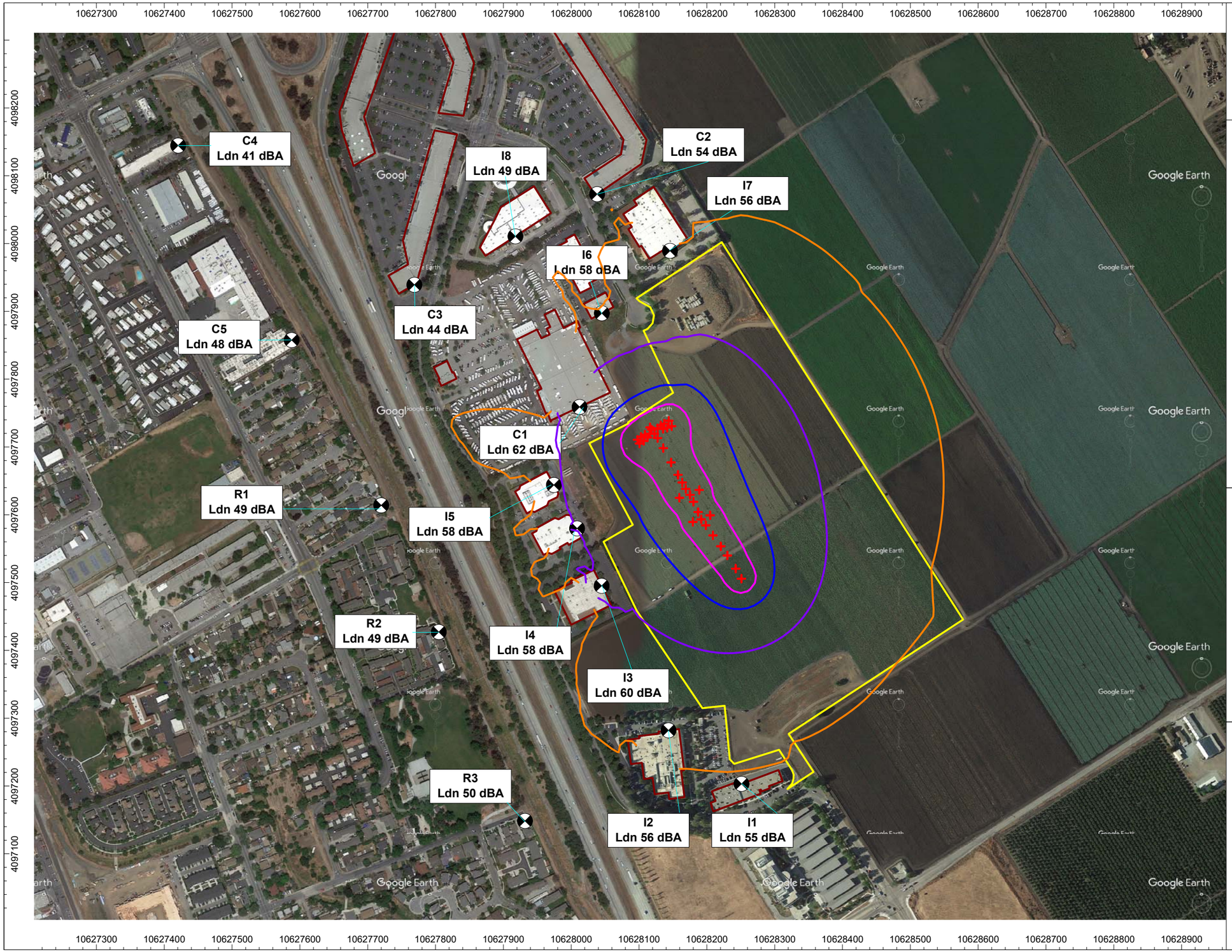
N

55 dBA

60 dBA

65 dBA

70 dBA



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Figure 4.2

Sound Level Impact Contours @ 4.5 m Above Ground

Phase 1 Construction Site Work & Infrastructure

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

55 dBA

60 dBA

65 dBA

70 dBA



Trinity Consultants

Figure 4.3

Sound Level Impact Contours @ 4.5 m Above Ground

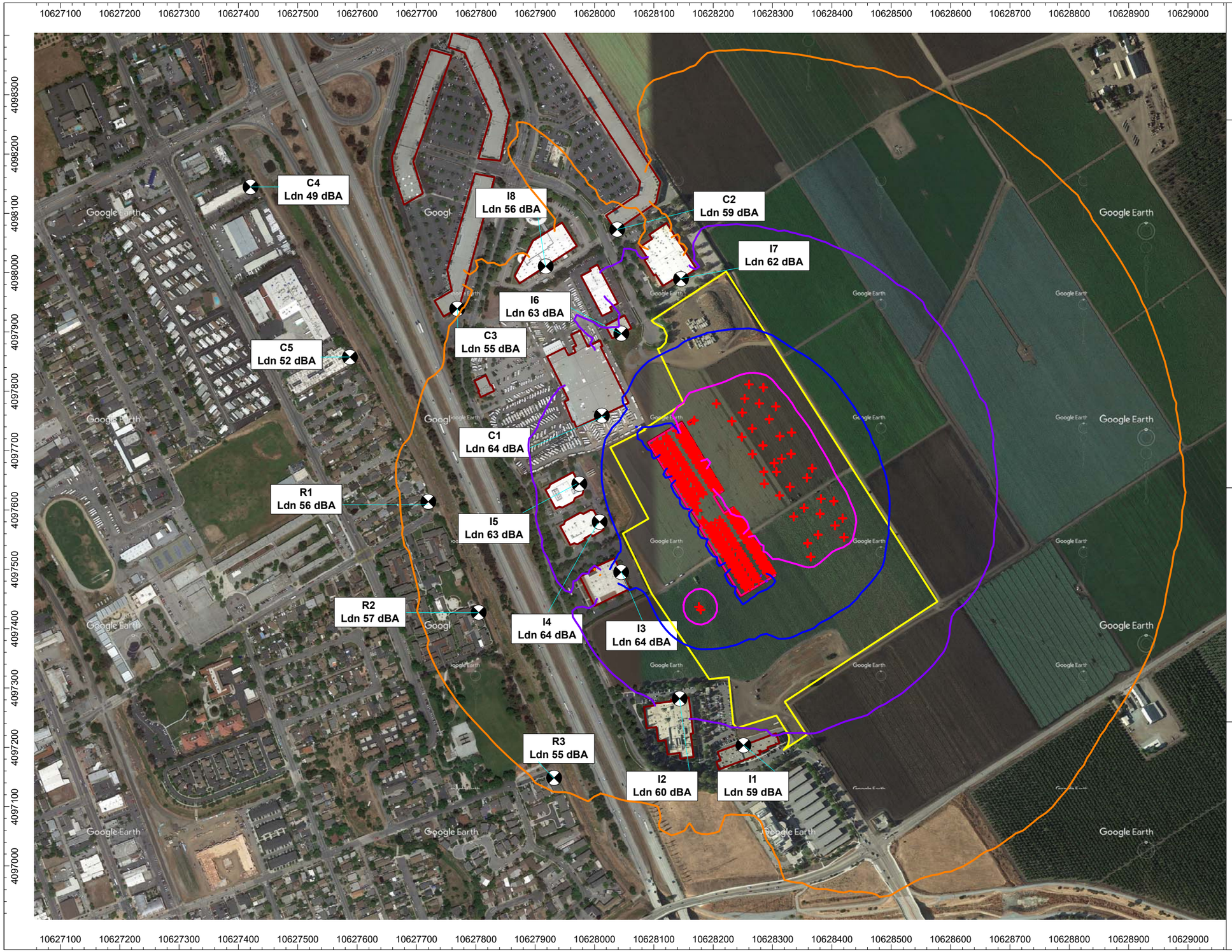
Phase 1 Construction Foundation & Building Exterior Pile Drivers (Instead of Augers)

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

55 dBA
60 dBA
65 dBA
70 dBA



Trinity Consultants

Figure 4.4

Sound Level Impact Contours @ 4.5 m Above Ground

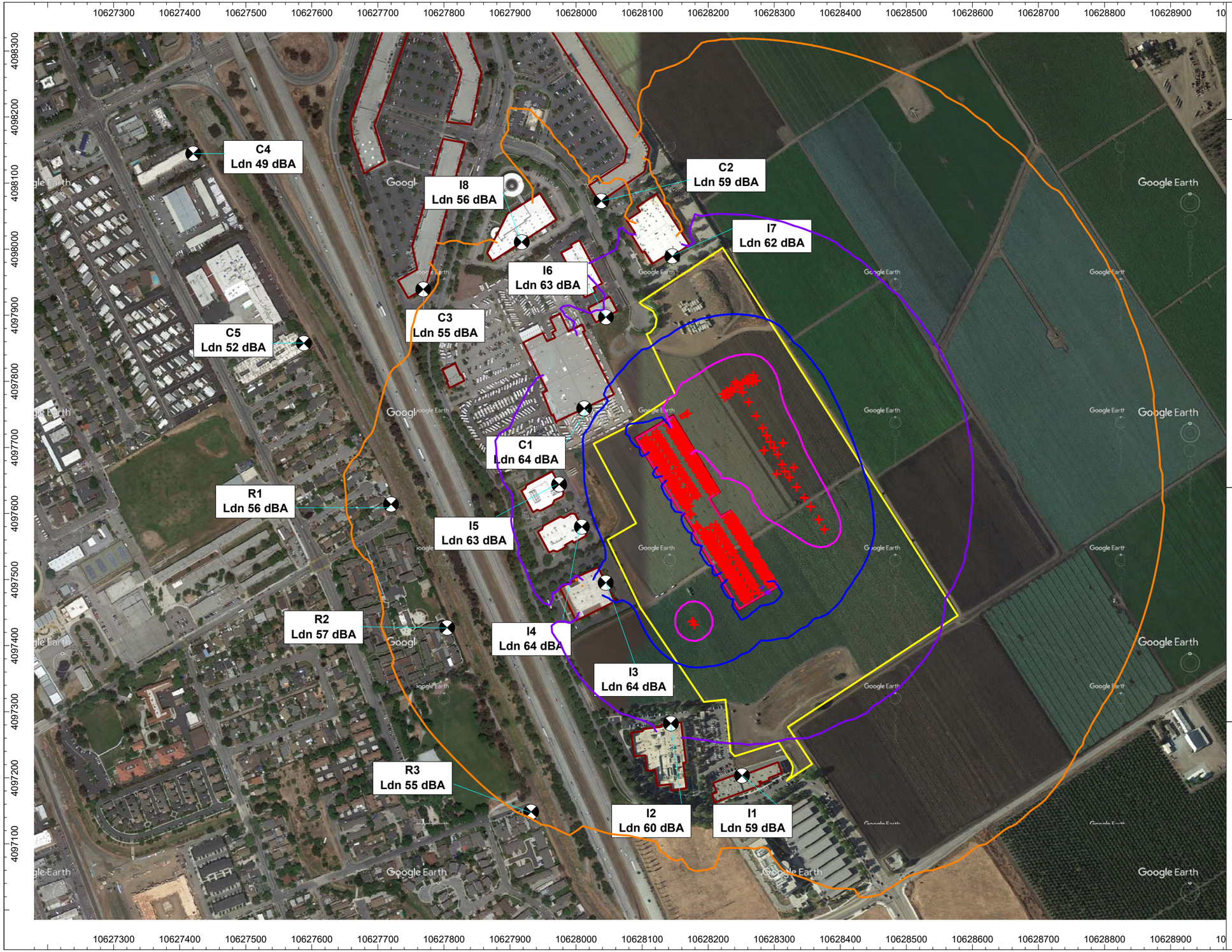
Phase 2 Construction Demolition, Site Preparation & Grading

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

55 dBA
60 dBA
65 dBA
70 dBA



Trinity Consultants

Figure 4.5

Sound Level Impact Contours @ 4.5 m Above Ground

Phase 2 Construction Site Work & Infrastructure

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

55 dBA

60 dBA

65 dBA

70 dBA



Trinity Consultants

Figure 4.6

Sound Level Impact Contours @ 4.5 m Above Ground

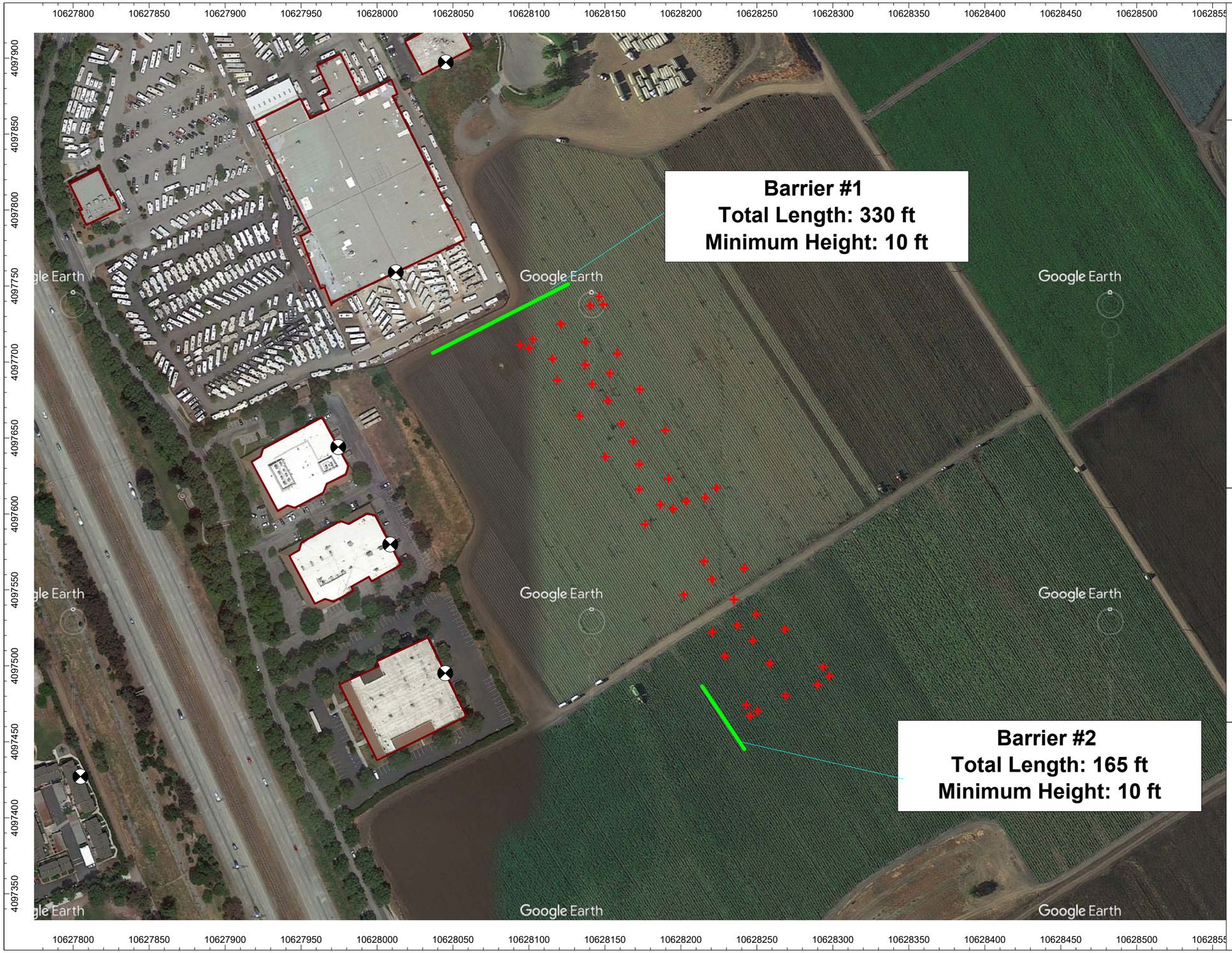
Phase 2 Construction Foundation & Building Exterior Pile Drivers (Instead of Augers)

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

- Point Source
- Area Source
- vert. Area Source
- Building
- Barrier
- Receiver
- Calculation Area



Trinity Consultants

Figure 4.7

Mitigation Recommendations For Phase 1 Construction Foundation & Building Exterior Pile Drivers (Instead of Augers)

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

- Point Source
- Area Source
- vert. Area Source
- Building
- Barrier
- Receiver



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Figure 4.8

Mitigated Sound Level Impact Contours @ 4.5 m Above Ground

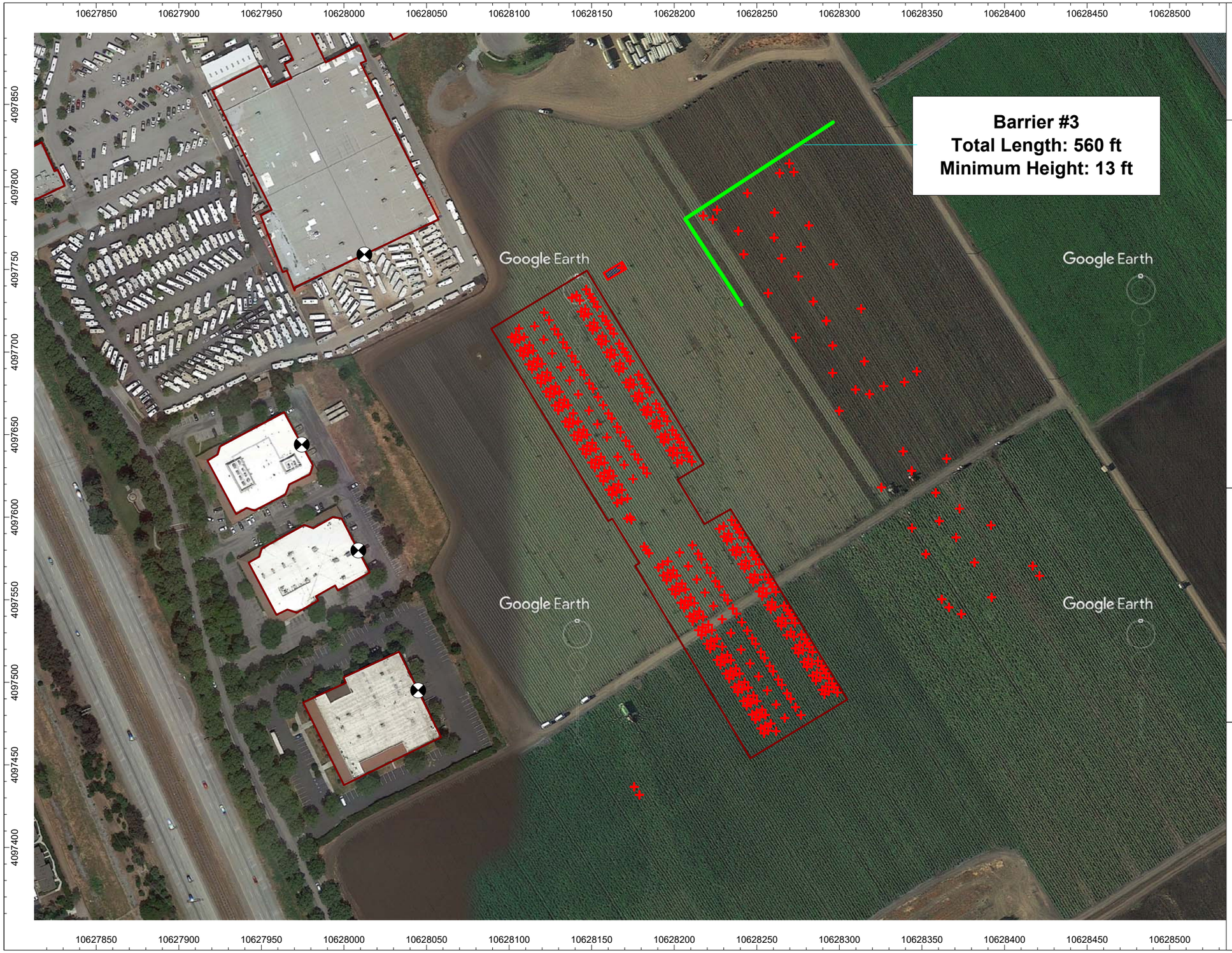
Phase 1 Construction Foundation & Building Exterior Pile Drivers (Instead of Augers)

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

55 dBA
60 dBA
65 dBA
70 dBA



Trinity Consultants

Figure 4.9

Mitigation Recommendations For Phase 2 Construction Foundation & Building Exterior Pile Drivers (Instead of Augers)

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

- Point Source
- Area Source
- vert. Area Source
- Building
- Barrier
- Receiver
- Calculation Area



Trinity Consultants

Figure 4.10

Mitigated Sound Level Impact Contours @ 4.5 m Above Ground

Phase 2 Construction Foundation & Building Exterior Pile Drivers (Instead of Augers)

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

- Point Source
- Area Source
- vert. Area Source
- Building
- Barrier
- Receiver
- Calculation Area



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Figure 4.11

Sound Level Impact Contours @ 4.5 m Above Ground

Phase 1 Construction Foundation & Building Exterior Pile Augers (Instead of Drivers)

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

55 dBA

60 dBA

65 dBA

70 dBA



Figure 4.12

Sound Level Impact Contours @ 4.5 m Above Ground

Phase 2 Construction Foundation & Building Exterior Pile Augers (Instead of Drivers)

Environmental Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

55 dBA
60 dBA
65 dBA
70 dBA



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Figure 4.13

Ambient Noise Monitoring Locations

Environmtal Noise & Vibration Assessment

Proposed Gilroy Backup Generating Facility

N

Receiver

APPENDIX B: ZONING MAP

CITY OF GILROY
ZONING MAP

N
W E
S

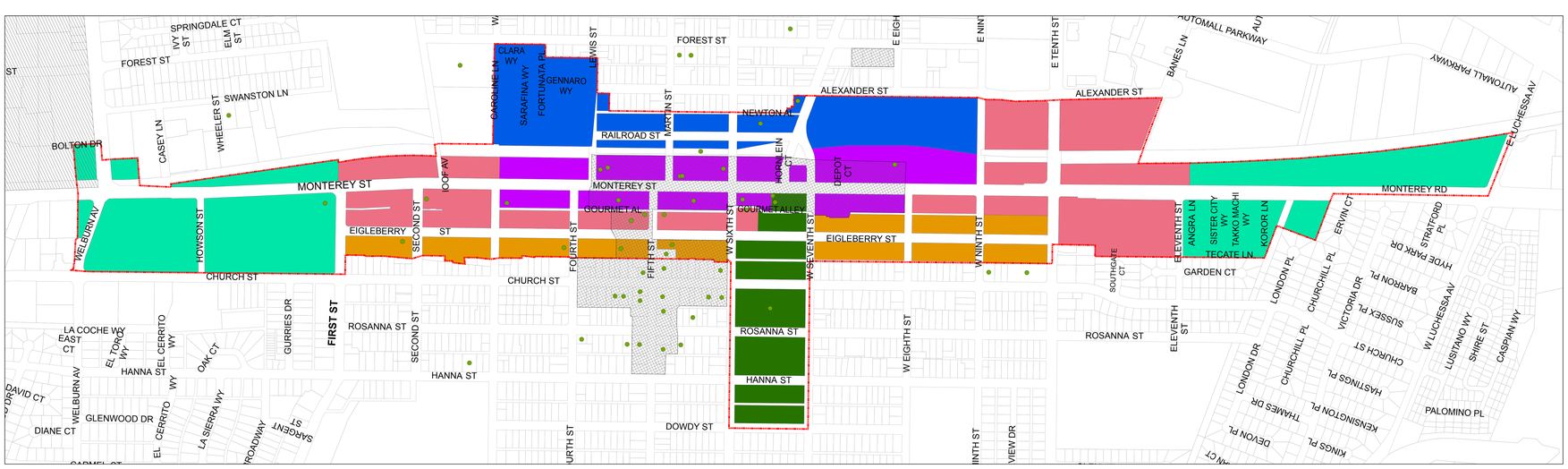
RESIDENTIAL
- A-1 Agriculture
- RH Residential Hillside
- R-1 Single Family Housing
- R-2 Two Family Housing
- R-3 Medium Density Housing
- R-4 High Density Housing

COMMERCIAL
- PO Professional Office
- C-1 Neighborhood Commercial
- C-3 Shopping Center Commercial
- HC Highway Commercial
- CM Commercial Industrial

INDUSTRIAL
- M-1 Limited Industrial
- M-2 General Industrial

OTHER
- OS Open Space
- PF Park/Public Facility
- ND Neighborhood District/Specific Plan Area
- Historic Site
- Murray-Las Animas Overlay
- Historic Neighborhood
- Gilroy Crossing
- Planned Unit Development
- City Limit Boundary

DOWNTOWN SPECIFIC PLAN



Downtown Legend
- Downtown
- Gateway District
- Historic District
- Cannery District
- Civic/Cultural Arts Disctrict
- Expansion District
- Transitional District
- Historic Site
- Murray-Las Animas Overlay
- Historic Neighborhood

0 1,250 2,500 5,000 7,500 10,000 Feet

Revised:
April 2019

LYNX TECHNOLOGIES
DIGITAL MAPPING CONSULTANTS

APPENDIX C: EQUIPMENT SPECIFICATIONS

3.2 Heat Pump

60 Hz, 208 - 230 V

Model	Indoor Unit		FTXS30LVJU		FTXS36LVJU	
	Outdoor Unit		RXS30LVJU		RXS36LVJU	
			Cooling	Heating	Cooling	Heating
Capacity Rated (Min. ~ Max.)		kW	8.8 (3.0 ~ 8.8)	10.2 (3.0 ~ 10.2)	10.5 (3.0 - 10.5)	11.1 (3.0 - 11.1)
		Btu/h	30,000 (10,200 ~ 30,000)	34,800 (10,200 ~ 34,800)	36,000 (10,200 - 36,000)	38,000 (10,200- 38,000)
		kcal/h	7,570 (2,580 ~ 7,570)	8,770 (2,580 ~ 8,770)	9,030 (2,580 - 9,030)	9,550 (2,580 - 9,550)
Moisture Removal		gal/h (L/h)	1.5 (5.8)	—	1.8 (6.9)	—
Running Current (Rated)		A	12.2	17.1	18.8	18.4
Power Consumption Rated (Min. - Max.)		W	2,800 (620 ~ 2,800)	3,900 (620 ~ 3,900)	4,000 - 4,300 (620 ~ 4,000 - 4,300)	3,800 - 4,200 (620 ~ 3,800 - 4,200)
Power Factor (Rated)		%	99.8	99.2	99.4	99.2
EER (Rated)		Btu/h·W	10.71 (16.45 ~ 10.71)	8.92 (16.45 ~ 8.92)	8.75 - 8.37 (16.45 ~ 8.75 - 8.37)	9.47 - 9.05 (16.45 ~ 9.47 - 9.05)
SEER/HSPF			19.3	8.3	17.9	8.3
Piping Connections	Liquid	in. (mm)	ϕ 3/8 (9.5)		ϕ 3/8 (9.5)	
	Gas	in. (mm)	ϕ 5/8 (15.9)		ϕ 5/8 (15.9)	
	Drain	in. (mm)	ϕ 5/8 (16.0)		ϕ 5/8 (16.0)	
Heat Insulation			Both Liquid and Gas Pipes		Both Liquid and Gas Pipes	
Max. Interunit Piping Length		ft (m)	98.4 (30)		98.4 (30)	
Max. Interunit Height Difference		ft (m)	65.6 (20)		65.6 (20)	
Chargeless		ft (m)	32 (10)		32 (10)	
Amount of Additional Charge of Refrigerant		oz/ft (g/m)	0.54 (50)		0.54 (50)	
Indoor Unit			**FTXS30LVJU**		**FTXS36LVJU**	
Front Panel Color			White		White	
Airflow Rate	H	cfm(m³/min)	706 (20.0)	710 (20.1)	770 (21.8)	808 (22.9)
	M		611 (17.3)	611 (17.3)	635 (18.0)	657 (18.6)
	L		519 (14.7)	519 (14.7)	519 (14.7)	519 (14.7)
	SL		473 (13.4)	469 (13.3)	473 (13.4)	469 (13.3)
Fan	Type		Cross Flow Fan		Cross Flow Fan	
	Motor Output	W	64		64	
	Speed	Steps	5 Steps, Quiet, Auto		5 Steps, Quiet, Auto	
Air Direction Control			Right, Left, Horizontal, Downward		Right, Left, Horizontal, Downward	
Air Filter			Removable / Washable / Mildew Proof		Removable / Washable / Mildew Proof	
Running Current (Rated)		A	0.38 - 0.34	0.38 - 0.34	0.38 - 0.34	0.38 - 0.34
Power Consumption (Rated)		W	77	77	77	77
Power Factor (Rated)		%	97.4 - 98.5	97.4 - 98.5	97.4 - 98.5	97.4 - 98.5
Temperature Control			Microcomputer Control		Microcomputer Control	
Dimensions (H × W × D)		in. (mm)	13-3/8 × 47-1/4 × 9-7/16 (340 × 1,200 × 240)		13-3/8 × 47-1/4 × 9-7/16 (340 × 1,200 × 240)	
Packaged Dimensions (H × W × D)		in. (mm)	12-13/16 × 51-9/16 × 16-7/8 (325 × 1,310 × 429)		12-13/16 × 51-9/16 × 16-7/8 (325 × 1,310 × 429)	
Weight (Mass)		Lbs (kg)	38 (17)		38 (17)	
Gross Weight (Gross Mass)		Lbs (kg)	51 (23)		51 (23)	
Sound Pressure Level	H / M / L / SL	dB(A)	47 / 45 / 40 / 37	47 / 44 / 38 / 35	49 / 45 / 40 / 37	49 / 44 / 38 / 35
Sound Power Level		dB	63	63	65	65
Outdoor Unit			**RXS30LVJU**		**RXS36LVJU**	
Casing Color			Ivory White		Ivory White	
Compressor	Type		Hermetically Sealed Swing Type		Hermetically Sealed Swing Type	
	Model		2YC63FXD		2YC63FXD	
	Motor Output	W	2,030		2,030	
Refrigerant Oil	Type		FVC50K		FVC50K	
	Charge	oz (L)	25.5 (0.75)		25.5 (0.75)	
Refrigerant	Type		R-410A		R-410A	
	Charge	Lbs (kg)	6.17 (2.8)		6.17 (2.8)	
Airflow Rate	H	cfm(m³/min)	2,627 (74.4)	2,627 (74.4)	2,627 (74.4)	2,627 (74.4)
	SL		2,316 (65.6)	2,316 (65.6)	2,316 (65.6)	2,316 (65.6)
Fan	Type		Propeller		Propeller	
	Motor Output	W	200		200	
Running Current (Rated)		A	111.86	16.76	18.46	18.06
Power Consumption (Rated)		W	2,723	3,823	4,223	4,123
Power Factor (Rated)		%	99.8	99.2	99.5	99.3
Starting Current		A	18.9		19.4	
Dimensions (H × W × D)		in. (mm)	38-15/16 × 37 × 12-5/8 (990 × 940 × 320)		38-15/16 × 37 × 12-5/8 (990 × 940 × 320)	
Packaged Dimensions (H × W × D)		in. (mm)	43-7/8 × 39-7/16 × 16-11/16 (1,114 × 1,003 × 425)		43-7/8 × 39-7/16 × 16-11/16 (1,114 × 1,003 × 425)	
Weight (Mass)		Lbs (kg)	179 (81)		179 (81)	
Gross Weight (Gross Mass)		Lbs (kg)	204 (93)		204 (93)	
Sound Pressure Level	H / SL	dB(A)	54 / 51	55 / 51	54 / 51	55 / 51
Sound Power Level	H	dB	68	69	68	69
Drawing No.			3D075050		3D075055	

Condensing Unit
HeatPump

Conversion Formulae
kcal/h = kW × 860 Btu/h = kW × 3412 cfm = m³/min × 35.3

drain in compartments not drained by the cooling coil drain pan, which shall be extended to a capped male threaded hose fitting on the exterior of the casing.

Compliance 8. All pipe and conduit penetrations in the casing shall be thoroughly sealed and caulked to prevent air leakage.

Compliance 9. Where indicated, provide galvanized steel grating over duct openings in the floor of the air handling units. The grating shall consist of removable sections weighing not more than 50 pounds each and secured with mechanical fasteners. Grating shall be capable of supporting a 400-pound live load with negligible deflection.>

Compliance 10. Shipping splits (Where Applicable): Provide bolting flanges, gasket material, sealant and fasteners for units shipped in multiple pieces. The joining system used shall accommodate an installation on a base that is not perfectly level. Raised bolting flanges may be provided at the floor where the angles are not located at access walkways which would present a tripping hazard. Where angles are located in the access walkways such as the service corridor and the outside air plenum the shipping split joints in the floor shall be continuously welded in the field.

Deviation 11. Coatings/finishes: clean all casing parts and powder coat all casing exterior surfaces. Color to be white.

Compliance 12. Lifting brackets or lugs with lifting holes shall be provided to accept cable or chain hooks. Reinforce C-channel frame at lifting lugs to prevent C-channel bending during lifting.

Compliance 13. Provide hoist rail inside fan cabinet to enable removal/replacement of all fan motors.

Compliance 14. Unit labels: Each end and side of each unit shall be labeled in accordance with contract documents and the [redacted]g and Labeling Standard, Rev02 stating unit number. Unit label location shall be coordinated with the installing contractor.

15. Acoustical Performance:

Deviation a. The casing shall have been tested for acoustical performance by an independent laboratory that is accredited. This requirement is for qualification and does not apply to each unit produced. Test results from qualification shall be provided with each identical unit produced.

Exception b. The noise levels at design operating conditions at the outside air intake louver and relief air hood and for overall casing radiated noise shall not exceed the following maximum dB levels:

DAHU

OCTAVE BAND								
1	2	3	4	5	6	7	8	
103	100	88	85	82	78	73	71	Outside air intake louver
91	95	75	59	45	35	31	25	Radiated from casing

Compliance 16. Supply fan discharge isolation damper: Each supply fan shall be provided with a backdraft damper assembly to allow the maintenance of one fan while the other fans are operating. The damper assembly shall be constructed of a minimum of 16 gauge galvanized sheet steel with raised seams to reinforce the panel and minimize deflection to less than 1/8" under 8" of static pressure.

Deviation B. Plenum Fans:

REYQ144 - 192XAYDA

Outdoor unit model No.			REYQ144XAYDA	REYQ168XAYDA	REYQ192XAYDA
Unit combination			—	—	REYQ96XAYDA REYQ96XAYDA
Power supply			3 phase, 460 V, 60 Hz	3 phase, 460 V, 60 Hz	3 phase, 460 V, 60 Hz
★1 Cooling capacity	Nominal	Btu/h (kW)	144,000 (42.2)	168,000 (49.2)	192,000 (56.3)
	Rated		138,000 (40.4)	160,000 (46.9)	184,000 (53.9)
★2 Heating capacity	Nominal	Btu/h (kW)	162,000 (47.5)	188,000 (55.1)	216,000 (63.3)
	Rated		154,000 (45.1)	180,000 (52.7)	206,000 (60.4)
Casing color			Ivory white (5Y7.5/1)	Ivory white (5Y7.5/1)	Ivory white (5Y7.5/1)
Dimensions: (H × W × D)		in. (mm)	66-11/16 × 48-7/8 × 30-3/16 (1,694 × 1,242 × 767)	66-11/16 × 48-7/8 × 30-3/16 (1,694 × 1,242 × 767)	66-11/16 × 48-7/8 × 30-3/16 + 66-11/16 × 48-7/8 × 30-3/16 (1,694 × 1,242 × 767 + 1,694 × 1,242 × 767)
Heat exchanger			Cross fin coil	Cross fin coil	Cross fin coil
Compressor	Type		Hermetically sealed scroll type	Hermetically sealed scroll type	Hermetically sealed scroll type
	Volume	m^3/h	27.7	33.6	17.7 + 17.7
	Number of revolutions	r/min	5,214	6,330	5,214 + 5,214
	Motor output × number of units	kW	8.0 × 1	9.7 × 1	5.4 × 1 + 5.4 × 1
	Starting method		Soft start	Soft start	Soft start
Fan	Type		Propeller fan	Propeller fan	Propeller fan
	Motor output	kW	0.6 × 2	0.6 × 2	(0.6 × 2) × 2
	Airflow rate	cfm (m^3/min)	9,480 (268)	9,480 (268)	7,989 + 7,989 (226 + 226)
	Drive		Direct drive	Direct drive	Direct drive
Connecting pipes	Liquid pipe	in. (mm)	ϕ1/2 (12.7) C1220T (Brazing connection)	ϕ5/8 (15.9) C1220T (Brazing connection)	ϕ5/8 (15.9) C1220T (Brazing connection)
	Suction gas pipe	in. (mm)	ϕ1-1/8 (28.6) C1220T (Brazing connection)	ϕ1-1/8 (28.6) C1220T (Brazing connection)	ϕ1-1/8 (28.6) C1220T (Brazing connection)
	High / Low pressure gas pipe	in. (mm)	ϕ7/8 (22.2) C1220T (Brazing connection)	ϕ7/8 (22.2) C1220T (Brazing connection)	ϕ1-1/8 (28.6) C1220T (Brazing connection)
Weight		lbs (kg)	793 (360)	793 (360)	727 + 727 (330 + 330)
Sound pressure level (Reference data)		dB (A)	65	65 (65.5 ★3)	64 (67.5 ★3)
Sound power level (Reference data)		dB	87	88	83
Safety devices			High pressure switch, Fan driver overload protector, Overcurrent fuse, Inverter overload protector, Leak detecting device	High pressure switch, Fan driver overload protector, Overcurrent fuse, Inverter overload protector, Leak detecting device	High pressure switch, Fan driver overload protector, Overcurrent fuse, Inverter overload protector, Leak detecting device
Defrost method			Deicer	Deicer	Deicer
Capacity control		%	14-100	12-100	6-100
Refrigerant	Refrigerant name		R410A	R410A	R410A
	Charge	lbs (kg)	25.8 (11.7)	25.8 (11.7)	25.8 + 25.8 (11.7 + 11.7)
	Control		Electronic expansion valve	Electronic expansion valve	Electronic expansion valve
Standard accessories			Installation manual, Operation manual, Connection pipes, Clamps	Installation manual, Operation manual, Connection pipes, Clamps	Installation manual, Operation manual, Connection pipes, Clamps

C: 3D120071C, 3D120072B

Air Cooled Heat Recovery Units

Notes:

★1 Indoor temp.: 80°FDB (26.7°CDB) , 67°FWB (19.4°CWB) / Outdoor temp.: 95°FDB (35.0°CDB) / Rated capacity is certified under AHRI standard 1230.

★2 Indoor temp.: 70°FDB (21.1°CDB) / Outdoor temp.: 47°FDB (8.3°CDB) , 43°FWB (6.1°CWB) / Rated capacity is certified under AHRI standard 1230.

★3 Sound pressure level may increase during heating operation at ambient temps below 41°F (5°C) value in parenthesis is the max sound pressure at those conditions.

GREENHECK
Building Value in Air.

Job:PDX068
Mark: AX-160 - 60K
Model: AX-160-400-0619-C200

Model: AX-160-400-0619-C200

Medium Pressure Axial Roof Upblast Direct Drive

Performance	
Quantity	1
Volume (CFM)	68,739
Total External SP (in. wg)	0.409
Total TP (in. wg)	0.998
Operating Power (hp)	17.12
Required Power (hp)	18.26
Fan RPM	870
Elevation (ft)	0
Start-up Temp.(F)	70
Operating Temp.(F)	105

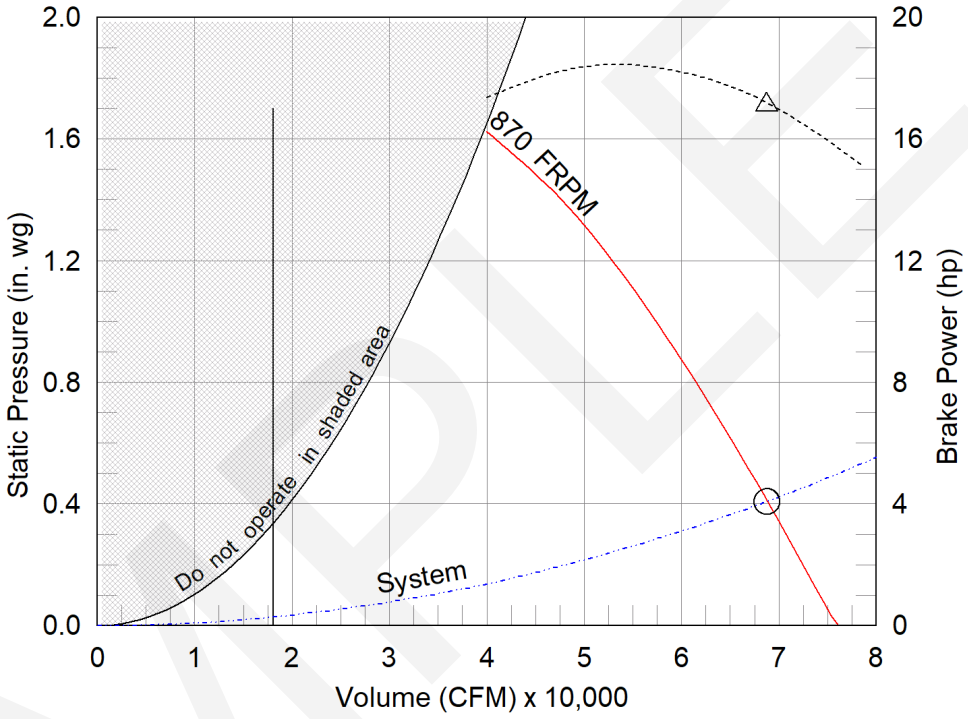
Fan Configuration	
Size	160
Arrangement	4
Discharge Position	Upblast
Mounting	Roof Mount
Material Type	Steel
Casing Style	Upblast
Impeller Material	Aluminum

Equipment Weights	
Fan (LMD)(lb)	1,575
Motor/Drive (lb)	560
Accessories (lb)	9

Misc Fan Data	
FEG	75
Outlet Velocity (ft/min)	3,175
Static Efficiency (%)	26
Tip Speed (ft/min)	14,349

Motor and Drives	
Motor	Included
Size (hp)	20
RPM	870
Enclosure	TEFC
V/C/P	460/60/3
Frame Size	324T
Max Frame Size	365

Operating Performance



△ Operating Bhp point
◯ Operating point at Total External SP
Fan curve
System curve
Brake horsepower curve
Min. Damper Volume

Static Pressure Calculations	
External SP	0.4 in. wg
Direct Drive RPM Static Adj	0.009 in. wg
Total External SP	0.409 in. wg

Upblast Exhaust Fans

Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA
Inlet	99	99	98	96	92	88	85	82	98	86

LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per octave band at 5 ft- dBA levels are not licensed by AMCA International

SAMPLE

Technical Data Sheet for DOAS-1

Condensing Section

Compressor

Type	Quantity	Refrigerant Charge lb	Total Power	Capacity Control	Compressor Isolation
Inverter Scroll	2	45.8	9.64 kW	Mod Control with Inverter Compressors	Rubber in Shear

Compressor Amps:

Compressor 1	4.5 A
Compressor 2	7.9 A

Compressor Options: Suction and Discharge Isolation Valves

Condenser Coil

Type	Fins per Inch	Fin Material
Copper Tube	23	Aluminum

Coil Options: Vandal Guard

Condenser Fan Motors

Number of Motors	Full Load Current (Total)
2	1.8 A

AHRI 360 Certified Data at AHRI 360 Standard Conditions

Net Capacity	EER	IEER	Heat Net Capacity at 47°F	COP at 47°F	Heat Net Capacity at 17°F	COP at 17°F
119000 Btu/hr	11.7	18	105000 Btu/hr	3.42	62000 Btu/hr	2.38

Internal Pressure Drop Calculation

External Static Pressure:	1.00 inH_2O
Filter:	0.04 inH_2O
Outside Air:	0.05 inH_2O
Energy Recovery:	1.29 inH_2O
DX Coil:	0.14 inH_2O
Hot Gas Reheat:	0.03 inH_2O
Electric Heat:	0.09 inH_2O
Total Static Pressure:	2.64 inH_2O

DOA

Sound

Sound Power (db)

Frequency	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Inlet	82	83	79	80	75	72	66	61
Discharge	82	86	82	85	81	78	74	69
Radiated	85	85	81	78	76	71	64	57

Options

Unit

Smoke Detectors:	Return Air Smoke Detector

Electrical

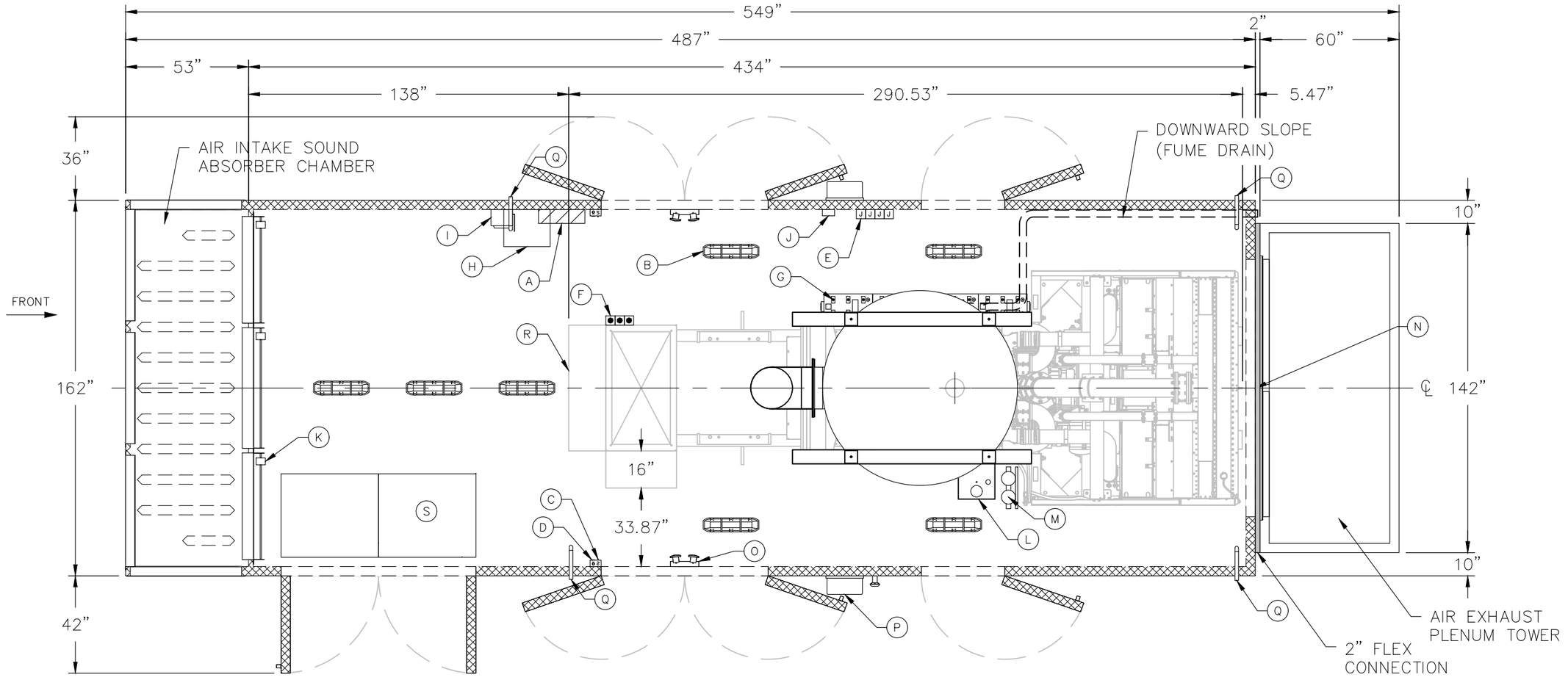
Field Connection:	Fused Disc: 65 kAIC - 208/230/460V: 22 kAIC 575V
Powered Receptacle:	Field powered 115V GFI outlet
Power Options:	Phase Failure Monitor

Controls

Communication Card:	BACnet/MSTP card, Factory installed

ENCLOSURE TO REDUCE IN FREE FIELD GENERATOR NOISE TO 85 dB/A AT 23 FEET FROM ENCLOSURE

WORK # 35600619



NOTE:
– CHECK WITH CUSTOMER WITH REFERENCE TO GROUND BAR

TOP VIEW

KEYED NOTES

ALL ELECTRICAL PARTS WIRED IN EMT CONDUIT

A – (1) PANELBOARD 125A 120V/208Y 3P
B – (7) 2FT LED FIXTURES (LITHONIA DMW2 40W)
C – (2) LIGHT SWITCHES
D – (2) INTERIOR GFI RECEPTACLES
E – (4) CONNECTIONS FOR JACKET WATER HEATER, ALTERNATOR HEATER, OR BATTERY CHARGER
F – (3) CONNECTIONS FOR LOW/HIGH/LEAK ALARMS
G – (1) CONNECTION FOR CUSTOMER BATTERIES
H – (1) 30KVA TRANSFORMER 3P (SQUARE D EX30T3H)
I – (1) 60A FUSED DISCONNECT SWITCH
J – (1) THERMOSTAT WIRED TO OPEN/CLOSE MOTOR OPERATED DAMPERS
K – (6) CONNECTIONS FOR MOTOR OPERATED DAMPERS (148"WIDE X 133.44"HIGH) WITH AUXILIARY RELAY
L – 4" FUEL FILL COUPLING, 2" FUEL FILL PORT WITH CAP AND 8" SPILL CONTAINMENT LIP AND DRAIN
M – (1) FUEL/WATER RACOR SEPARATOR WITH VALVES (SUPPLIED & INSTALLED BY ASI)
N – (1) PARKER 1/2" RADIATOR DRAIN VALVE WITH ACCESS OPENING
O – (2) EMERGENCY DUAL–HEAD LIGHTS
P – (2) LED EXTERIOR LIGHTS (TWH–LED–20C–1000–50K–T3M–120–PE–DWHXD)
Q – (4) EXTERNAL FUEL POLISHER HOOK–UPS WITH DIP TUBES
R – (1) 4,000A CIRCUIT BREAKER
S – (1) CAMBOARD

RIGHT HAND UNIT

REVISIONS

DATE	BY	DESCRIPTION:
3–16–20	MI	TOWER DIMENSION
3–17–20	MI	TOWER NOTE
3–20–20	MI	RELABELED PROJECT NUMBER, TANK CAPACITY

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Project: VADATA 2500 CAMBOARD ENCLOSURE (PLENUM DISCHARGE)

ONE (1) WEATHER–PROTECTIVE, WALK–IN, DROP–OVER TYPE ENCLOSURE WITH BASE AND BUILT–IN UL–142 LISTED 5,000 GALLON SUB–BASE TANK WITH RUPTURE TANK, FOR A 2,500KW 3516C HD (WITH 43°C RADIATOR) CATERPILLAR DIESEL GENERATOR SET WITH A 4,000AMP FREE–STANDING CONNECTION BOX.

Scale: 1/4"=1'–0"

CUSTOMER APPROVAL

ALBAN ENGINES APPROVES THE DESIGN AS SHOWN OR INDICATED AND RELEASES THESE DRAWINGS FOR FABRICATION.

SIGNATURE DATE

ACOUSTICAL SHEETMETAL COMPANY

2600 PRODUCTION ROAD
VA BEACH, VA 23454
PHONE:
(757) 456–9720
FAX:
(757) 557–0245

Date: 3–2–20

Sheet 2 *of* 20

35600619 REV 3–20–20.DWG

UNIVERSAL
Acoustic & Emission Technologies

Engine Silencer Selection Tool

Performance Summary

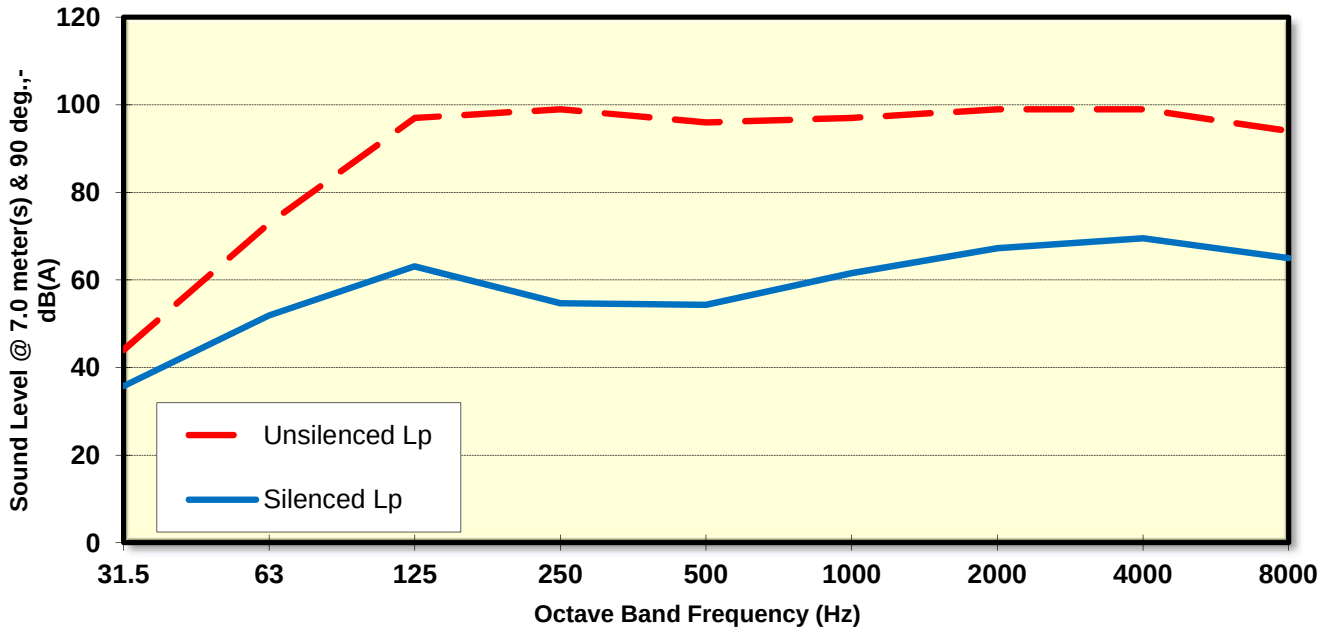
Customer	Rypos	**Date:**	2-Dec-14
Project Name	Peterson CAT	**By:**	R. Evans

Engine Details			**Piping Details**		
Engine Make	CAT		Pipe Diameter	0	inches
Engine Type	3516C-HD		Straight Pipe Length	0	feet
Exhaust Flow Rate	19,049	cfm	Number of Sawcut Elbows	0	
Exhaust Temperature	921.92	°F	Number of 90 deg. Long Radius Elbows	0	
Max Allowable Backpressure	27	inch WG	Number of 90 deg. Short Radius Elbows	0	

Silencer Performance			**Silencer Details for Part Number: Q-20008313**		
Silencer Backpressure	4.72	inch WG	No. of Silencers per Engine	1	
Total Backpressure	4.72	inch WG	Inlet Size/Outlet size (NB)	Dual 10/20	inches
Calculated Exhaust Gas Velocity	7222.4	ft/min	Silencer Type & Silencing Grade	Critical	
Required Sound Level- Lp	75.0	dB(A)	Inlet-Outlet Configuration	Dual Bottom In/Top Out	
Required Lp at:	23.0 feet	90 deg	Silencer Shape	Box	
Predicted Insertion Loss	32.7	dB	Silencer Material	Mild Steel	
Predicted Sound Level	73.3	dB(A)	Silencer Finish	Gray Hi-Temp Paint	

Predicted Silencer Performance Curve- Sound Level @ 7.0 meter(s) & 90 deg.,- dB(A)

Frequency Hz	Total	31.5	63	125	250	500	1000	2000	4000	8000
Unsilenced Lp	106.0	44	73	97	99	96	97	99	99	94
Silenced Lp	73.3	36	52	63	55	54	62	67	69	65



Comments:
Standard Length APDF7-22, 64.25" x 98" x 76.5"

Frequency Band, Hz	31.5	63	125	250	500	1000	2000	4000	8000
Unsilenced Lp @ 7 meters, dB	--	--	113	108	99	97	98	98	95

Sound levels and backpressures are predictions based on typical silencer performance. Actual results will vary depend on a number of factors affecting the individual application & installation. Calculations shown are estimates only and do NOT constitute a warranty.

ATTACHMENT 2 – NOISE

Noise and Vibration Memoranda, Trinity Consultants March 20, 2021 and March 31, 2022

Trinity Consultants

MEMORANDUM

To: California Energy Commission

cc: Scott Galati, DayZen LLC

From: Jafar Al-Khalaf, David Strohm, Trinity Consultants

Date: March 29, 2021

RE: Gilroy Backup Generating Facility Environmental Noise & Vibration Assessment Addendum

The purpose of this memorandum is to provide an addendum to the Environmental Noise & Vibration Assessment originally submitted to the California Energy Commission (CEC) in November 2020 for the proposed Gilroy Data Center to be located at Camino Arroyo, Gilroy, California (the Project).

In response to the Bay Area Air Quality Management District's (BAAQMD's) publication of a revised Best Available Control Technology (BACT) guideline for diesel-fired emergency generators rated greater than or equal to 1,000 brake horsepower (bhp) requiring Tier 4F-compliant engines, Amazon Data Services (ADS) authorized its consultant team to evaluate the noise impacts of a Tier 4F-compliant solution in comparison to the analysis submitted for the original Tier 2 design. The changes associated with the Tier 4F-compliant solution include a selective catalytic reduction (SCR) and diesel oxidizing catalyst (DOC) retrofit, an increase in the generator plenum height to 32 feet, and an increase in stack diameter to 26 inches.

The noise-generating components involved with the generators are the following:

- Mechanical sound that is controlled by the generator enclosure.
- Stack sound controlled by the stack silencer.

The Tier 4F-compliant solution does not affect the original Tier 2 design's generator enclosure nor stack silencer. It is also anticipated that the SCR and DOC retrofit does not contribute significant noise-generating components. As such, the noise generated from the generator stack will remain the same as that for the Tier 2 design at the manufacturer-rated sound pressure level of 85 dBA at 23 feet.

It was also confirmed with the generator vendor that the Tier 4F-compliant solution will not affect the sound power levels associated with the generator components. Therefore, Trinity's noise assessment for the Tier 2 design is still applicable to the Tier 4F-compliant solution and no additional assessment is required.

For questions regarding this memorandum or the noise assessment, please feel free to contact me at (647) 470-0067 or email jalkhalaf@trinityconsultants.com.

Sincerely,

TRINITY CONSULTANTS



Jafar Al-Khalaf
Consultant

1901 Harrison St, Ste 1590, Oakland, CA 94612
P 510.285.6351

Trinity Consultants

MEMORANDUM

To: City of Gilroy

cc: Scott Galati, DayZen LLC

From: David Strohm, Trinity Consultants

Date: March 31, 2022

RE: Gilroy Backup Generating Facility Environmental Noise & Vibration Assessment Second Addendum

The purpose of this memorandum is to provide a second addendum to the Environmental Noise & Vibration Assessment originally submitted to the California Energy Commission (CEC) in November 2020 (herein referred to as the "2020 Noise Assessment") and associated addendum submitted in March 2021 for the proposed Gilroy Data Center to be located at Camino Arroyo, Gilroy, California (the Project).

In response to revised design engineering for the Project, the Applicant has concluded that the Project's emergency generation needs can be accommodated with a reduced number of onsite generators. This will result in the removal of all generators for the Phase II building and removal of a single generator on the north side of the Phase I building. The revision will reduce the total number of onsite generators to 25 for use as critical backups as well as one for life safety and one for the security building. The 2020 Noise Assessment evaluated the noise and vibration impacts from a total of 50 critical backup generators, two life safety generators, and one security building generator, and concluded the Project noise impacts would be less than significant with mitigation incorporated.

The noise-generating components involved with the generators are the following:

- Mechanical sound that is controlled by the generator enclosure.
- Stack sound controlled by the stack silencer.

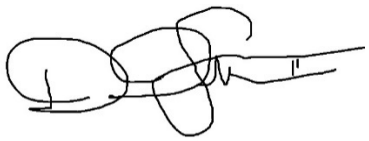
Because the reduction in the number of generators is directly linked with a reduction in onsite noise production, this Project revision will result in a reduction in both onsite and offsite ambient noise impacts. The Applicant will continue to comply with the mitigation methods proposed in the 2020 Noise Assessment.

It was also confirmed that the revision will not affect the sound power levels associated with the remaining generator components. Therefore, Trinity's noise assessment for the Tier 2 design is still a conservative representation of worst-case offsite noise impacts and no additional assessment is required.

For questions regarding this second addendum or the 2020 Noise Assessment, please feel free to contact me at (208) 999-2327 or email dstrohm@trinityconsultants.com.

Sincerely,

TRINITY CONSULTANTS



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