City of Coachella Cr6 Water Treatment Facilities

NOISE IMPACT ANALYSIS

CITY OF COACHELLA

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LIST OF ABBREVIATED TERMS

(1)	Reference
ANSI	American National Standards Institute
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
Cr6	Chromium 6
CRRF	Centralized Resin Regeneration Facility
CVWD	Coachella Valley Water District
CWA	Coachella Water Authority
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FICON	Federal Interagency Committee on Noise
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
Leq	Equivalent continuous (average) sound level
Lmax	Maximum level measured over the time interval
Lmin	Minimum level measured over the time interval
MCL	Maximum contaminant levels
NIOSH	National Institute for Occupational Safety and Health
PPV	Peak particle velocity
Project	City of Coachella Cr6 Water Treatment Facilities
RCNM	Roadway Construction Noise Model
RRF	Resin Regeneration Facility
SBA	Strong Base Anion
SCADA	Supervisory Control and Data Acquisition
VdB	Vibration Decibels
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

This noise study has been prepared to determine the noise exposure and the necessary noise mitigation measures for the proposed City of Coachella Chromium 6 (Cr6) Water Treatment Facilities ("Project"). The City of Coachella Cr6 Water Treatment Facilities Project is located at seven existing well sites within the limits of the City of Coachella. The Project includes the construction and operation of new Cr6 treatment equipment at each of these seven existing City of Coachella facilities to comply with the July 2014 State of California adoption of the Cr6 maximum contaminant levels (MCL) for drinking water. The purpose of this noise analysis is to ensure that the proposed operational and construction activities within the Project study area are compatible with the existing and future noise environment. The potential noise impacts on the sensitive land uses near the Project well sites are evaluated using noise level standards established under the appropriate Federal, State, and local noise regulations.

OPERATIONAL NOISE ANALYSIS

Using reference noise levels to represent the noise sources from the City of Coachella Cr6 Water Treatment Facilities, this analysis estimates the Project-related operational noise levels at nearby sensitive receiver locations. The operational noise levels related to the well pump and surge tank activity, building exhaust and cooling systems, a transformer, and emergency backup generators associated with the City of Coachella Cr6 Water Treatment Facilities are considered exempt from the City of Coachella Municipal Code noise standards. However, to demonstrate compliance with CEQA Guidelines, this analysis evaluates the potential operational noise levels against the City of Coachella Municipal Code exterior noise standards at the closest noise-sensitive receiver locations. Further, the expected noise sources at the existing City of Coachella facilities after Project improvements are expected to be similar to those associated with existing City of Coachella well sites, thereby representing minimal changes to the operational noise sources of each existing facility.

The Project-related operational noise levels at the closest sensitive receiver locations will range from 16.1 to 43.2 dBA Leq and will satisfy the residential daytime 55 dBA Leq and nighttime 45 dBA Leq noise level standards of the City of Coachella Municipal Code. Therefore, the operational noise impacts will be *less than significant*. Further, the Project will contribute an operational noise level increase of up to 0.1 dBA Leq during the daytime hours and the nighttime Project-related operational noise level increases will approach 0.7 dBA Leq. Since the Project-related operational noise level contributions will satisfy the Federal Interagency Committee on Noise (FICON) significance criteria based on the existing ambient noise levels, the increases at the sensitive receiver locations will be *less than significant*. (1) On this basis, Project operational stationary-source noise would not result in a substantial temporary/periodic, or permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project, and impacts in these regards will be *less than significant*.

OPERATIONAL NOISE ABATEMENT MEASURES

The following operational noise abatement measures are recommended to reduce the potential operational noise levels received at nearby residential homes.

- All trucks transiting on-site in outdoor areas of the well facilities shall be operated with properly functioning and well-maintained mufflers.
- Maintain quality pavement conditions on the property that are free of vertical deflection (i.e. speed bumps) to minimize truck noise.
- The truck access gates and loading areas shall be posted with signs which state:
    - Truck drivers shall turn off engines when not in use;
    - No music or electronically reinforced speech from workers shall be audible at noise-sensitive properties.

CONSTRUCTION NOISE ANALYSIS

Construction noise represents a temporary short-term noise level contribution to the existing ambient noise levels. Based on reference construction equipment noise levels, the peak construction noise levels will approach 79.6 dBA Leq at 50 feet. However, some sensitive receiver locations are located less than 50 feet from the center of construction activities within each well site, and therefore, the Project-related construction noise levels are evaluated at the distance to each of the closest receiver locations. Since the City's General Plan and Municipal Code do not establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes as the *generation of noise levels in excess of standards* or as a *substantial temporary or periodic noise increase*, the National Institute for Occupational Safety and Health (NIOSH) 85 dBA Leq noise level threshold is used. (2) The construction noise levels include the additional attenuation provided by existing and proposed noise barriers at each well site location. Based on the results of the construction noise analysis, the unmitigated peak construction noise levels will satisfy the 85 dBA Leq threshold at the nearby sensitive receiver locations and construction noise impacts with, therefore, be *less than significant*.

To describe the temporary Project construction noise level contributions to the existing ambient noise environment, the Project construction noise levels were combined with the existing ambient noise levels measurements for the off-site receiver locations. The difference between the combined Project-construction and ambient noise levels are used to describe the construction noise level contributions. A temporary noise level increase of 12 dBA is considered a potentially significant impact based on the Caltrans *substantial* noise level increase criteria which is used to assess the Project-construction noise level increases. (3) No nighttime construction activity is permitted in the City of Coachella Municipal Code, and therefore, is not analyzed in this noise study. The Project will contribute an unmitigated construction noise level increase ranging from 0.2 to 20.0 dBA Leq during the daytime hours at the closest sensitive receiver locations. Therefore, temporary construction noise mitigation barriers are required at the construction boundaries near the impacted receiver locations where Project construction noise levels could potentially exceed the noise level thresholds. The construction noise analysis

presents a conservative, worst-case approach with the highest noise-level-producing equipment for each stage of Project construction operating at the closest point from the center of construction activity to the nearby sensitive receiver locations. This scenario is unlikely to occur during typical construction activities and likely overstates the construction noise levels which will be experienced at each receiver location. With the installation of temporary exterior noise control barriers at the minimum height of 10-feet, shown on Exhibit ES-A, the worst-case construction noise level increases at the nearby residential receivers would be reduced.

With the temporary construction noise mitigation, the peak construction noise level increases at potentially impacted receiver locations are expected to range from 0.2 to 11.6 dBA Leq. The analysis shows that the temporary 10-foot high temporary noise barrier mitigation will reduce the peak construction noise levels at the potentially impacted receiver locations to satisfy the 12 dBA Leq construction noise level increase threshold adopted from Caltrans. The temporary construction noise barriers will reduce these noise level increases at the closest noise-sensitive receiver locations to *less than significan*t levels. It is important to note that receiver location R3 represents currently vacant land use designated as residential, and therefore, only represents a sensitive receiver location if built and occupied at the time of Project construction.

CONSTRUCTION NOISE MITIGATION MEASURES

Based on the stages of Project construction activity, temporary high-level noise increases are expected at receivers surrounding the City of Coachella Cr6 Water Treatment Facilities when certain activities occur within each site. Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following practices are required to reduce the noise level increases produced by the construction equipment to the nearby noise sensitive residential land uses.

- Project construction activities shall only occur between the permitted hours of 6:00 a.m. to 5:30 p.m., and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. From May 1st through September 30th, construction is limited to between 5:00 a.m. to 7:00 p.m. Monday to Friday, and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. The Project construction supervisor shall ensure compliance with the note.
- Install temporary construction noise barriers with a minimum effective noise barrier height of 10 feet at well site numbers 17 and 19, as shown on Exhibit ES-A. The noise control barriers must present a solid face from top to bottom. The noise control barrier must meet the minimum height of 10-feet on Exhibit ES-A.
    - If receiver location R3 is not built and occupied at the time of well site number 17 construction, then it is not considered a noise-sensitive land use, and as such, would not require temporary noise barrier mitigation.
    - Existing perimeter walls at well site numbers 17 and 19 may be used to satisfy the 10-foot effective temporary noise barrier height in combination with the materials identified below. Any gaps, holes, or openings between the permanent and temporary barriers must be properly sealed at the time of construction.
    - The barrier shall provide a weight of at least 4 pounds per square foot of face area with no decorative cutouts or line-of-sight openings between shielded areas and the noise source. The noise barrier shall be constructed using one of the following materials:

  - An acoustical blanket (e.g. vinyl acoustic curtains or quilted blankets) on a temporary frame attached to the existing perimeter wall or as a standalone temporary noise barrier;
  - Masonry block;
  - Stucco veneer over wood framing (or foam core), or 1-inch-thick tongue and groove wood of sufficient weight per square foot;
  - Glass (1/4-inch-thick), or other transparent material with sufficient weight per square foot;
  - Any combination of these construction materials satisfying a weight of at least 4 pounds per square foot of face area.
- The noise barriers must be maintained and any damage promptly repaired. Gaps, holes, or weaknesses in the barrier or openings between the barrier and the ground shall be promptly repaired.
- The noise control barriers and associated elements shall be completely removed and the site appropriately restored upon the conclusion of the construction activity.

- During all Project site construction, all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction supervisor shall place all stationary construction equipment so that emitted noise is directed away from the noise-sensitive receivers nearest the Project site.
- The construction supervisor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receivers nearest the Project site (i.e., on access roads or at the center of each facility) during all Project construction.
- The construction supervisor shall limit haul truck deliveries to the same hours specified for construction equipment (between the hours of 6:00 a.m. to 5:30 p.m., and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. From May 1st through September 30th, construction is limited to between 5:00 a.m. to 7:00 p.m. Monday to Friday, and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays).

EXHIBIT ES-A: TEMPORARY CONSTRUCTION NOISE BARRIER MITIGATION

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1 INTRODUCTION

This noise analysis has been completed to determine the potential noise impacts related to the development of the proposed City of Coachella Chromium 6 (Cr6) Water Treatment Facilities ("Project"). The Project includes the operation and construction of new Cr6 treatment equipment throughout the existing City of Coachella water treatment facilities to comply with July 2014 Cr6 maximum contaminant levels (MCL) for drinking water adopted by the State of California. This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, and evaluates the potential Project-related long-term operational and temporary noise impacts associated with the construction of the Cr6 water treatment facilities.

1.1 SITE LOCATION

The proposed Cr6 water treatment facilities and new pipelines would be located at seven existing well sites within the limits of the City of Coachella, as shown on Exhibit 1-A. The existing well sites are controlled by the Coachella Water Authority (CWA) and currently serve water to the City of Coachella residents.

1.2 PROJECT DESCRIPTION

The Project includes the construction and operation of new Cr6 treatment equipment at seven existing City of Coachella facilities to comply with the July 2014 State of California adoption of the Cr6 maximum contaminant levels (MCL) for drinking water. The Project will provide Cr6 strong base anion (SBA) water treatment at the existing and proposed City of Coachella facilities once constructed. The existing sites with proposed Project improvements include: Wells 12, 16 to 19, a resin regeneration facility, and a wastewater treatment plant. The site plans for the existing seven well sites and proposed treatment facilities are provided in Appendix 1.1.

1.2.1 STRONG BASE ANION (SBA) TREATMENT FACILITIES

Under the Strong Base Anion (SBA) treatment process, water is pumped from the wellhead into a resin treatment vessel, where it passes through the SBA ion exchange resin. Since the resin must be regenerated or replaced the City of Coachella Cr6 Water Treatment Facilities Project will construct a Resin Regeneration Facility (RRF) rather than regenerate the resin at each SBA well site. There are currently five existing drinking water wells that will require SBA treatment. Future wells added to the Coachella system to meet the demand of future development will undergo CEQA review at the time they are proposed and designed. The existing well sites vary in terms of geometry (shape) and size, and range in area from 0.3 to 2.5 acres; the average size of the well sites is approximately 0.5 acre. The 5 sites are located throughout the CWA service area, as shown on Exhibit 1-A. Each site is contained within a continuous perimeter of either concrete masonry block wall or chain link fence, and typically includes a single vehicle access drive.

In general, each existing well site currently contains a well head, pump and piping enclosed within a well house; chlorine dosing building; surge tank and compressor; electrical equipment enclosed within a building or canopy; communications cabinets (often within the electrical building);

underground and overhead utilities; blowoff structure and associated piping; emergency eyewash and/or shower; and security lighting on the buildings. The chlorine dosing occurs through a sodium hypochlorite feed system. All of the well sites have Supervisory Control and Data Acquisition (SCADA) equipment to control and monitor water pumping and water quality. Most well sites also have a blowoff structure that directs unused water from well maintenance activities either to onsite ponds or other form of beneficial reuse or discharge. Some well sites currently have an emergency power generator, while the remaining sites have no stationary on-site generators or receptacles for portable standby generator connections.

In addition to the new treatment facilities, other improvements will be installed at some or all of the SBA well sites. Improvements related to this noise study are described below:

- Demolition, relocation and/or reconstruction of some existing facilities within the well site parcel to accommodate the new treatment facilities;
- New concrete drain pad construction adjacent to resin vessels and bag filters, with catch basin(s) and piping to new onsite blow off pond;
- New electrical equipment, as required for the resin treatment equipment or to replace existing aged electrical equipment on the site;
- Existing emergency generators at the well sites will be retained. Well 16 will be provided with emergency generating capacity as part of the Project;
- Upgraded chain link perimeter fencing to block at Wells 12, 16, and 18;
- Access improvements (e.g., new or relocated electronic gate, new or relocated driveway apron/curb cuts/sidewalk replacement, etc.)
- Asphalt paved paths within the sites to accommodate truck turning areas and equipment access, including protective bollards around well structures
- Site grading, to create a local high-point at the well location and direct/collect runoff to new onsite blow off pond.

Certain improvements will not be needed or made to the well sites, including: landscaping within the well site perimeter and heating/ventilation/air conditioning (HVAC) equipment. HVAC equipment is not required because the only fully enclosed structures on SBA well sites are the electrical buildings, and these structures are cooled by fans.

1.2.2 RESIN REGENERATION FACILITY

Eventually the capacity of the resin at the SBA well sites to attract chromium-6 will be exhausted, and the resin must be regenerated. In this Project, two options are proposed for regenerating resin at an offsite Resin Regeneration Facility (RRF). The first option is to partner with a neighboring agency, the Coachella Valley Water District (CVWD) to utilize available capacity at their Centralized Resin Regeneration Facility (CRRF). In this option, CWA would contract with CVWD to transport the resin to and from the CWA well sites and for regeneration of the resin. The second option is for CWA to construct their own resin regeneration facility. In this option, CWA (or a contracted outside vendor) would be responsible for the resin transfer and transport to the CWA regeneration facility, and for conducting the regenerations. For the purpose of this noise study, the CWA RRF option is analyzed to determine the potential noise impacts of the

Project. No analysis is included in this report for the CVWD CRRF since this option has already been completed as a part of the CEQA process under the CVWD project.

The proposed CWA Resin Regeneration Facility would be located on land owned by CWA south of Avenue 52 between Industrial and Enterprise Way. This CWA property used to be the site of the original Coachella Sanitation District (CSD) wastewater treatment plant (WWTP). Equipment remaining from that facility includes a control building structure and clarifier, which will require demolition. CWA currently uses the site as a lift station for rinse water flows from nearby agricultural operations. CWA may make improvements to the pipelines or send the flows to the existing sewer system for processing at CWA's Avenue 54 WWTP.

The purpose of the RRF is to remove chromium-6 and regenerate the resin that has been transported from the vessels at the individual SBA treatment sites to the resin regeneration facility. The main unit processes incorporated in the treatment process are spent resin transfer, resin truck disinfection and dechlorination, backwash, brine make-up and dilution, resin regeneration, and regenerated resin transfer. There are also two proposed alternatives for managing the spent brine: (a) hauling to a licensed treatment and disposal facility, and (b) spent brine treatment and supplementation to the CWA WWTP. The proposed facilities and improvements that would accomplish the process are described below.

The proposed CWA Resin Regeneration Facility building would consist of two or three structures. There will be an electrical/controls room that would be approximately 1,000 square feet. This building would be a combination of split-face and smooth-face block. The second building will contain the resin regeneration process equipment and will be adjacent to the electrical building. This building will be comprised of steel and would have a footprint of approximately 18,000 square feet. The buildings would include all necessary process equipment required for resin regeneration, brine treatment, as well as an electrical/control area. A paved access roadway would be installed around the perimeter of the facility, allowing access to any exterior location of the treatment buildings.

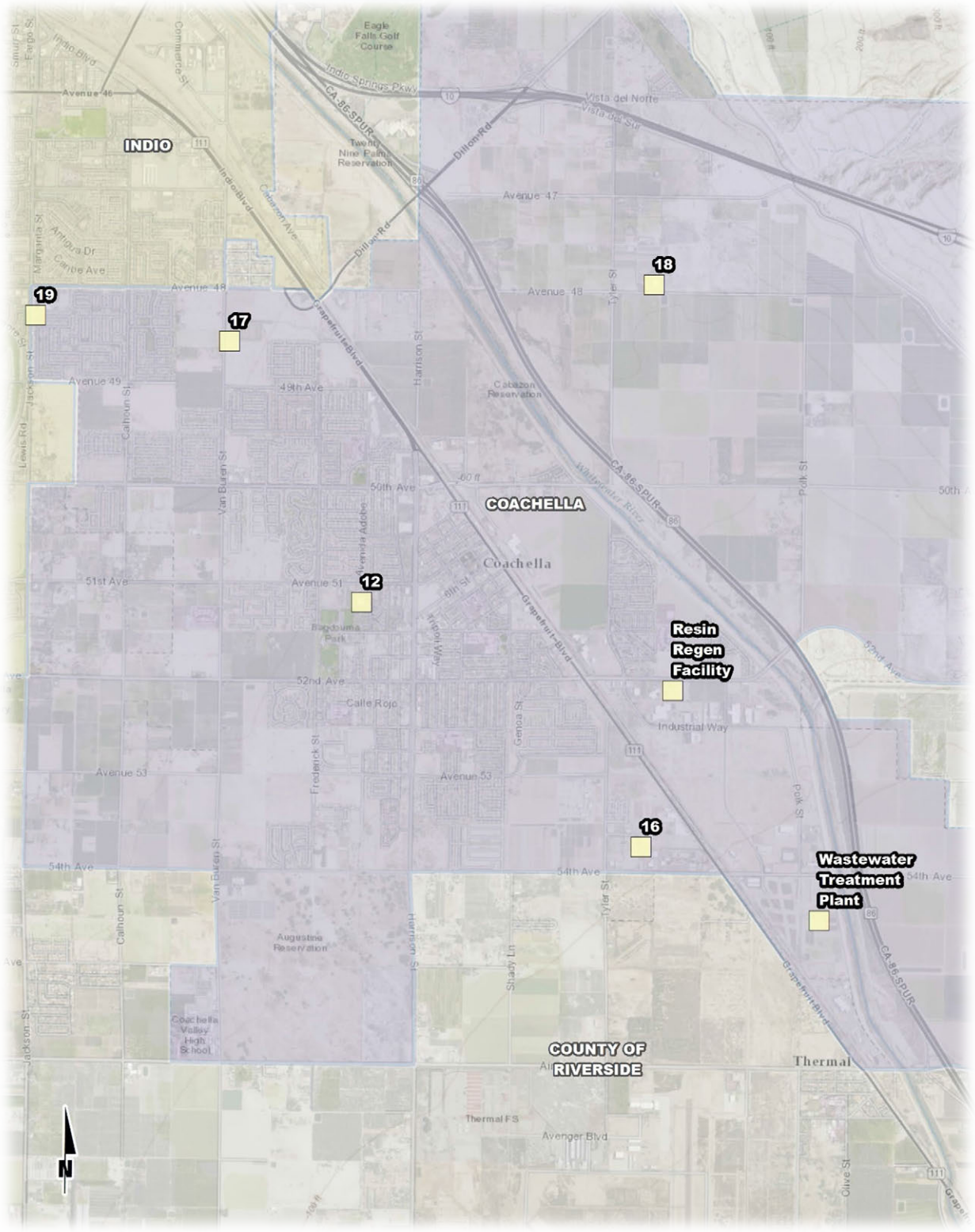
1.2.3 WASTEWATER TREATMENT PLANT

The proposed Wastewater Treatment Plant (WWTP) would receive the treated brine, rinse water, and wash down water (called mixed waste water) for treatment. In addition, proposed improvements include new aeration blowers, pumps, and concrete-lined sludge drying beds. Three buildings are proposed for blowers, administrative services, and chlorination.

1.3 PROJECT NOISE SOURCES

The planned Project operations would primarily be conducted within the boundaries of each existing and proposed City of Coachella facility. In addition, the expected noise sources at the existing City of Coachella facilities after Project improvements will be the same as those associated with the existing City of Coachella well sites; which will vary by site location and facility type. The existing and future on-site Project-related noise sources are expected to include: well pump and surge tank activity, building exhaust and cooling systems, a transformer, and emergency backup generators.

EXHIBIT 1-A: LOCATION MAP



2 FUNDAMENTALS

Noise has been simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (4) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort. (5) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (Leq). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 5 decibels to dBA Leq sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA Leq sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any particular time, but rather represents the total sound exposure. The City of Coachella relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually

sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receptor such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source.

2.3.3 ATMOSPHERIC EFFECTS

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 ft) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby resident. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The FHWA does not consider the planting of vegetation to be a noise abatement measure.

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for a particular observation point or receptor by controlling the noise source, transmission path, receptor, or all three. This concept is known as the source-path-receptor concept. In general, noise control measures can be applied to any and all of these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (6)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process.

The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (7)

2.7 COMMUNITY RESPONSE TO NOISE

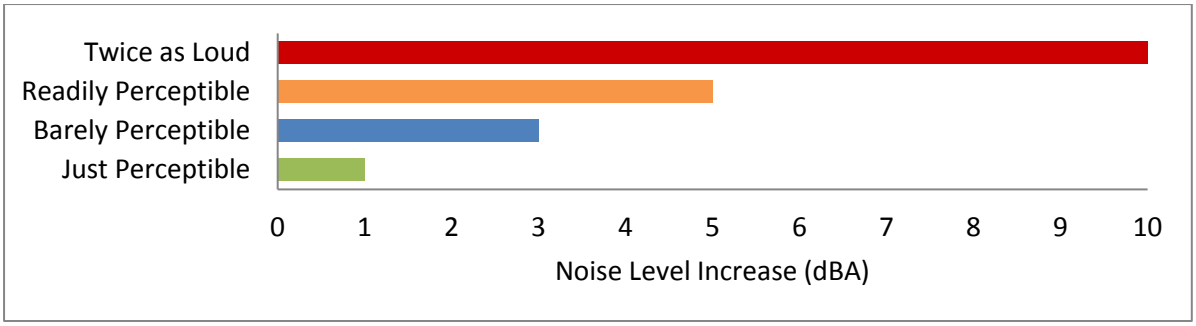
Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon each individual's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Another twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (8) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (8)

Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (6)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 EXPOSURE TO HIGH NOISE LEVELS

The Occupational Safety and Health Administration (OSHA) sets legal limits on noise exposure in the workplace. The permissible exposure limit (PEL) for a worker over an eight-hour day is 90 dBA. The OSHA standard uses a 5 dBA exchange rate. This means that when the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half. The National Institute for Occupational Safety and Health (NIOSH) has recommended that all worker exposures to noise should be controlled below a level equivalent to 85 dBA for eight hours to minimize occupational noise induced hearing loss. NIOSH also recommends a 3 dBA exchange rate so that every increase by 3 dBA doubles the amount of the noise and halves the recommended amount of exposure time. (9)

OSHA has implemented requirements to protect all workers in general industry (e.g. the manufacturing and the service sectors) for employers to implement a Hearing Conservation Program where workers are exposed to a time weighted average noise level of 85 dBA or higher over an eight-hour work shift. Hearing Conservation Programs require employers to measure noise levels, provide free annual hearing exams and free hearing protection, provide training, and conduct evaluations of the adequacy of the hearing protectors in use unless changes to tools, equipment and schedules are made so that they are less noisy and worker exposure to noise is less than the 85 dBA. This noise study does not evaluate the noise exposure of workers within a project or construction site based on CEQA requirements, and instead, evaluates Project-related operational and construction noise levels at the nearby sensitive receiver locations in the Project study area. Further, periodic exposure to high noise levels in short duration, such as Project construction, is typically considered an annoyance and not impactful to human health. It would take several years of exposure to high noise levels to result in hearing impairment. (10)

2.9 VIBRATION

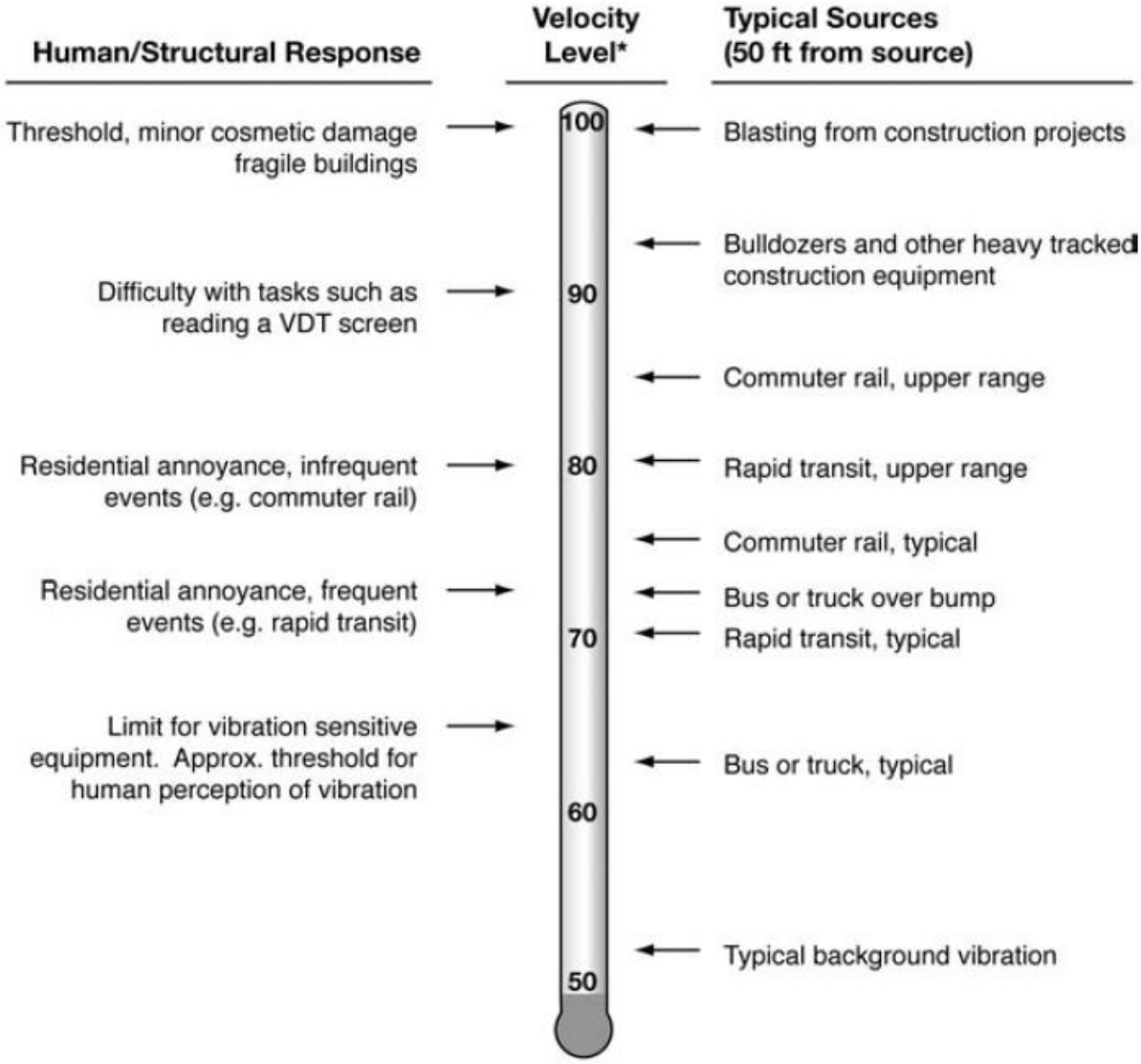
Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (11), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions.

As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings, but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal, and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment.

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



Source: Federal Transit Administration (FTA) Transit Noise Impact and Vibration Assessment.

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3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared according to guidelines adopted by the Governor's Office of Planning and Research. (12) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 CITY OF COACHELLA GENERAL PLAN NOISE ELEMENT

The City of Coachella has adopted a Noise Element of the General Plan as *a tool for local planners to use in achieving and maintaining land uses that are compatible with environmental noise levels*. (13) The Noise Element identifies noise goals and polices to protect City of Coachella residents from excessive noise. The goals of the Noise Element are as follows:

Goal 1 Land Use Planning and Design. A community where noise compatibility between differing types of land uses is ensured through land use planning and design strategies.

Goal 2 Stationary Source Noise. A community where excessive noise from stationary sources is minimized.

Goal 3 Mobile Source Noise. A community where excessive noise from mobile sources is minimized.

To ensure noise-sensitive land uses are protected from high levels of noise (Goal 1), Figure 10-1 of the City of Coachella General Plan Noise Element identifies exterior noise level guidelines for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. In addition, Table 1 of the Noise Technical Appendix provides an exterior noise level standard of 65 dBA CNEL and an interior noise level standard of 45 dBA CNEL for new residential developments impacted by transportation noise. The Noise Element also requires the analysis of new developments, as necessary, to identify mitigation measures to reduce noise levels to those found in Figure 10-1 of the Noise Element.

The noise criteria identified in the City of Coachella Noise Element are guidelines to evaluate the land use compatibility of transportation-related noise. The compatibility criteria, shown on Exhibit 3-A, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

The *Coachella Land Use/Noise Compatibility Matrix* (Figure 10-1) in the City of Coachella General Plan Noise Element provides guidelines to evaluate the acceptability of the transportation related noise level impacts. These guidelines are based on the Governor's Office of Planning and Research and are used to assess the long-term traffic noise impacts on land uses. According to the land use compatibility guidelines of the General Plan, the utility/institutional land use of the Project is considered *clearly compatible* with exterior noise levels approaching 70 dBA CNEL. For comparison, noise-sensitive residential land uses are considered *clearly compatible* with exterior noise levels of 60 dBA CNEL. (13)

3.3 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the City of Coachella Cr6 Water Treatment Facilities Project, operational source noise such as the well pump and surge tank activity, building exhaust and cooling systems, a transformer, and emergency backup generators are typically evaluated against standards established under a City's Municipal Code. For noise-sensitive residential properties, the City of Coachella Municipal Code, Section 7.04.030 (A), identifies exterior operational noise level limits for the daytime (6:00 a.m. to 10:00 p.m.) hours of 55 dBA Leq and 45 dBA Leq during the nighttime (10:00 p.m. to 6:00 a.m.) hours. The City of Coachella Municipal Code noise level standards are shown on Table 3-1 and provided in Appendix 3.1.

The City of Coachella Municipal Code, Section 7.04.060 (K) indicates that the stationary-source noise level standards *shall not preclude the construction, operation, maintenance and repairs of equipment, apparatus or facilities of park and recreation departments, public work projects or essential public services and facilities, including those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission*. (14) This exemption applies to both operational and construction-related noise levels associated with government owned property, and therefore, the operational activities associated with the City of Coachella Cr6 Water Treatment Facilities will be considered exempt from the noise standards.

TABLE 3-1: OPERATIONAL NOISE STANDARDS

Jurisdiction	Land Use	Time Period	Exterior Noise Level Standards (dBA Leq)[2]
Coachella[1]	Residential	Daytime (6:00 a.m. to 10:00 p.m.)	55
		Nighttime (10:00 p.m. to 6:00 a.m.)	45

[1] Source: City of Coachella Municipal Code, Section 7.04.030 (A).
[2] Leq represents a steady state sound level containing the same total energy as a time varying signal over a given sample period.

EXHIBIT 3-A: LAND USE/NOISE COMPATIBILITY MATRIX

LAND USE CATEGORIES		CNEL						
CATEGORIES	USES	55	60	65	70	75	80	
RESIDENTIAL	Single Family, Duplex, Multiple Family							
RESIDENTIAL	Mobile Homes							
COMMERCIAL - Regional, District	Hotel, Motel, Transient Lodging							
COMMERCIAL - Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theater							
COMMERCIAL INDUSTRIAL	Office Building, Research and Development, Professional Offices, City Office Building							
COMMERCIAL - Recreation INSTITUTIONAL - Civic Center	Amphitheater, Concert Hall Auditorium, Meeting Hall							
COMMERCIAL - Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club							
COMMERCIAL - General, Special INDUSTRIAL, INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities							
INSTITUTIONAL - General	Hospital, Church, Library, School Classroom							
OPEN SPACE	Parks							
OPEN SPACE	Golf Couse, Cemeteries, Nature Centers, Wildlife Reserves, Wildlife Habitat							
AGRICULTURE	Agriculture							

INTERPRETATION

ZONE A (GREEN) CLEARLY COMPATIBLE	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.
ZONE B (YELLOW) NORMALLY COMPATIBLE	New construction or development should be undertaken only after an analysis of the noise reduction requirements is made and needed noise insulation features included in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning will normally suffice.
ZONE C (ORANGE) NORMALLY INCOMPATIBLE	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
ZONE D (RED) CLEARLY INCOMPATIBLE	New construction or development should generally not be undertaken.

* Construction of new residential uses will not be allowed within the 65 dBA CNEL contour for airport noise.

Source: City of Coachella General Plan Noise Element, Figure 10-1.

3.4 CONSTRUCTION NOISE STANDARDS

As previously indicated in Section 3.3, the construction activities at the City of Coachella Cr6 Water Treatment Facilities are considered exempt from the noise level standards of the Municipal Code. However, to control noise impacts associated with the construction of the proposed Project, the City has established limits to the hours of operation. Section 7.04.070 of the City's Municipal Code, provided in Appendix 3.1, indicates that construction activities shall be limited from October 1st through April 30th, Monday to Friday, between the hours of 6:00 a.m. to 5:30 p.m., and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. From May 1st through September 30th, construction is limited to between 5:00 a.m. to 7:00 p.m. Monday to Friday, and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. (14) Since the City's General Plan and Municipal Code do not establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes as the *generation of noise levels in excess of standards* or as a *substantial temporary or periodic noise increase*, the following construction noise level thresholds are used in this noise study.

3.4.1 CONSTRUCTION NOISE LEVEL COMPLIANCE THRESHOLD

To evaluate whether the Project will generate *noise levels in excess of standards* at off-site sensitive receiver locations, a construction-related noise level threshold is adopted from the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH). (2) A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The construction related noise level threshold starts at 85 dBA for more than eight hours per day, and for every 3 dBA increase, the exposure time is cut in half. This results in noise level thresholds of 88 dBA for more than four hours per day, 92 dBA for more than one hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. (2) For the purposes of this analysis, the lowest, more conservative construction noise level threshold of 85 dBA Leq is used as an acceptable threshold for construction noise at the nearby sensitive receiver locations. Since this construction-related noise level threshold represents the energy average of the noise source over a given time period, they are expressed as Leq noise levels. Therefore, the noise level threshold of 85 dBA Leq over a period of eight hours or more is used to evaluate the potential Project-related construction noise level impacts at the nearby sensitive receiver locations.

3.4.2 CONSTRUCTION NOISE LEVEL INCREASE THRESHOLD

To determine if the Project-related construction noise level increases represent a potentially significant *temporary or periodic increase in ambient noise levels*, the Caltrans *Traffic Noise Analysis Protocol* 12 dBA Leq *substantial* noise level increase threshold is used in this analysis. (3) If the Project-related construction noise levels generate a temporary noise level increase above the existing ambient noise levels of up to 12 dBA Leq, then the Project construction noise level increases will be considered a potentially significant impact. This approach is consistent with the legal case, *Friends of Riverside's Hills v. Riverside Transportation Commission, et al.* (15)

3.4.3 CONSTRUCTION-RELATED HEARING CONSERVATION

The Occupational Safety and Health Administration (OSHA) requires hearing protection be provided by employers in workplaces where the noise levels may, over long periods of exposure to high noise levels, endanger the hearing of their employees. Standard 29 CFR, Part 1910 indicates the noise levels under which a hearing conservation program is required to be provided to workers exposed to high noise levels. (9) This analysis does not evaluate the noise exposure of construction workers within the Project site based on CEQA requirements, and instead, evaluates the Project-related construction noise levels at the nearby sensitive receiver locations in the Project study area. Further, periodic exposure to high noise levels in short duration, such as Project construction, is typically considered an annoyance and not impactful to human health. It would take several years of exposure to high noise levels to result in hearing impairment. (10)

3.5 CONSTRUCTION VIBRATION STANDARDS

The City of Coachella has not identified or adopted vibration standards. However, the United States Department of Transportation Federal Transit Administration (FTA) provides guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines allow 80 VdB for residential uses and buildings where people normally sleep. (11)

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity. While not enforceable regulations within the City of Coachella, the FTA guidelines of 80 VdB for sensitive land uses provide the basis for determining the relative significance of potential Project-related vibration impacts.

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

B. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

C. A substantial permanent increase in ambient noise levels in the Project vicinity above existing levels without the proposed Project; or

D. A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.

E. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the Project area to excessive noise levels.

F. For a project within the vicinity of a private airstrip, expose people residing or working in the Project area to excessive noise levels.

While the CEQA Guidelines and the City of Coachella General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts under CEQA Guideline A, they do not define the levels at which increases are considered substantial for use under Guidelines B, C, and D. CEQA Guidelines E and F apply to nearby public and private airports, if any, and the Project's land use compatibility. However, the Project would not expose people residing or working within Project facilities to aircraft noise levels beyond those existing today, since the Project represents improvements to existing City of Coachella well sites. Therefore, no further noise analysis is conducted in relation to Guidelines E and F.

4.1 NOISE-SENSITIVE RECEIVERS

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels and the location of noise-sensitive receivers in order to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (16)

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to

a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

4.1.1 SUBSTANTIAL PERMANENT NOISE LEVEL INCREASES

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. With this in mind, the Federal Interagency Committee on Noise (FICON) (1) developed guidance to be used for the assessment of long-term project-generated increases in noise levels that take into account the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (i.e., CNEL).

For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source will greatly increase the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for the purpose of this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. According to the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. Table 4-1 below provides a summary of the potential noise impact significance criteria, based on guidance from FICON.

TABLE 4-1: SIGNIFICANCE OF NOISE IMPACTS AT NOISE-SENSITIVE RECEIVERS

Without Project Noise Level	Potential Significant Impact
< 60 dBA	5 dBA or more
60 - 65 dBA	3 dBA or more
> 65 dBA	1.5 dBA or more

Federal Interagency Committee on Noise (FICON), 1992.

4.1.2 SUBSTANTIAL TEMPORARY OF PERIODIC NOISE LEVEL INCREASES

Due to the temporary, short-term nature of noise-generating construction activities, the temporary or periodic noise level increases over the existing ambient conditions must be considered under CEQA Guideline D, consistent with a recent legal case, *Friends of Riverside's Hills v. Riverside Transportation Commission, et al.* (15) Therefore, the Caltrans *Traffic Noise Analysis Protocol* 12 dBA Leq *substantial* noise level increase threshold is used in this analysis to assess temporary noise level increases. (3) If the Project-related construction noise levels generate a temporary noise level increase above the existing ambient noise levels of up to 12 dBA Leq, then the Project construction noise level increases will be considered a potentially significant impact. Although the Caltrans recommendations were specifically developed to

assess traffic noise impacts, the 12 dBA Leq substantial noise level increase threshold is used in California to address noise level increases with the potential to exceed existing conditions. (3)

4.2 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-2 shows the significance criteria summary matrix.

OPERATIONAL NOISE

- If Project-related operational (stationary-source) noise levels exceed the exterior noise level standards of 55 dBA Leq during the daytime hours or 45 dBA Leq during the nighttime hours (City of Coachella Municipal Code, Section 7.04.030(A)).
- If the existing ambient noise levels at the nearby noise-sensitive receivers near the Project site:
    - are less than 60 dBA Leq and the Project creates a *readily perceptible* 5 dBA Leq or greater Project-related noise level increase; or
    - range from 60 to 65 dBA Leq and the Project creates a *barely perceptible* 3 dBA Leq or greater Project-related noise level increase; or
    - already exceed 65 dBA Leq, and the Project creates a community noise level impact of greater than 1.5 dBA Leq (FICON, 1992).

CONSTRUCTION NOISE AND VIBRATION

- If Project-related construction activities:
    - occur at any time other than the permitted hours during October 1st through April 30th, Monday to Friday, between the hours of 6:00 a.m. to 5:30 p.m.; from May 1st through September 30th, construction is limited to between 5:00 a.m. to 7:00 p.m. Monday to Friday; and all year between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. (City of Coachella Municipal Code, Section 17.1-8); or
    - generate noise levels which exceed the 85 dBA Leq acceptable noise level threshold at the nearby sensitive receiver locations (NIOSH, Criteria for Recommended Standard: Occupational Nosie Exposure); or
    - generate temporary Project construction-related noise level increases which exceed the noise level 12 dBA Leq *substantial* noise level increase threshold (Caltrans, Traffic Noise Analysis Protocol).
- If short-term Project generated construction vibration levels exceed FTA vibration threshold of 80 VdB at sensitive receiver locations (FTA Transit Noise and Vibration Impact Assessment).

TABLE 4-2: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Operational Noise	Noise-Sensitive	Exterior Noise Level Standards[1]	55 dBA Leq	45 dBA Leq
		if ambient is < 60 dBA Leq[2]	≥ 5 dBA Leq Project increase	
		if ambient is 60 - 65 dBA Leq[2]	≥ 3 dBA Leq Project increase	
		if ambient is > 65 dBA Leq[2]	≥ 1.5 dBA Leq Project increase	
Construction Noise & Vibration	Permitted Construction Hours[3]	**October 1st to April 30th** 6:00 a.m. to 5:30 p.m. Mondays to Fridays	**May 1st to September 30th** 5:00 a.m. to 7:00 p.m. Mondays to Fridays	
		All Year: 8:00 a.m. to 5:00 p.m. Saturdays, Sundays, and holidays		
	Noise-Sensitive	Noise Level Threshold[4]	85 dBA Leq	n/a
		Noise Level Increase[5]	12 dBA Leq Project increase	
		Vibration Level Threshold[6]	80 VdB	n/a

[1] Source: City of Coachella Municipal Code, Section 7.04.030 (A).
[2] Source: FICON, 1992.
[3] Source: City of Coachella Municipal Code, Section 7.04.070.
[4] Source: NIOSH, Criteria for Recommended Standard: Occupational Noise Exposure, June 1998.
[5] Source: Caltrans Traffic Noise Analysis Protocol, May 2011.
[6] Source: U.S. Department of Transportation Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.
"Daytime" = 6:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 6:00 a.m.; "n/a" = No nighttime operation is anticipated at the Project site and no nighttime construction activity is permitted, and therefore, no nighttime noise level thresholds are identified.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, seven 24-hour noise level measurements were taken at sensitive receiver locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area near existing City of Coachella Cr6 Water Treatment Facilities. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Thursday, October 20th, 2016. Appendix 5.1 includes the detailed noise measurement location exhibits, and Appendix 5.2 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (17)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Based on recommendations found in the FTA *Transit Noise and Vibration Impact Assessment*, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (11) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

To describe the existing ambient noise environment, the noise measurements presented below focus on the average or equivalent sound levels (Leq). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the average hourly daytime (6:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 6:00 a.m.) noise levels at each noise level measurement location. Appendix 4.3 provides a summary of the existing hourly ambient noise levels described below.

- Location L1 represents the noise levels adjacent to existing residential homes on Playa Del Amor near Well 19. The noise level measurements collected show an overall 24-hour exterior noise level of 60.9 dBA CNEL. The hourly noise levels measured at location L1 ranged from 54.1 to 62.6 dBA Leq during the daytime hours and from 46.3 to 54.5 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 57.9 dBA Leq with an average nighttime noise level of 50.5 dBA Leq.
- Location L2 represents the noise levels within the Rancho Las Flores Coachella City Park near Well 17 and future residential homes to the south. The noise level measurements collected show an overall 24-hour exterior noise level of 69.5 dBA CNEL. The hourly noise levels measured at location L2 ranged from 57.8 to 68.3 dBA Leq during the daytime hours and from 55.0 to 66.2 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 64.3 dBA Leq with an average nighttime noise level of 60.9 dBA Leq.
- Location L3 represents the noise levels west of Well 18 at the southwest corner of Tyler Street and Avenue 48 near an existing mobile home. The 24-hour CNEL indicates that the overall exterior noise level is 65.5 dBA CNEL. At location L3 the background ambient noise levels ranged from 56.6 to 67.1 dBA Leq during the daytime hours to levels of 51.1 to 63.1 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 61.0 dBA Leq with an average nighttime noise level of 57.6 dBA Leq.
- Located on an existing trail, L4 is locate west of Mecca Street, between residential homes to the south and Well 12 to the north. The 24-hour CNEL indicates that the overall exterior noise level is 59.4 dBA CNEL. At location L4 the background ambient noise levels ranged from 49.0 to 61.9 dBA Leq during the daytime hours to levels of 43.0 to 52.2 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 56.2 dBA Leq with an average nighttime noise level of 48.3 dBA Leq.
- Location L5 represents the noise levels on Avenue 52 at the northern property line of the proposed Resin Regen Facility. The 24-hour CNEL indicates that the overall exterior noise level is 76.8 dBA CNEL. At location L5 the background ambient noise levels ranged from 68.8 to 75.2 dBA Leq during the daytime hours to levels of 62.9 to 73.1 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 71.7 dBA Leq with an average nighttime noise level of 68.3 dBA Leq.
- Location L6 represents the noise levels at the cul-de-sac of Tyler Lane north of Well 16 and south of existing residential homes on Tyler Street. The 24-hour CNEL indicates that the overall exterior noise level is 62.6 dBA CNEL. At location L6 the background ambient noise levels ranged from 46.1 to 60.2 dBA Leq during the daytime hours to levels of 47.7 to 60.6 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 54.2 dBA Leq with an average nighttime noise level of 55.6 dBA Leq.

- Location L7 represents the noise levels west of the proposed wastewater treatment plant on Wallace Road near existing residential homes. The 24-hour CNEL indicates that the overall exterior noise level is 70.3 dBA CNEL. At location L7 the background ambient noise levels ranged from 54.2 to 68.9 dBA Leq during the daytime hours to levels of 49.5 to 67.3 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 63.4 dBA Leq with an average nighttime noise level of 62.7 dBA Leq.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.3 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

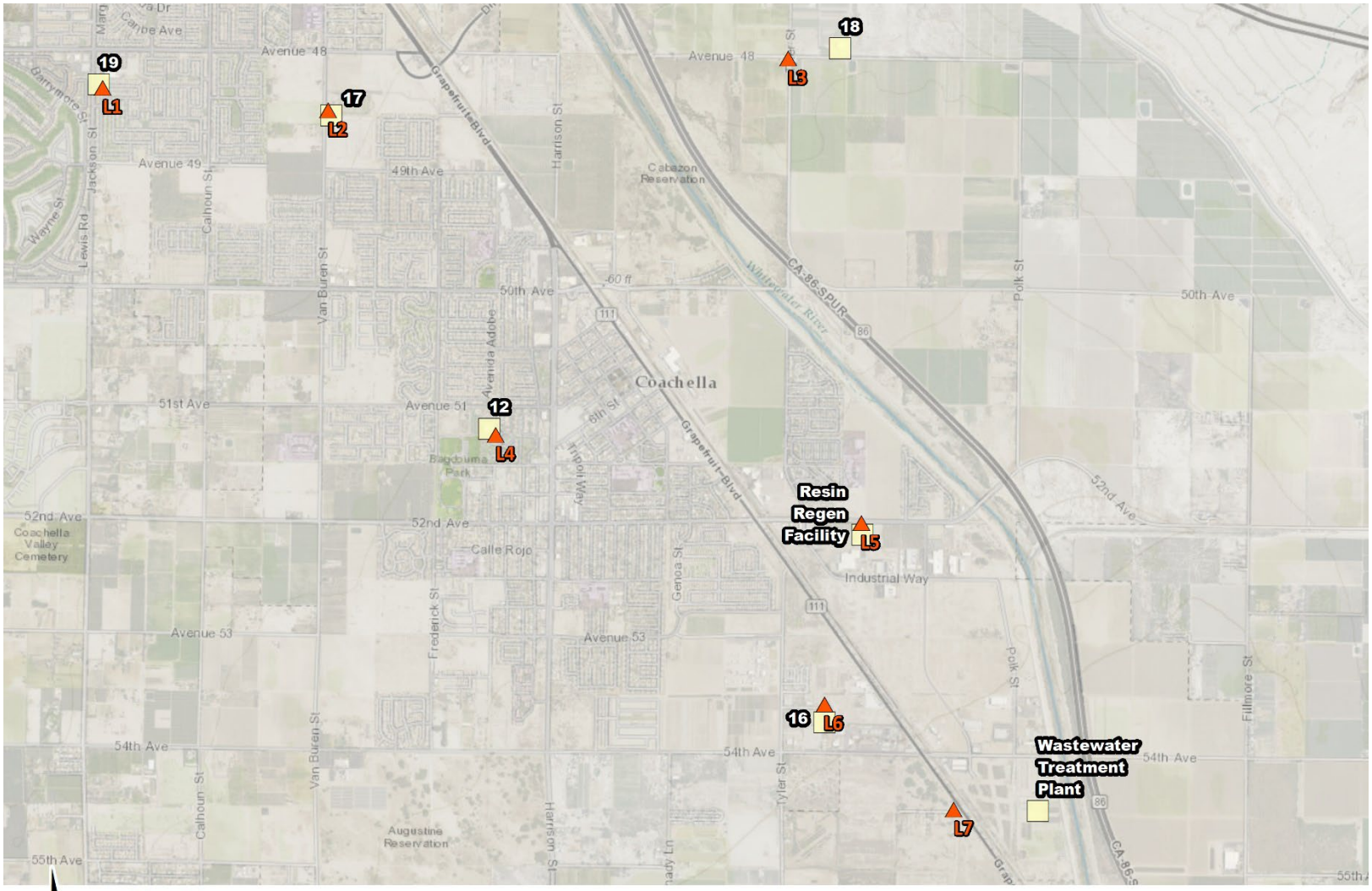
The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the arterial roadway network. This includes auto and heavy truck activities near the noise level measurement locations. The 24-hour existing noise level measurements shown on Table 5-1 present the worst-case existing unmitigated ambient noise conditions.

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Distance to Nearest Well Site (Feet)	Description	Energy Average Hourly Noise Level (dBA Leq)[2]		CNEL
			Daytime	Nighttime	
L1	80'	Located adjacent to existing residential homes on Playa Del Amor near Well 19.	57.9	50.5	60.9
L2	10'	Located within the Rancho Las Flores Coachella City Park near Well 17 and future residential homes to the south.	64.3	60.9	69.5
L3	1,015'	Located west of Well 18 at the southwest corner of Tyler Street and Avenue 48 near an existing mobile home.	61.0	57.6	65.5
L4	65'	Located on an existing trail, west of Mecca Street, between residential homes to the south and Well 12 to the north.	56.2	48.3	59.4
L5	10'	Located on Avenue 52 at the northern property line of the proposed Resin Regen Facility.	71.7	68.3	76.8
L6	390'	Located at the cul-de-sac of Tyler Lane north of Well 16 and south of existing residential homes on Tyler Street.	54.2	55.6	62.6
L7	1,415'	Located west of the proposed wastewater treatment plant on Wallace Road near existing residential homes.	63.4	62.7	70.3

[1] See Exhibit 5-A and Appendix 5.1 for the noise level measurement locations.
[2] The long-term 24-hour measurement worksheets are included in Appendix 5.3.
"Daytime" = 6:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 6:00 a.m.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS OVERVIEW



LEGEND:

- Noise Level Measurement Locations
- Well Site Location
- 19 Well Site Number/Name

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6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future noise and vibration impacts from Project operational and construction activities.

6.1 REFERENCE OPERATIONAL NOISE LEVELS

The Project's operational noise levels were estimated based on reference noise level measurements of similar operational activities at existing well site locations in the City of Coachella and throughout the Coachella Valley Water District (CVWD). The reference noise levels are intended to describe the expected operational noise sources that include well pump and surge tank activity, building exhaust and cooling systems, a transformer, and emergency backup generators. Only new or relocated operational noise sources are included in the operational noise level analysis, based on the following reference noise level measurements, since the existing well site activities are not considered a part of the proposed Project. To estimate the Project off-site operational noise impacts associated with the City of Coachella Cr6 Water Treatment Facilities, the following reference noise level measurements were collected, as shown on Table 6-1.

6.1.1 WELL PUMP & SURGE TANK ACTIVITY

To describe the well pump and surge tank activity associated with the Project, three reference noise level measurements were taken at existing well sites in the Cities of Coachella and Palm Desert. The peak reference noise level of 45.4 dBA Leq at a distance of 50 feet of all three reference noise level measurements, as shown on Table 6-1, is used in the analysis to account for the well pump and surge tank activity of the Project facilities. The peak well pump and surge tank activity reference noise level measurement is described below.

A reference noise level measurement was taken on September 29th, 2015 by Urban Crossroads, Inc. at CVWD well site number 5676, located at 38-130 Portola Avenue in the City of Palm Desert to describe the well pump activity expected at the Project facilities. The two-minute reference noise level measurement indicates that well pump activity generates noise levels of 45.4 dBA Leq at a uniform reference distance of 50 feet. The well pump activity noise level measurement includes the noise from existing pipes as water is pumped through them and represents the peak reference noise level measured across three different well sites. Further, it is expected that the surge tanks within the Project facilities will include similar water movement noise through the new pipes associated with the surge tanks, and therefore, the peak reference well pump activity noise level is also used to describe surge tank activities.

6.1.2 WELL PUMP BUILDING EXHAUST & COOLING SYSTEMS

Based on reference noise level measurements taken at 5 different existing well sites, the noise sources associated with the well pump buildings were observed to include: well pump noise transmission through closed building doors, exhaust noise through fans and louvers, and mechanical cooling equipment (e.g. air conditioning units). Table 6-1 shows the reference noise levels associated with the well pump building noise sources. For the purpose of this analysis, the

well pump building-related noise sources identified on the City of Coachella Cr6 Water Treatment Facilities plans include the new Resin Regeneration Facility (RRF) building with anticipated exhaust louver, and the aeration blower building of the Wastewater Treatment Plant (WWTP).

No exterior air conditioning unit or mechanical cooling equipment is shown on the plans for the Project facilities beyond what already exists at the City of Coachella well sites, and therefore, only the reference noise levels described below are included in this analysis.

Well Pump Building

On October 19th, 2016, Urban Crossroads, Inc. collected a reference noise level measurement at well site number 17 of the well pump noise levels transmitting through the closed pump building doors. The reference noise level measurement shows the noise levels with the well pump doors closed approach 34.8 dBA Leq at the uniform reference distance of 50 feet. The reference well pump building noise level is intended to describe new buildings proposed as part of the City of Coachella Cr6 Water Treatment Facilities.

Well Pump Building Exhaust Louver

An exhaust louver reference noise level measurement was collected on October 19th, 2016, by Urban Crossroads, Inc. at well site number 18. The reference noise level measurement shows the noise levels exiting the exhaust louver approach 47.0 dBA Leq at the uniform reference distance of 50 feet. The reference well pump building exhaust louver noise level is intended to describe new buildings proposed as part of the City of Coachella Cr6 Water Treatment Facilities with expected exhaust louver systems.

6.1.3 MECHANICAL COOLING EQUIPMENT

As previously discussed, no new exterior air conditioning units or mechanical cooling equipment are shown on the plans for the Project facilities beyond what already exists at the City of Coachella well sites, and therefore, are not included as a Project noise source in this analysis. The reference noise levels shown on Table 6-1 are provided for disclosure and comparison purposes based on existing well site conditions.

6.1.4 EMERGENCY BACKUP GENERATORS

A CAT XQ 350 generator was observed at CVWD well site number 5676 located at 38-130 Portola Avenue in the City of Palm Desert. To estimate the operational noise levels associated with the expected generators within some of the CVWD facilities, the CAT XQ 350 generator noise level specifications when running at 100% capacity in standby mode at 60 Hz were obtained from the Caterpillar, Inc. website. (18) The reference noise level of 44.5 dBA Leq at the uniform reference distance of 50 feet represents the highest of all the noise levels provided on the CAT XQ 350 generator specification sheet under varying conditions and was chosen to represent the worst-case operational conditions of the emergency backup generators within the City of Coachella Cr6 Water Treatment Facilities.

6.1.5 TRANSFORMER

The Project includes an electrical transformer within the proposed Resin Regeneration Facility (RRF). Therefore, to determine the noise level impacts associated with the planned transformer within the Project site, the National Electrical Manufacturers Association (NEMA) *Transformers, Step Voltage Regulators and Reactors*, Table 2 sound level for a 500 kVA transformer is used in this analysis. (19) The reference NEMA noise level represents the factory tested noise level of the transformer. At the time of this analysis, the exact model of transformer was unknown. Based on observations made of a similar transformer, no noise is anticipated to be audible from the transformer, however, the reference NEMA noise level is used to evaluate the potential noise impacts. Using the uniform reference distance of 50 feet, the reference NEMA transformer noise level is 37.6 dBA Leq.

TABLE 6-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	City	Well Site No.	Duration (h:mm:ss)	Distance From Source (Feet)	Noise Source Height (Feet)	Noise Level (dBA Leq)	
						@ Ref. Distance	@ 50 Feet
Well Pump & Surge Tank Activities					***Peak Reference Noise Level:***	***69.8***	***45.4***
Well Pump Activity[1]	Coachella	19	0:00:50	3'	3'	63.4	39.0
Well Pump Activity[2]	Palm Desert	5676-2	0:02:00	3'	5'	69.8	45.4
Well Pump Activity[3]		5678-1	0:00:52	3'	5'	64.2	39.8
Well Pump Building					***Peak Reference Noise Level:***	***67.8***	***47.8***
Exhaust Vent[1]	Coachella	19	0:00:25	5'	7'	67.8	47.8
Well Pump Building[4]		17	0:01:00	3'	5'	59.2	34.8
Exhaust Louver[5]		18	0:00:30	5'	6'	67.0	47.0
External Mechanical Cooling Equipment					***Peak Reference Noise Level:***	***72.4***	***52.4***
Air Conditioning Unit[4]	Coachella	17	0:00:40	3'	3'	66.6	42.2
Mechanical Cooling Equipment[5]		18	0:01:00	5'	5'	72.4	52.4
Electrical Equipment					***Peak Reference Noise Level:***	***56.0***	***44.5***
Generator[6]	n/a	n/a	n/a	23'	9'	51.2	44.5
Transformer[7]	n/a	n/a	n/a	6'	5'	56.0	37.6

[1] As measured by Urban Crossroads, Inc. on 10/19/2016 at well site no. 19 located at 48281 Playa Del Amor in the City of Coachella.
[2] As measured by Urban Crossroads, Inc. on 9/29/2015 at CVWD well site no. 5676-2 located at 38-130 Portola Avenue in the City of Palm Desert.
[3] As measured by Urban Crossroads, Inc. on 9/29/2015 at CVWD well site no. 5678-1 located at 74-885 Frank Sinatra Drive in the City of Palm Desert.
[4] As measured by Urban Crossroads, Inc. on 10/19/2016 at well site no. 17 located at 48463 Van Buren Boulevard in the City of Coachella.
[5] As measured by Urban Crossroads, Inc. on 10/19/2016 at well site no. 18 located on Avenue 48 east of Tyler Street in the City of Coachella.
[6] Source: CAT XQ 350 Portable Generator Specification Sheet, Noise Rating at 100% of generator load at 60 Hz. Sound Power Level of 76 dBA at 23 feet converted to a sound pressure level (Leq) for use in the noise study.
[7] Source: NEMA TR 1-2013 Transformers, Step Voltage Regulators and Reactors, Table 2 sound level for a 500 kVA transformer.
"CVWD" = Coachella Valley Water District

6.2 CONSTRUCTION ACTIVITIES

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers and portable generators that when combined can reach high levels. The number and mix of construction equipment is expected to occur in the following stages, separated by facility type:

Typical SBA Well Site

- Demolition
- Grading/Excavation
- Building Construction
- Paving
- Architectural Coating

Resin Regeneration Facility / Wastewater Treatment Plant

- Grading/Excavation
- Building Construction
- Paving
- Architectural Coating

This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction. The construction reference noise level measurements represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 68 dBA to in excess of 80 dBA when measured at 50 feet. Hard site conditions are used in the construction noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source (i.e. construction equipment). For example, a noise level of 80 dBA measured at 50 feet from the noise source to the receiver would be reduced to 74 dBA at 100 feet from the source to the receiver, and would be further reduced to 68 dBA at 200 feet from the source to the receiver. The construction stages and equipment types used in this analysis are consistent with data provided by the Project team.

6.3 CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 6-2 provides a summary of the 16 construction reference noise level measurements. Since the reference noise levels were collected at varying distances, all construction noise level measurements presented on Table 6-2 have been adjusted to describe a common reference distance of 50 feet.

TABLE 6-2: CONSTRUCTION REFERENCE NOISE LEVELS

ID	Noise Source	Reference Distance From Source (Feet)	Reference Noise Levels @ Reference Distance (dBA Leq)	Reference Noise Levels @ 50 Feet (dBA Leq)[6]
1	Truck Pass-Bys & Dozer Activity[1]	30'	63.6	59.2
2	Dozer Activity[1]	30'	68.6	64.2
3	Construction Vehicle Maintenance Activities[2]	30'	71.9	67.5
4	Foundation Trenching[2]	30'	72.6	68.2
5	Rough Grading Activities[2]	30'	77.9	73.5
6	Residential Framing[3]	30'	66.7	62.3
7	Water Truck Pass-By & Backup Alarm[4]	30'	76.3	71.9
8	Dozer Pass-By[4]	30'	84.0	79.6
9	Two Scrapers & Water Truck Pass-By[4]	30'	83.4	79.0
10	Two Scrapers Pass-By[4]	30'	83.7	79.3
11	Scraper, Water Truck, & Dozer Activity[4]	30'	79.7	75.3
12	Concrete Mixer Truck Movements[5]	50'	71.2	71.2
13	Concrete Paver Activities[5]	30'	70.0	65.6
14	Concrete Mixer Pour & Paving Activities[5]	30'	70.3	65.9
15	Concrete Mixer Backup Alarms & Air Brakes[5]	50'	71.6	71.6
16	Concrete Mixer Pour Activities[5]	50'	67.7	67.7

[1] As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.
[2] As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.
[3] As measured by Urban Crossroads, Inc. on 10/20/15 at a residential construction site located in Rancho Mission Viejo.
[4] As measured by Urban Crossroads, Inc. on 10/30/15 during grading operations within an industrial construction site located in the City of Ontario.
[5] Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.
[6] Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).

6.4 VIBRATION ASSESSMENT

This analysis focuses on the potential ground-borne vibration associated with operational vehicular traffic and construction equipment activities. Ground-borne vibration levels from operational vehicle traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration, the short duration of the associated events, and low vehicle speeds used within Project facilities, operational vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the property line, and rarely results in vibration levels that cause damage to buildings in the vicinity.

However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-3. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the human response (annoyance) using the following vibration assessment methods defined by the FTA. To describe the human response (annoyance) associated with vibration impacts the FTA provides the following equation (11): $L_{VdB}(D) = L_{VdB}(25\ ft) - 30\log(D/25)$

TABLE 6-3: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	Vibration Decibels (VdB) at 25 feet
Small bulldozer	58
Jackhammer	79
Loaded Trucks	86
Large bulldozer	87

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

7 OPERATIONAL NOISE IMPACTS

This section analyzes potential impacts resulting from the activities associated with the operation of the Project, including well pump and surge tank activity, building exhaust and cooling systems, a transformer, and emergency backup generators.

7.1 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the City of Coachella Cr6 Water Treatment Facilities Project, operational source noise such as the well pump and surge tank activity, building exhaust and cooling systems, a transformer, and emergency backup generators are typically evaluated against standards established under a City's Municipal Code. For noise-sensitive residential properties, the City of Coachella Municipal Code, Section 7.04.030 (A), identifies exterior operational noise level limits for the daytime (6:00 a.m. to 10:00 p.m.) hours of 55 dBA Leq and 45 dBA Leq during the nighttime (10:00 p.m. to 6:00 a.m.) hours. The City of Coachella Municipal Code noise level standards are shown on Table 3-1 and provided in Appendix 3.1.

The City of Coachella Municipal Code, Section 7.04.060 (K) indicates that the stationary-source noise level standards *shall not preclude the construction, operation, maintenance and repairs of equipment, apparatus or facilities of park and recreation departments, public work projects or essential public services and facilities, including those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission*. (14) This exemption applies to both operational and construction-related noise levels associated with government owned property, and therefore, the operational activities associated with the City of Coachella Cr6 Water Treatment Facilities will be considered exempt from the noise standards.

7.2 SENSITIVE RECEIVER LOCATIONS

Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include: schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include: multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses which are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

This noise study presents the estimated distance to the City of Coachella Municipal Code daytime 55 dBA Leq and nighttime 45 dBA Leq Project-related operational noise level contour boundaries, at the nearby sensitive receiver locations. Since the location of sensitive receivers near each facility will vary, the distance to each Project-related operational noise level contour boundaries are presented to show the potential noise level impacts at calculated distances from each noise

source within the City of Coachella Cr6 Water Treatment Facilities. Further, Appendix 7.1 identifies the distances to the closest sensitive receiver locations from the peak noise source of each of the City of Coachella Cr6 Water Treatment Facilities.

7.3 OPERATIONAL NOISE LEVELS

Based upon the reference noise levels, previously discussed in Section 6.1, it is possible to estimate the distance from each Project-related operational noise activity daytime 55 dBA Leq and nighttime 45 dBA Leq noise level contour boundaries to demonstrate compliance with the City of Coachella Municipal Code. The operational noise level calculations shown in this section account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. With geometric spreading, sound levels attenuate (or decrease) at a rate of 6 dB for each doubling of distance from a point source (e.g. well pump and surge tank activity, building exhaust and cooling systems, a transformer, and emergency backup generators). Table 7-1 shows the operational noise sources expected at each Project facility based on the Project site plans provided in Appendix 1.1. As previously described in Section 1.2, no new HVAC equipment is planned, and therefore, is not included in the operational noise analysis.

TABLE 7-1: OPERATIONAL NOISE SOURCES BY FACILITY

Reference Noise Source	Is the Reference Noise Source Included in the Proposed Project Facility?[1]						
	Well 19	Well 18	Well 17	Well 12	RRF	Well 16	WWTP
Well Pump Building Exhaust Vent	×	×	×	×	×	×	×
Well Pump Building	×	×	×	×	✓	×	✓
Well Pump Building Exhaust Louver	×	×	×	×	✓	×	✓
Peak Well Pump & Surge Tank Activity[2]	✓	✓	✓	✓	×	✓	✓
Air Conditioning Unit	×	×	×	×	×	×	×
Mechanical Cooling Equipment	×	×	×	×	×	×	×
Emergency Backup Generator	✓	×	×	×	✓	✓	×
Transformer	×	×	×	×	✓	×	×

[1] Based on the site plans for each individual site provided in Appendix 1.1.
[2] Peak well pump reference noise level measurement is used to represent the potential noise levels from surge tanks.
"RRF" = Resin Regeneration Facility; "WWTP" = Wastewater Treatment Plant

The distances to each unmitigated operational noise level contour boundary, shown on Table 7-2, does not account for any existing or proposed noise barriers in the Project study area. The operational noise source locations, including well pump and surge tank activity, building exhaust and cooling systems, a transformer, and emergency backup generators, are shown in Appendix 7.1 for each site based on the Project site plans (Appendix 1.1). As shown on Table 7-2, the reference operational noise levels from the Project-related noise sources range from 34.8 to 47.0 dBA Leq at the uniform reference distance of 50 feet. Based on the results of this analysis, the Project-related operational noise activities will generate 55 dBA Leq and 45 dBA Leq noise level

contour boundaries that will largely be located within the boundaries of each well facility. The exact location of each noise level contour for each City of Coachella Cr6 Water Treatment Facilities will depend on the location of each noise source, any existing or proposed noise barriers in the Project study area, and the topographic differences between the sources and receiver locations. Appendix 7.1 shows the Project-related operational noise level contour boundaries for each well site, in addition to the location of each noise source.

TABLE 7-2: OPERATIONAL NOISE LEVEL CONTOUR BOUNDARIES

Reference Noise Source at the Well Sites[1]	Reference Noise Level at 50 Feet (dBA Leq)[1]	Distance to the Project Operational Noise Level Contour Boundaries[2]	
		55 dBA Leq	45 dBA Leq
Well Pump Building	34.8	5'	15'
Well Pump Building Exhaust Louver	47.0	20'	63'
Peak Well Pump & Surge Tank Activity	45.4	16'	52'
Emergency Backup Generator	44.5	15'	47'
Transformer	37.6	7'	21'

[1] Reference noise sources as identified on Table 6-1, based on the site plan for each facility
[2] Peak reference noise levels as previously shown on Table 5-1.
[3] Estimated distance to the City of Coachella exterior 55 dBA Leq daytime and 45 dBA Leq nighttime noise level standards contour for each source.

7.4 OPERATIONAL NOISE LEVEL COMPLIANCE

The operational noise levels related to the well pump and surge tank activity, building exhaust and cooling systems, a transformer, and emergency backup generators associated with City of Coachella Cr6 Water Treatment Facilities are considered exempt from the City of Coachella Municipal Code noise standards. However, to demonstrate compliance with CEQA Guidelines, this analysis evaluates the potential operational noise levels against the City of Coachella Municipal Code exterior noise standards at the closest noise-sensitive receiver locations. Further, the expected noise sources at the existing City of Coachella facilities after Project improvements are expected to be similar to those associated with existing City of Coachella well sites, thereby representing minimal changes to the operational noise sources of each existing facility.

The distances from the peak noise sources of each of the proposed City of Coachella Cr6 Water Treatment Facilities to the closest noise-sensitive receiver locations, R1 to R7, are provided in Appendix 7.1. Table 7-3 shows that the Project-related operational noise levels at the closest sensitive receiver locations will range from 16.1 to 43.2 dBA Leq and will satisfy the residential daytime 55 dBA Leq and nighttime 45 dBA Leq noise level standards of the City of Coachella Municipal Code. The operational noise levels shown on Table 7-3 account for the attenuation from the existing and proposed noise barriers at the Project well sites. Appendix 7.2 includes the operational noise level calculations.

TABLE 7-3: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Well Site	Noise Sources[2]					Combined Operational Noise Levels (dBA Leq)[3]	Threshold Exceeded?[4]	
		Well Pump Building	Well Pump Building Exhaust Louver	Well Pump & Surge Tank Activity	Emergency Backup Generator	Transformer		Daytime (55 dBA Leq)	Nighttime (45 dBA Leq)
R1	19	-[5]	-[5]	39.3	41.0	-[5]	43.2	No	No
R2	18	-[5]	-[5]	17.7	-[5]	-[5]	17.8	No	No
R3	17	-[5]	-[5]	39.6	-[5]	-[5]	39.6	No	No
R4	12	-[5]	-[5]	25.9	-[5]	-[5]	25.9	No	No
R5	RRF	13.6	24.8	-[5]	23.4	17.0	27.7	No	No
R6	16	-[5]	-[5]	21.3	20.6	-[5]	24.0	No	No
R7	WWTP	0.6	12.8	12.9	-[5]	-[5]	16.1	No	No

[1] See Appendix 7.1 for the well site and receiver locations.
[2] Reference noise sources as shown on Table 7-2.
[3] Calculations at each of the closest receiver locations are provided in Appendix 7.1.
[4] Do the Project-only operational noise levels exceed the City of Coachella exterior noise level standards (Table 3-1)?
[5] The well site does not contain the noise source.
"RRF" = Resin Regeneration Facility; "WWTP" = Wastewater Treatment Plant; "Daytime" = 6:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 6:00 a.m.

Although the Project operational noise levels are considered exempt from the noise standards, the Project-related operational noise levels will still satisfy the City of Coachella Municipal Code noise level standards at nearby sensitive receiver locations, and therefore, the operational noise impacts will be *less than significant*. No exterior noise mitigation measures are required since there is not a significant noise impact. The operational noise abatement measures presented in this report are recommended, but not required, to further reduce the noise levels due to the operational activities at each of the City of Coachella Cr6 Water Treatment Facilities.

7.5 PROJECT OPERATIONAL NOISE CONTRIBUTION

To describe the Project operational noise level contributions, the Project operational noise levels were combined with the existing ambient noise levels measurements for the off-site receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (20) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describe the Project noise level contributions. Noise levels that would be experienced at receiver locations when Project-source noise is added to the ambient daytime and nighttime conditions are presented on Tables 7-4 and 7-5, respectively.

As indicated in Table 7-4, the Project will contribute an operational noise level increase of up to 0.1 dBA Leq during the daytime hours at the closest sensitive receiver locations. Table 7-5 shows that the nighttime Project-related operational noise level increases will approach 0.7 dBA Leq. Since the Project-related operational noise level contributions will satisfy the significance criteria discussed in Section 4, the increases at the sensitive receiver locations will be *less than significant*. On this basis, Project operational stationary-source noise would not result in a substantial temporary/periodic, or permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project, and impacts in these regards will be *less than significant*.

TABLE 7-4: DAYTIME OPERATIONAL NOISE LEVEL CONTRIBUTIONS (DBA LEQ)

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Contribution[6]	Threshold Exceeded?[7]
R1	43.2	L1	57.9	58.0	0.1	No
R2	17.8	L2	64.3	64.3	0.0	No
R3	39.6	L3	61.0	61.0	0.0	No
R4	25.9	L4	56.2	56.2	0.0	No
R5	27.7	L5	71.7	71.7	0.0	No
R6	24.0	L6	54.2	54.2	0.0	No
R7	16.1	L7	63.4	63.4	0.0	No

[1] See Appendix 7.1 for the sensitive receiver locations.
[2] Total Project operational noise levels as shown on Table 7-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

TABLE 7-5: NIGHTTIME OPERATIONAL NOISE LEVEL CONTRIBUTIONS (DBA LEQ)

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Contribution[6]	Threshold Exceeded?[7]
R1	43.2	L1	50.5	51.2	0.7	No
R2	17.8	L2	60.9	60.9	0.0	No
R3	39.6	L3	57.6	57.7	0.1	No
R4	25.9	L4	48.3	48.3	0.0	No
R5	27.7	L5	68.3	68.3	0.0	No
R6	24.0	L6	55.6	55.6	0.0	No
R7	16.1	L7	62.7	62.7	0.0	No

[1] See Appendix 7.1 for the sensitive receiver locations.
[2] Total Project operational noise levels as shown on Table 7-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

7.6 OPERATIONAL NOISE ABATEMENT MEASURES

The following operational noise abatement measures are recommended to reduce the potential operational noise levels received at nearby residential homes.

- All trucks transiting on-site in outdoor areas of the well facilities shall be operated with properly functioning and well-maintained mufflers.
- Maintain quality pavement conditions on the property that are free of vertical deflection (i.e. speed bumps) to minimize truck noise.
- The truck access gates and loading areas shall be posted with signs which state:
    - Truck drivers shall turn off engines when not in use;
    - No music or electronically reinforced speech from workers shall be audible at noise-sensitive properties.

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8 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the temporary activities associated with the construction of the Project.

8.1 CONSTRUCTION NOISE AND VIBRATION STANDARDS

As previously indicated in Section 3.3, the construction activities at the City of Coachella Cr6 Water Treatment Facilities are considered exempt from the noise level standards of the Municipal Code. However, to control noise impacts associated with the construction of the proposed Project, the City has established limits to the hours of operation. Section 7.04.070 of the City's Municipal Code, provided in Appendix 3.1, indicates that construction activities shall be limited from October 1st through April 30th, Monday to Friday, between the hours of 6:00 a.m. to 5:30 p.m., and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. From May 1st through September 30th, construction is limited to between 5:00 a.m. to 7:00 p.m. Monday to Friday, and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. (14) Since the City's General Plan and Municipal Code do not establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes as the *generation of noise levels in excess of standards* or as a *substantial temporary or periodic noise increase*, the following construction noise level thresholds are used in this noise study.

8.1.1 CONSTRUCTION NOISE LEVEL COMPLIANCE THRESHOLD

To evaluate whether the Project will generate *noise levels in excess of standards* at off-site sensitive receiver locations, a construction-related noise level threshold is adopted from the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH). (2) A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The construction related noise level threshold starts at 85 dBA for more than eight hours per day, and for every 3 dBA increase, the exposure time is cut in half. This results in noise level thresholds of 88 dBA for more than four hours per day, 92 dBA for more than one hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. (2) For the purposes of this analysis, the lowest, more conservative construction noise level threshold of 85 dBA Leq is used as an acceptable threshold for construction noise at the nearby sensitive receiver locations. Since this construction-related noise level threshold represents the energy average of the noise source over a given time period, they are expressed as Leq noise levels. Therefore, the noise level threshold of 85 dBA Leq over a period of eight hours or more is used to evaluate the potential Project-related construction noise level impacts at the nearby sensitive receiver locations.

8.1.2 CONSTRUCTION NOISE LEVEL INCREASE THRESHOLD

To determine if the Project-related construction noise level increases represent a potentially significant *temporary or periodic increase in ambient noise levels*, the Caltrans *Traffic Noise Analysis Protocol* 12 dBA Leq *substantial* noise level increase threshold is used in this analysis. (3) If the Project-related construction noise levels generate a temporary noise level increase above the existing ambient noise levels of up to 12 dBA Leq, then the Project construction noise level increases will be considered a potentially significant impact. This approach is consistent with the legal case, *Friends of Riverside's Hills v. Riverside Transportation Commission, et al.* (15)

8.1.3 CONSTRUCTION-RELATED HEARING CONSERVATION

The Occupational Safety and Health Administration (OSHA) requires hearing protection be provided by employers in workplaces where the noise levels may, over long periods of exposure to high noise levels, endanger the hearing of their employees. Standard 29 CFR, Part 1910 indicates the noise levels under which a hearing conservation program is required to be provided to workers exposed to high noise levels. (9) This analysis does not evaluate the noise exposure of construction workers within the Project site based on CEQA requirements, and instead, evaluates the Project-related construction noise levels at the nearby sensitive receiver locations in the Project study area. Further, periodic exposure to high noise levels in short duration, such as Project construction, is typically considered an annoyance and not impactful to human health. It would take several years of exposure to high noise levels to result in hearing impairment. (10)

8.1.4 CONSTRUCTION VIBRATION STANDARDS

The City of Coachella has not identified or adopted vibration standards. However, the United States Department of Transportation Federal Transit Administration (FTA) provides guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines allow 80 VdB for residential uses and buildings where people normally sleep. (11)

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity. While not enforceable regulations within the City of Coachella, the FTA guidelines of 80 VdB for sensitive land uses provide the basis for determining the relative significance of potential Project-related vibration impacts.

8.2 CONSTRUCTION NOISE LEVELS

Project construction activities are analyzed using the reference construction noise levels, previously shown on Table 6-2, and the expected equipment at the two facility types identified in the Project's equipment list: typical SBA well sites and the RRF/WWTP facilities. Tables 8-1 to 8-5 show the typical SBA well site construction noise levels by stage, and Tables 8-6 to 8-9 show the RRF/WWTP construction noise levels by stage. A summary of the construction noise levels, by stage, by facility type, is provided on Table 8-10. Based on the reference construction noise

levels, the Project-related construction noise levels when the peak reference noise level is operating at a single point nearest the sensitive receiver location will range from 68.2 to 79.6 dBA Leq at a distance of 50 feet from the center of construction activities.

TABLE 8-1: SBA WELL DEMOLITION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Two Scrapers & Water Truck Pass-By	79.0
Two Scrapers Pass-By	79.3
Peak Reference Noise Level at 50 Feet (dBA Leq):	79.3

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.

TABLE 8-2: SBA WELL GRADING/EXCAVATION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Construction Vehicle Maintenance Activities	67.5
Rough Grading Activities	73.5
Dozer Pass-By	79.6
Peak Reference Noise Level at 50 Feet (dBA Leq):	79.6

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.

TABLE 8-3: SBA WELL BUILDING CONSTRUCTION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Truck Pass-Bys & Dozer Activity	59.2
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Two Scrapers Pass-By	79.3
Concrete Mixer Pour & Paving Activities	65.9
Peak Reference Noise Level at 50 Feet (dBA Leq):	79.3

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.

TABLE 8-4: SBA WELL PAVING EQUIPMENT NOISE LEVEL SUMMARY

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Rough Grading Activities	73.5
Concrete Mixer Truck Movements	71.2
Concrete Paver Activities	65.6
Concrete Mixer Pour & Paving Activities	65.9
Concrete Mixer Backup Alarms & Air Brakes	71.6
Concrete Mixer Pour Activities	67.7
Peak Reference Noise Level at 50 Feet (dBA Leq):	73.5

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.

TABLE 8-5: SBA WELL ARCHITECTURAL COATING EQUIPMENT NOISE LEVEL SUMMARY

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Peak Reference Noise Level at 50 Feet (dBA Leq):	68.2

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.

TABLE 8-6: RRF/WWTP GRADING/EXCAVATION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Construction Vehicle Maintenance Activities	67.5
Rough Grading Activities	73.5
Dozer Pass-By	79.6
Peak Reference Noise Level at 50 Feet (dBA Leq):	79.6

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.

TABLE 8-7: RRF/WWTP BUILDING CONSTRUCTION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Truck Pass-Bys & Dozer Activity	59.2
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Two Scrapers Pass-By	79.3
Concrete Mixer Pour & Paving Activities	65.9
Peak Reference Noise Level at 50 Feet (dBA Leq):	79.3

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.

TABLE 8-8: RRF/WWTP PAVING EQUIPMENT NOISE LEVEL SUMMARY

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Rough Grading Activities	73.5
Concrete Mixer Truck Movements	71.2
Concrete Paver Activities	65.6
Concrete Mixer Pour & Paving Activities	65.9
Concrete Mixer Backup Alarms & Air Brakes	71.6
Concrete Mixer Pour Activities	67.7
Peak Reference Noise Level at 50 Feet (dBA Leq):	73.5

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.

TABLE 8-9: RRF/WWTP ARCHITECTURAL COATING EQUIPMENT NOISE LEVEL SUMMARY

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA Leq)
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Peak Reference Noise Level at 50 Feet (dBA Leq):	68.2

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.

8.3 CONSTRUCTION NOISE LEVEL COMPLIANCE

The construction noise analysis shows that the highest noise levels will occur when building construction activities near the site boundaries of a well facility. As shown on Table 8-10, the worst-case peak construction noise levels are expected to approach 79.6 dBA Leq at a distance of 50 feet from the center of Project construction activities.

TABLE 8-10: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY BY FACILITY TYPE

Construction Phase	Unmitigated Construction Hourly Noise Level at 50 Feet (dBA Leq)[1]		Distance to 85 dBA Leq Noise Level Contours[2]	
	SBA Sites	RRF/WWTP	SBA Sites	RRF/WWTP
Demolition	79.3	n/a	26'	n/a
Grading/Excavation	79.6	79.6	27'	27'
Building Construction	79.3	79.3	26'	26'
Paving	73.5	73.5	13'	13'
Architectural Coating	68.2	68.2	7'	7'

[1] Construction equipment noise levels by stage and facility type are shown on Tables 8-1 to 8-9.
[2] Estimated distance to the 85 dBA Leq noise level contour for each stage of construction activity. Exhibits for each well facility's construction noise level contours are provided in Appendix 8.1.
"RRF" = Resin Regeneration Facility; "WWTP" = Wastewater Treatment Plant; "n/a" = No demolition construction activities are planned for the Resin Regeneration Facility or Wastewater Treatment Facility.

Based on the construction equipment noise levels shown on Table 8-10, the peak construction noise levels will approach 79.6 dBA Leq at a distance of 50 feet. However, since some sensitive receiver locations are located less than 50 feet from the center of construction activities within each well site, the Project-related construction noise levels are evaluated at the distance to each of the closest receiver locations based on the NIOSH 85 dBA Leq noise level threshold, as shown on Table 8-11. The construction noise levels shown on Table 8-11 include the additional attenuation provided by existing and proposed noise barriers at each well site location. Based on the results of the construction noise analysis, the unmitigated peak construction noise levels will satisfy the 85 dBA Leq threshold at the nearby sensitive receiver locations and construction noise impacts with, therefore, be *less than significant*.

TABLE 8-11: CONSTRUCTION EQUIPMENT NOISE LEVEL COMPLIANCE

Well Site[1]	Peak Reference Noise Level at 50 Feet (dBA Leq)[2]	Worst-Case Construction Noise Analysis at the Closest Sensitive Receiver Location				Calculated Existing Noise Barrier Attenuation[4]	Construction Noise Levels With Barrier Attenuation (dBA Leq)[5]	Construction 85 dBA Leq Threshold Exceeded?[6]
		Receiver Location[1]	Distance (Feet)	Distance Atten./ Adjustment[3]	Unmitigated Noise Level			
19	79.6	R1	35'	3.1	82.7	-4.8	77.9	No
18	79.6	R2	1,185'	-27.5	52.1	-1.7	50.4	No
17	79.6	R3	43'	1.3	80.9	-3.5	77.4	No
12	79.6	R4	130'	-8.3	71.3	-3.8	67.5	No
RRF	79.6	R5	517'	-20.3	59.3	0.0	59.3	No
16	79.6	R6	552'	-20.9	58.7	0.0	58.7	No
WWTP	79.6	R7	1,663'	-30.4	49.1	0.0	49.1	No

[1] See Appendix 8.1 for the well site and receiver locations.
[2] Peak reference noise source based on the construction noise levels by stage and facility type shown on Table 8-10.
[3] Point sources attenuate with distance at a rate of 6 dBA per doubling of distance from the source (soft site conditions).
[4] See Appendix 8.2 for the existing and proposed barrier attenuation calculations. Barriers are shown on the exhibits in Appendix 8.1.
[5] Worst-case Project construction noise levels at the closest sensitive receiver location to each well site, including additional attenuation provided by the existing and proposed noise barriers in the Project study area.
[6] Do the worst-case Project-only operational noise levels exceed the 85 dBA Leq noise level threshold?
"RRF" = Resin Regeneration Facility; "WWTP" = Wastewater Treatment Plant; "Daytime" = 6:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 6:00 a.m.

8.4 CONSTRUCTION NOISE LEVEL CONTRIBUTIONS

To describe the temporary Project construction noise level contributions to the existing ambient noise environment, the Project construction noise levels were combined with the existing ambient noise levels measurements for the off-site receiver locations. The difference between the combined Project-construction and ambient noise levels are used to describe the construction noise level contributions. Temporary noise level increases that would be experienced at sensitive receiver locations when Project construction-source noise is added to the ambient daytime conditions are presented on Table 8-12. A temporary noise level increase of 12 dBA is considered a potentially significant impact based on the Caltrans *substantial* noise level increase criteria which is used to assess the Project-construction noise level increases. (3) No nighttime construction activity is permitted in the City of Coachella Municipal Code, and therefore, is not analyzed in this noise study.

As indicated in Table 8-12, the Project will contribute an unmitigated construction noise level increase ranging from 0.2 to 20.0 dBA Leq during the daytime hours at the closest sensitive receiver locations. The unmitigated construction noise level increases at two receiver locations, R1 and R3, are shown on Table 8-12 to represent potentially significant temporary noise level increases.

TABLE 8-12: UNMITIGATED CONSTRUCTION-RELATED TEMPORARY NOISE LEVEL INCREASES

Receiver Location[1]	Project Construction Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Temporary Project Contribution[6]	Threshold Exceeded?[7]
R1	77.9	L1	57.9	77.9	20.0	Yes
R2	50.4	L2	64.3	64.5	0.2	No
R3	77.4	L3	61.0	77.5	16.5	Yes
R4	67.5	L4	56.2	67.8	11.6	No
R5	59.3	L5	71.7	71.9	0.2	No
R6	58.7	L6	54.2	60.0	5.8	No
R7	49.1	L7	63.4	63.6	0.2	No

[1] Closest sensitive receiver location to each well site.
[2] Unmitigated Project construction noise levels as shown on Table 8-11.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project construction activities.
[6] The temporary noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

Therefore, temporary construction noise mitigation barriers are required at the construction boundaries near the impacted receiver locations where Project construction noise levels could potentially exceed the noise level thresholds, as shown on Exhibit 8-A. The construction noise analysis presents a conservative, worst-case approach with the highest noise-level-producing equipment for each stage of Project construction operating at the closest point from the center of construction activity to the nearby sensitive receiver locations. This scenario is unlikely to occur during typical construction activities and likely overstates the construction noise levels which will be experienced at each receiver location. With the installation of temporary exterior noise control barriers at the minimum height of 10-feet shown on Exhibit 10-A, the worst-case construction noise level increases at the nearby residential receivers would be reduced.

This analysis does not evaluate the feasibility of temporary noise barrier installation. If it is not feasible to install temporary barriers, construction noise levels would not be reduced, because no other measures exist to reasonably reduce construction noise levels. The noise attenuation provided through temporary noise barriers depends on many factors including cost, wind loading, the location of the receiver, and the ability to place barriers such that the line-of-sight of the receiver is blocked to the noise source, among others. This analysis assumes a temporary noise barrier constructed using frame-mounted materials such as vinyl acoustic curtains or quilted blankets attached to the construction site perimeter fence.

Table 8-13 shows that with the temporary construction noise mitigation, the peak construction noise level increases at the potentially impacted receiver locations are expected to range from 0.2 to 11.6 dBA Leq. As shown on Table 8-13, the temporary 10-foot high temporary noise barrier mitigation will reduce the peak construction noise levels at the potentially impacted receiver locations to satisfy the 12 dBA Leq construction noise level increase threshold adopted from Caltrans. The temporary construction noise barriers will reduce these noise levels at the closest

noise-sensitive receiver locations to *less than significan*t levels. It is important to note that receiver location R3 represents currently vacant land use designated as residential, and therefore, only represents a sensitive receiver location if built and occupied at the time of Project construction. The noise impact due to Project construction is considered a *less than significant* impact after mitigation at all receiver locations, which includes the use of temporary 10-foot high noise barriers, as previously shown on Exhibit 8-A. The noise barrier attenuation calculations for existing and temporary noise barriers are provided in Appendix 8.2.

TABLE 8-13: MITIGATED CONSTRUCTION-RELATED TEMPORARY NOISE LEVEL INCREASES

Receiver Location[1]	Project Construction Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Temporary Project Contribution[6]	Threshold Exceeded?[7]
R1	69.2	L1	57.9	69.5	11.6	No
R2	50.4	L2	64.3	64.5	0.2	No
R3	69.1	L3	61.0	69.7	8.7	No
R4	67.5	L4	56.2	67.8	11.6	No
R5	59.3	L5	71.7	71.9	0.2	No
R6	58.7	L6	54.2	60.0	5.8	No
R7	49.1	L7	63.4	63.6	0.2	No

[1] Closest sensitive receiver location to each well site.
[2] Mitigated Project construction noise levels calculated in Appendix 8.2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project construction activities.
[6] The temporary noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

EXHIBIT 8-A: TEMPORARY CONSTRUCTION NOISE BARRIER MITIGATION

8.5 CONSTRUCTION NOISE MITIGATION MEASURES

Based on the stages of Project construction activity, temporary high-level noise increases are expected at receivers surrounding the City of Coachella Cr6 Water Treatment Facilities when certain activities occur within each site. Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following practices are required to reduce the noise level increases produced by the construction equipment to the nearby noise sensitive residential land uses.

- Project construction activities shall only occur between the permitted hours of 6:00 a.m. to 5:30 p.m., and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. From May 1st through September 30th, construction is limited to between 5:00 a.m. to 7:00 p.m. Monday to Friday, and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. The Project construction supervisor shall ensure compliance with the note.
- Install temporary construction noise barriers with a minimum effective noise barrier height of 10 feet at well site numbers 17 and 19, as shown on Exhibit 8-A. The noise control barriers must present a solid face from top to bottom. The noise control barrier must meet the minimum height of 10-feet on Exhibit 8-A.
    - If receiver location R3 is not built and occupied at the time of well site number 17 construction, then it is not considered a noise-sensitive land use, and as such, would not require temporary noise barrier mitigation.
    - Existing perimeter walls at well site numbers 17 and 19 may be used to satisfy the 10-foot effective temporary noise barrier height in combination with the materials identified below. Any gaps, holes, or openings between the permanent and temporary barriers must be properly sealed at the time of construction.
    - The barrier shall provide a weight of at least 4 pounds per square foot of face area with no decorative cutouts or line-of-sight openings between shielded areas and the noise source. The noise barrier shall be constructed using one of the following materials:
        - An acoustical blanket (e.g. vinyl acoustic curtains or quilted blankets) on a temporary frame attached to the existing perimeter wall or as a standalone temporary noise barrier;
        - Masonry block;
        - Stucco veneer over wood framing (or foam core), or 1-inch-thick tongue and groove wood of sufficient weight per square foot;
        - Glass (1/4-inch-thick), or other transparent material with sufficient weight per square foot;
        - Any combination of these construction materials satisfying a weight of at least 4 pounds per square foot of face area.
    - The noise barriers must be maintained and any damage promptly repaired. Gaps, holes, or weaknesses in the barrier or openings between the barrier and the ground shall be promptly repaired.
    - The noise control barriers and associated elements shall be completely removed and the site appropriately restored upon the conclusion of the construction activity.

- During all Project site construction, all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction supervisor shall place all stationary construction equipment so that emitted noise is directed away from the noise-sensitive receivers nearest the Project site.
- The construction supervisor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receivers nearest the Project site (i.e., on access roads or at the center of each facility) during all Project construction.
- The construction supervisor shall limit haul truck deliveries to the same hours specified for construction equipment (between the hours of 6:00 a.m. to 5:30 p.m., and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays. From May 1st through September 30th, construction is limited to between 5:00 a.m. to 7:00 p.m. Monday to Friday, and between 8:00 a.m. to 5:00 p.m. on Saturdays, Sundays, and holidays).

8.6 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. The proposed Project's construction activities most likely to cause vibration impacts are:

- Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to building, the vibration is usually short-term and is not of sufficient magnitude to cause building damage. It is not expected that heavy equipment such as large bulldozers would operate close enough to any residences to cause a vibration impact.
- Trucks: Trucks hauling building materials to construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration. Construction activities that would occur within the Project site are expected to include grading, which would have the potential to generate low levels of ground-borne vibration. Using the vibration source level of construction equipment provided on Table 6-3 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts.

Vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. Typical vibration levels for the City of Coachella Cr6 Water Treatment Facilities heavy truck activity at normal traffic speeds will approach 65 VdB, as previously shown on Exhibit 2-C, based on the FTA *Transit Noise Impact and Vibration Assessment.* Trucks and heavy equipment transiting on site will be travelling at very low speeds so it is expected that construction equipment vibration impacts at nearby residential homes will not exceed the vibration threshold of 80 VdB, and therefore, will be *less than significant*.

9 REFERENCES

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10 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed City of Coachella Cr6 Water Treatment Facilities. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5979.

Bill Lawson, P.E., INCE
Principal
URBAN CROSSROADS, INC.
260 E. Baker Street, Suite 200
Costa Mesa, CA 92626
(949) 336-5979
blawson@urbanxroads.com

EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 1.1:

CITY OF COACHELLA CR6 WATER TREATMENT FACILITIES SITE PLANS

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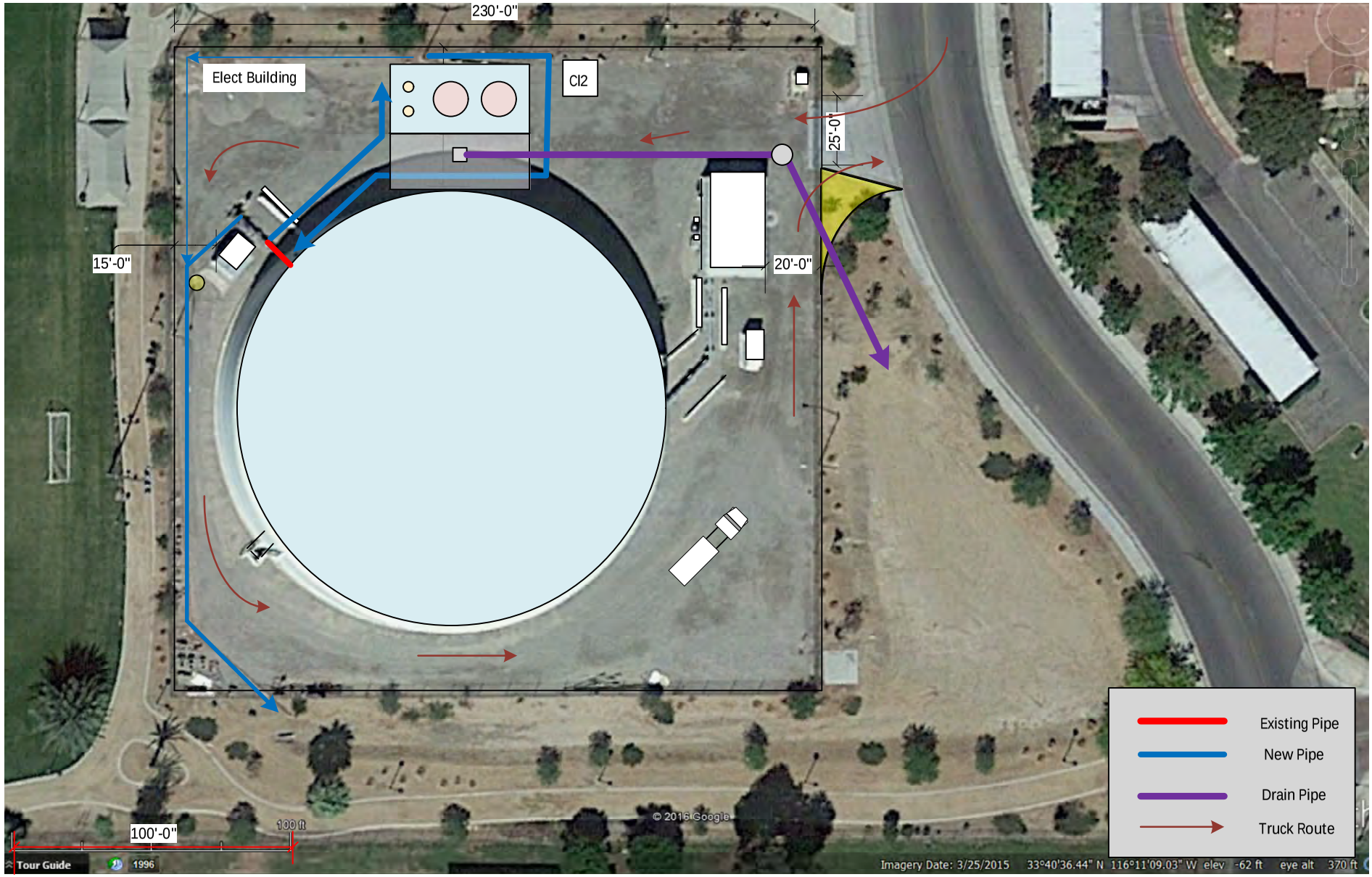
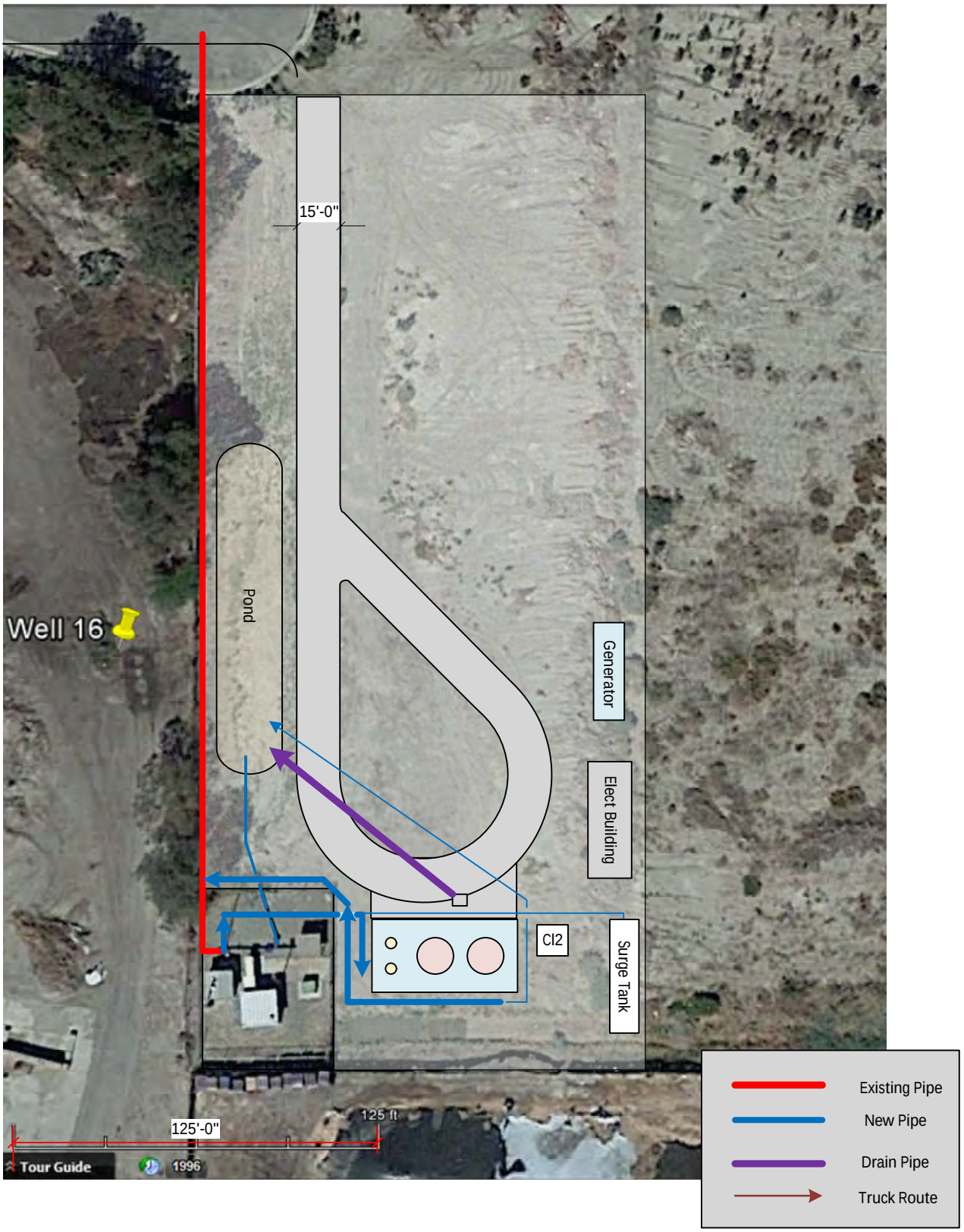
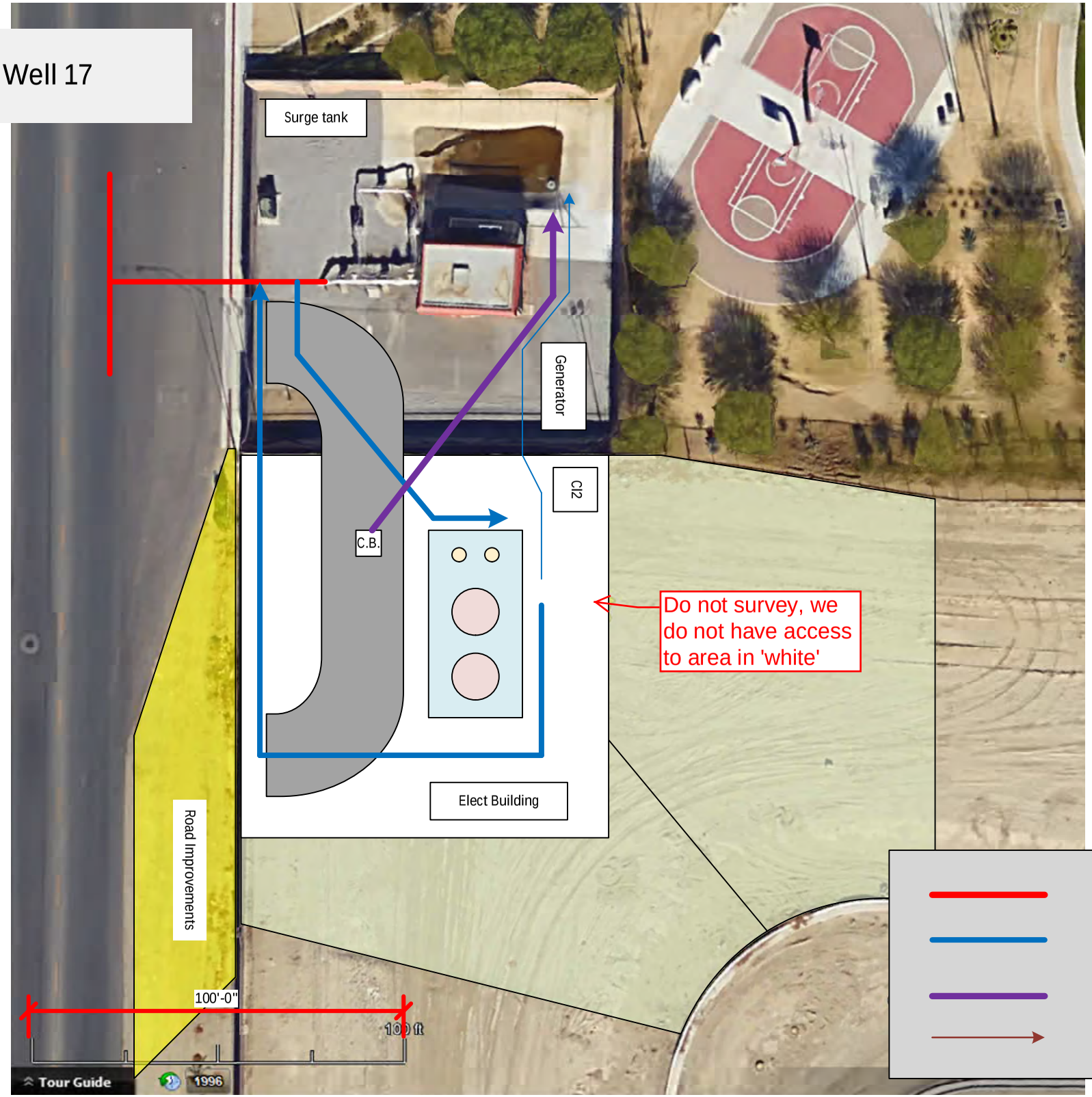
Well 12


230'-0"
Elect Building
Cl2
25'-0"
15'-0"
20'-0"
100'-0"
100 ft
© 2016 Google
Tour Guide
1996
Imagery Date: 3/25/2015 33°40'36.44" N 116°11'09.03" W elev -62 ft eye alt 370 ft
Existing Pipe
New Pipe
Drain Pipe
Truck Route

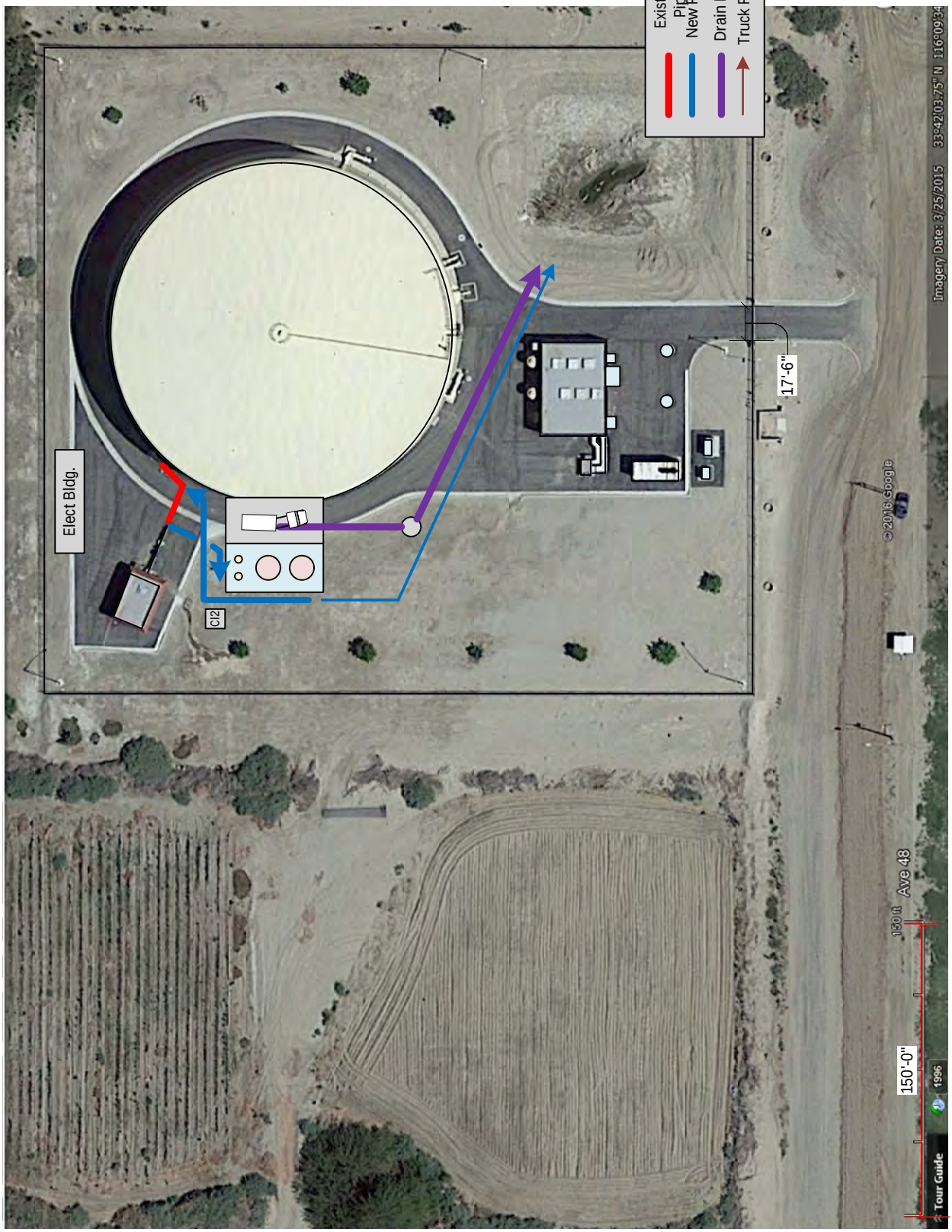
Well 16


15'-0"
Pond
Well 16
Generator
Elect Building
Cl2
Surge Tank
125'-0"
125 ft
Tour Guide
1996
Existing Pipe
New Pipe
Drain Pipe
Truck Route

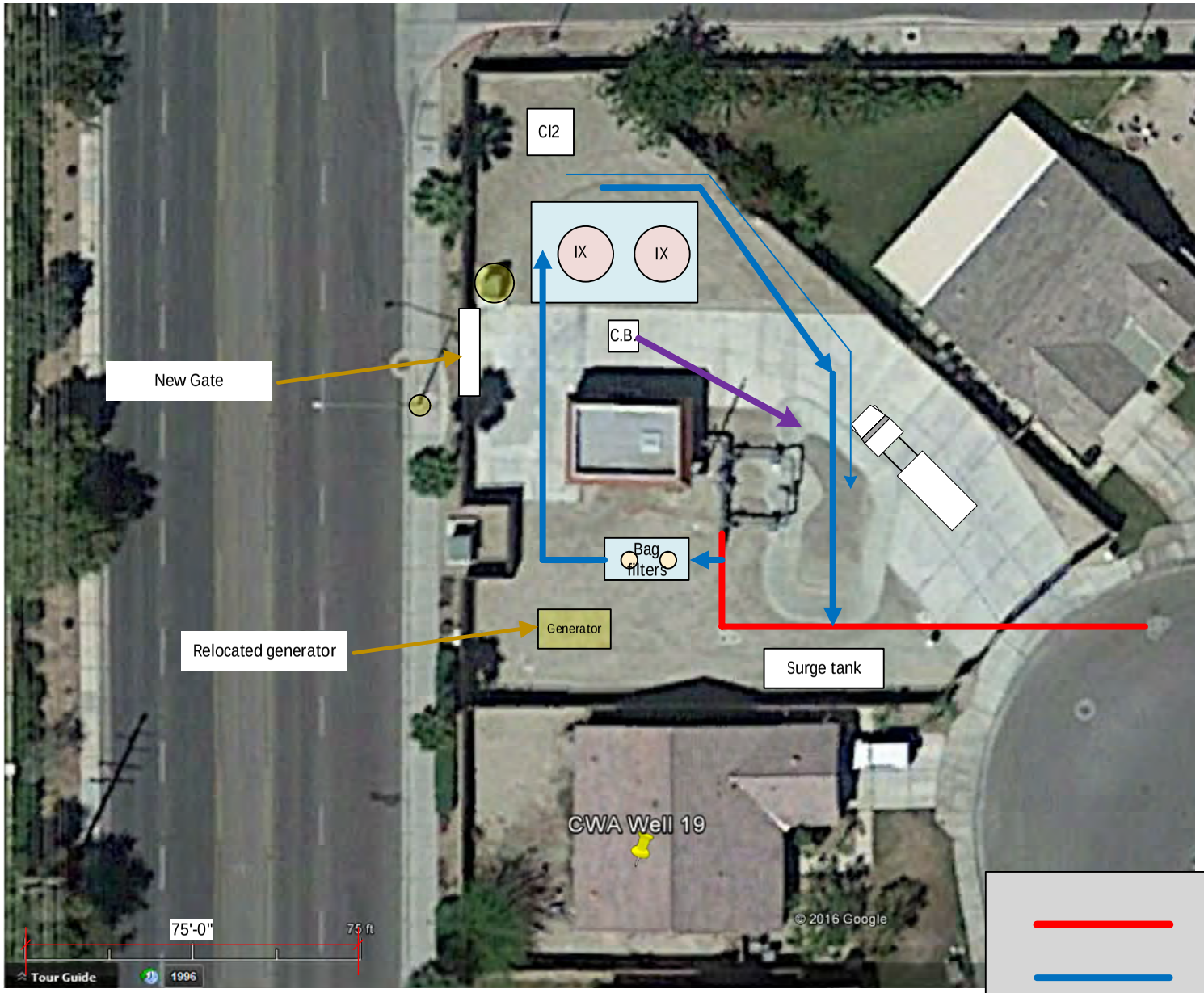
Well 17


Surge tank
Generator
Cl2
C.B.
Do not survey, we do not have access to area in 'white'
Elect Building
Road Improvements
100'-0"
100 ft
Tour Guide
1996
Existing Pipe
New Pipe
Drain Pipe
Truck Route

Well 18


Existing Pipe
New Pipe
Drain Pipe
Truck Route
Elect Bldg.
Cl2
17'-6"
Ave 48
150 ft
150'-0"
Imagery Date: 3/25/2015 33°42'03.75" N 116°09'34
© 2015 Google
Tour Guide

Well 19

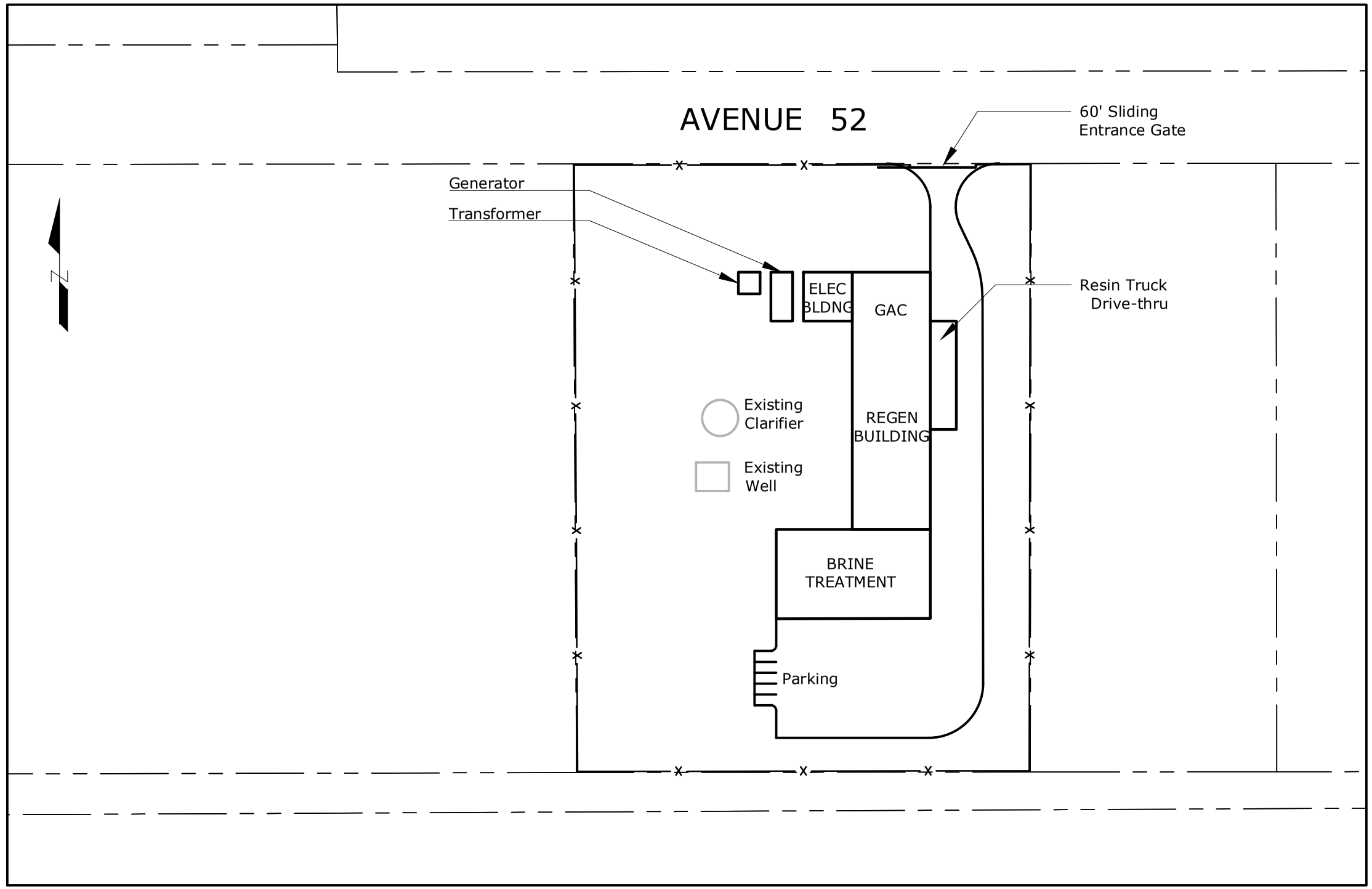


Existing Pipe

New Pipe

Drain Pipe

Truck Route



Hazen

HAZEN AND SAWYER
36-923 COOK STREET, SUITE 101
PALM DESERT, CALIFORNIA 92211

SCALE: 1" = 100'

100 50 0 100'

COACHELLA WATER AUTHORITY
RESIN REGENERATION FACILITY

PLANT DESIGN DATA

PLANT CAPACITY

EXISTING OXIDATION DITCH, AVERAGE FLOW, MGD	3.0
CONTACT STABILIZATION TANK (CST) TO BE UPGRADED, AVERAGE FLOW, MGD	1.5
TOTAL PLANT CAPACITY, AVERAGE FLOW, MGD	4.5
WET WEATHER FLOW PEAKING FACTOR	3.0

WASTEWATER CHARACTERISTICS USED FOR CST PROCESS DESIGN

NUMBER OF CST	2
AVERAGE FLOW TO EACH CST, MGD	0.75
DESIGN MLSS, MG/L	3,000
SLUDGE RETENSION TIME (SRT), DAYS	5
AERATION ZONE VOLUME, EACH, GALLONS	127,000
AERATION ZONE HYDRAULIC RETENTION TIME, HOURS	4
REAERATION ZONE VOLUME, EACH, GALLONS	257,500
REAERATION ZONE HYDRAULIC RETENTION TIME, HOURS	8
CLARIFIER DIAMETER, EACH, FEET	44
CLARIFIER SIDE WATER DEPTH, FEET	13
CLARIFIER OVERFLOW RATE, GPD/SF	500
AEROBIC DIGESTER VOLUME, EACH, GALLONS	220,000

NEW AERATION BLOWERS

NUMBER OF AERATION BLOWERS INCLUDING STANDBY, EACH	3
BLOWER CAPACITY, EACH	2,274 SCFM @ 7.3 PSIG
BLOWER MOTOR HORSEPOWER, EACH, HP	125

NEW RAS PUMPS

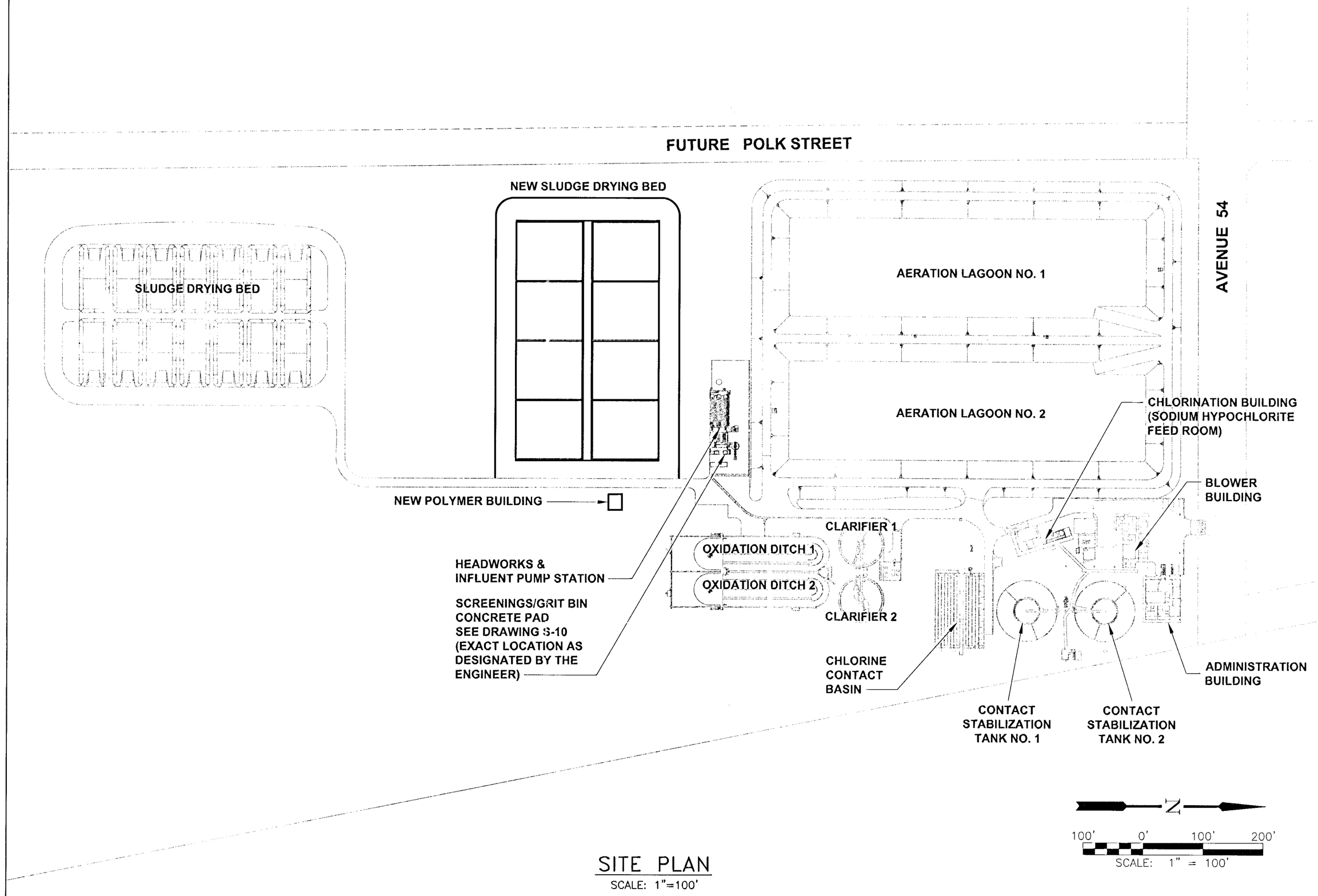
NUMBER OF PUMPS, EACH PER CST INCLUDING STANDBY	2
TOTAL NUMBER OF PUMPS	4
CAPACITY, EACH	800 GPM @ 15 FT TDH
MOTOR HORSEPOWER, EACH, HP	5

NEW WAS PUMPS

NUMBER OF PUMPS, EACH PER CST	1
TOTAL NUMBER OF PUMPS (INCLUDING SPARE NOT INSTALLED)	3
CAPACITY, EACH	350 GPM @ 15 FT TDH
MOTOR HORSEPOWER, EACH, HP	10

NEW CONCRETE-LINED SLUDGE DRYING BEDS

NUMBER	8
DIMENSIONS, L x W x D, FEET	114 x 96.33 x 3



SITE PLAN
SCALE: 1"=100'

LEE&RO, Inc.
City of Industry, California

LINE IS 2 INCHES AT FULL SCALE (IF NOT 2"-SCALE ACCORDINGLY)

DESIGNED:	K. SAIKI
DRAWN:	D. PARK
CHECKED:	D. BACHTEL
DATE:	10/11/2010

REGISTERED PROFESSIONAL ENGINEER DAVID R. BACHTEL No. C33748 Exp. 06/30/12 CIVIL STATE OF CALIFORNIA

TWO DAYS BEFORE YOU DIG
CALL U.S.A. TOLL FREE
1-800-422-4133

No.	DATE	REVISIONS

APPROVED:
BY Ek Amer C 24870 Exp. 12-31-11 11-29-10 DATE
RECOMMENDED:
BY _____ DATE
REVIEWED:
BY _____ DATE

CITY OF COACHELLA CALIFORNIA

CITY OF COACHELLA

AVENUE 54 WASTEWATER TREATMENT PLANT
AERATION IMPROVEMENTS AND PLANT UPGRADES

GENERAL SITE PLAN AND PROJECT DESIGN DATA

JOB NO.
DRAWING NO. G-5
SHEET NO. 5 OF 72

3294-5-8115-J15

DWG: N:\PROJ\480\Design\480-G105.dwg USER: Daniel Park
DATE: Oct 18, 2010 1:11pm XREFS: 480-GDBOR

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APPENDIX 3.1:

CITY OF COACHELLA MUNICIPAL CODE

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Title 7 - NOISE CONTROL

Chapters:

Chapter 7.04 - NOISE CONTROL[1]

Sections:

Footnotes:
*--- **(1)** ---*
***Editor's note**—Ord. No. 1022, adopted Nov. 17, 2010, amended ch. 7.04 in its entirety to read as herein set out. Former ch. 7.04 pertained to similar subject matter, consisted of §§ 7.04.010—7.04.140, and derived from Ord. 940.*

7.24.010 - Purpose.

The city council finds and declares that:

A. Inadequately controlled noise presents a growing danger to the health and welfare of the residents of the city of Coachella;
B. The making and creation of excessive, unnecessary or unusually loud noises within the limits of the city of Coachella is a condition that has existed for some time, however, the extent and volume of such noises is increasing;
C. The making, creation or maintenance of such excessive, unnecessary, unnatural or unusually loud noises that are prolonged, unusual and unnatural in their time, place and use affect and are a detriment to public health, comfort, convenience, safety, welfare and prosperity of the residents of the city of Coachella;
D. Every person is entitled to an environment in which the noise is not detrimental to his life, health, or enjoyment of property; and
E. The necessity in the public interest for the provisions and prohibitions hereinafter contained and enacted, is declared as a matter of legislative determination and public policy, and it is further declared that the provisions and prohibitions hereinafter contained and enacted are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, welfare and prosperity and the peace and quiet of the residents of the city of Coachella.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.020 - Definitions.

[As used in this chapter, the following terms have the meanings given:]

"A-weighted sound level" means the sound pressure level in decibels as measured on a sound level meter using the A-weighting network. The level to read is designated db(A) or dBA.

"Ambient noise level" means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

"Amplified music" means instrumental and/or vocal music amplified through electronic means.

"Average sound level" means a sound level typical of the sound levels at a certain place during a given period of time; also, means an equivalent continuous sound level.

"Commercial establishments" includes, but is not limited to, any nightclub, restaurant, sports bar, industrial, retail or business establishment or combination thereof.

"Construction equipment" means any tools, machinery or equipment used in connection with construction operations, including all types of "special construction" equipment as defined in the pertinent sections of the California Vehicle Code when used in the construction process on any construction site, home improvement site or property maintenance site, regardless of whether such site be located on-highway or off-highway.

"Cumulative period" means an additive period of time composed of individual time segments which may be continuous or interrupted.

"Decibel" means a unit measure of sound level noise.

"Disturbance" means any disturbance of the peace as defined by California Penal Code Section 415 or as otherwise defined herein.

"Disturbing, excessive or offensive noise" means any sound or noise from any source in excess of the sound level or noise level set forth in Section 7.04.030.

"Emergency machinery," "vehicle" or "work" means any machinery, vehicle or work used, employed or performed in an effort to protect, provide or restore safe conditions in the community or for the citizenry, or work by private or public utilities when restoring utility service.

"Fixed noise source" means a stationary device which creates sounds which are fixed or motionless including, but not limited to, industrial and commercial machinery and equipment, pumps, fans, compressors, generators, air conditioners and refrigeration equipment.

"Gathering" means any convergence of five or more persons.

"Impact noise" means the noise produced by the collision of one mass in motion with a second mass which may be either in motion or in rest.

"Noise level" means the same as "sound level." The terms may be used interchangeably herein.

"Peace officer" means a duly appointed officer of the city, as defined in California Penal Code, Sections 830, et seq.

"Person" means a person, firm, association, copartnership, joint venture, corporation or any entity, public or private in nature.

"Portable powered blower" means any mechanically powered device, regardless of the source of power, which is not stationary, and used for the purpose of blowing leaves, dirt or other debris off sidewalks, lawns or other surfaces.

"Premises" means any real property or location at which a gathering may be held.

"Sound level" (noise level) in decibels is the quantity measured using the frequency weighting of A of a sound level meter as defined herein.

"Sound level meter" means an instrument meeting American National Standard Institute's Standard SL. 4-1974 for type 1 or type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.030 - Sound level limits as related to fixed noise sources.

A. Regardless of whether an objective measurement by sound level meter is involved, it shall be unlawful for any person to make, continue, or cause to be made or continued, within the city limits any disturbing excessive or offensive noise or vibration which causes discomfort or annoyance to any reasonable person of normal sensitivity residing in the area or that is plainly audible at a distance greater than fifty (50) feet from the sources point for any purpose. The following ten-minute average sound level limits, unless otherwise specifically indicated, shall apply as indicated in the following table as it relates to a fixed noise source or leaf blowers pursuant to Section 7.04.075.

Zone	Time	Applicable Ten-Minute Average Decibel Limit (A-weighted)
Residential—All zones	6:00 a.m. to 10:00 p.m. 10:00 p.m. to 6:00 a.m.	55 45

Commercial—All zones	6:00 a.m. to 10:00 p.m. 10:00 p.m. to 6:00 a.m.	65 55

B. If the measured ambient noise level exceeds the applicable limit as noted in the table in subsection (A) of this section, the allowable average sound level shall be the ambient noise level. The ambient noise level shall be measured when the alleged noise violation sources are not operating.

C. The sound level limit between two zoning districts shall be measured at the higher allowable district.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.040 - Prohibited noise generally.

A. It is unlawful for any person or property owner within the city of Coachella to make, cause, or continue to make or cause, loud, excessive, impulsive or intrusive sound or noise that annoys or disturbs persons of ordinary sensibilities.

B. The factors, standards, and conditions that may be considered in determining whether a violation of the provisions of this section has been committed, include, but are not limited to, the following:

1. The level of the noise;
2. The level and intensity of the background (ambient) noise, if any;
3. The proximity of the noise to residential or commercial sleeping areas;
4. The nature, density and zoning of the area within which the noise emanates;
5. The density of inhabitation of the area within which the noise emanates;
6. The time of day and night the noise occurs;
7. The duration of the noise;
8. Whether the nature of the noise is natural or unnatural;
9. Whether the noise is constant, recurrent or intermittent; and
10. Whether the noise is produced by a commercial or noncommercial activity.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.050 - Disturbing, excessive, offensive noises—Declaration of certain acts constituting.

The following activities, are declared to be deemed disturbing, excessive or offensive noises and any of the following shall constitute prima facie evidence of a violation:

A.

Horns, Signaling Devices, Muffler Systems, Car Alarms, Etc. Unnecessary use or operation of horns, signaling devices, uncontrolled muffler noises, car alarms on vehicles of all types, including motorcycles, and other equipment.

1. The operation of any such sound production or reproduction device, radio receiving set, musical instrument, drum, phonograph, television set, machine, loudspeaker and sound amplifier or similar machine or device in such a manner as to be plainly audible at a distance of fifty (50) feet or more from the building, structure or vehicle in which located, or from the source point.
2. The operation of any sound amplifier, which is part of, or connected to, any radio, stereo receiver, compact disc player, cassette tape player, or other similar device when operated in such a manner as to be plainly audible at a distance of fifty (50) feet from the source point or when operated in such a manner as to cause a person to be aware of vibration at a distance of fifty (50) feet or more from the source point.

B. Uses Restricted. The use, operation, or permitting to be played, used or operated, any sound production or reproduction device, radio receiving set, musical instrument, drums, phonograph, television set, loudspeakers and sound amplifiers or other machine or device for the producing or reproducing of sound in such a manner as to disturb the peace, quiet, and comfort of any reasonable person of normal sensitiveness.

C. Prima Facie Violations. Any of the following shall constitute evidence of a prima facie violation of this section:

1. The operation of any such sound production or reproduction device, radio receiving set, musical instrument, drum, phonograph, television set, machine, loudspeaker and sound amplifier or similar machine or device in such a manner as to be plainly audible at a distance of fifty (50) feet from the building, structure or vehicle in which located, or from the source point.
2. The operation of any sound amplifier, which is part of, or connected to, any radio, stereo receiver, compact disc player, cassette tape player, or other similar device when operated in such a manner as to be plainly audible at a distance of fifty (50) feet from the source point or when operated in such a manner as to cause a person to be aware of vibration at a distance of fifty (50) feet from the source point.

D. Enforcement of Prima Facie Violations. Any peace office, as defined in California Penal Code, Sections 830, et seq., and/or the city manager or his or her designees, who are authorized to enforce the provisions of this chapter and who encounters evidence of a prima facie violation of this section whereby the component(s) amplifying or transmitting the sound in such a manner as to disturb the peace, quiet, or comfort of any reasonable person of normal sensitivity in any area of the city shall be empowered to issue a citation and/or to confiscate and impound as evidence, any or all of the components amplifying or transmitting the sound.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.060 - Special provisions—Exemptions.

The following activities shall be exempted from the provisions of this chapter:

A. School bands, school athletic and school entertainment events;
B. Outdoor gatherings, public dances, shows and sporting and entertainment events; provided, the events are authorized by the city;
C. Activities conducted in public parks and public playgrounds;
D. Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work;
E. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions;
F. Mobile noise sounds associated with agricultural operations provided such operations do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturdays, or at any time on Sunday or a federal holiday;
G. Mobile noise sources associated with agricultural pest control through pesticide application;
H. Carillon chimes between the hours of 8:00 a.m. to 7:00 p.m.;
I. For noise sources associated with property maintenance, refer to Section 7.04.075, "property maintenance activities";
J. For noise sources associated with construction activities, refer to Section 7.04.070, "construction activities"; and
K. The provisions of this regulation shall not preclude the construction, operation, maintenance and repairs of equipment, apparatus or facilities of park and recreation departments, public work projects or essential public services and facilities, including those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.070 - Construction activities.

No person shall perform, nor shall any person be employed, nor shall any person cause any other person to be employed to work for which a building permit is required by the city in any work of construction, erection, demolition, alteration, repair, addition to or improvement of any building, structure, road or improvement to realty except between the hours as set forth as follows:

October 1st through April 30th

Monday—Friday: 6:00 a.m. to 5:30 p.m.

Saturday: 8:00 a.m. to 5:00 p.m.

Sunday: 8:00 a.m. to 5:00 p.m.

Holidays: 8:00 a.m. to 5:00 p.m.

May 1st through September 30th

Monday—Friday: 5:00 a.m. to 7:00 p.m.

Saturday: 8:00 a.m. to 5:00 p.m.

Sunday: 8:00 a.m. to 5:00 p.m.

Holidays: 8:00 a.m. to 5:00 p.m.

Emergency work and/or unusual conditions may cause work to be permitted with the consent of the city manager, or his or her designee, upon recommendation of the building director or the city engineer.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.075 - Property maintenance activities.

A. Noise sources associated with property maintenance activity and all portable blowers, lawnmowers, edgers or similar devices shall be prohibited except during the following hours:

October 1st through April 30th

Monday—Sunday: 9:00 a.m. to 5:30 p.m.

Holidays: Not allowed.

May 1st through September 30th

Monday—Friday: 8:00 a.m. to 5:30 p.m.

Saturday and Sunday: 9:00 a.m. to 5:30 p.m.

Holidays: Not allowed.

Notwithstanding the hours of permitted operations, such equipment that constitutes a public nuisance may be abated as otherwise provided in this Code.

B. No person shall willfully make or continue, or willfully cause to be made or continued, any noise from any portable powered blower at a level which exceeds seventy (70) decibels dBA measured at the midpoint of a wall area twenty (20) feet long and ten (10) feet high and at the horizontal distance fifty (50) feet away from the midpoint of the wall, or not more than seventy-six (76) decibels dBA at a horizontal distance of twenty-four (24) feet using a sound level meter.

C. No portable powered blower shall be operated in a manner which will permit dirt, dust, debris, leaves, grass clippings, cuttings, or trimmings from trees or shrubs to be blown or deposited onto neighboring property or public right-of-way. All waste shall be removed and disposed of in a sanitary manner by the use or property occupant.

D. Leaf blowers shall not be operated within a horizontal distance of ten (10) feet of any operable window, door, or mechanical air intake opening or duct.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.080 - Schools, hospitals and churches—Special provisions.

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use, to exceed the noise limits, as specified in subsection (A) of Section 7.04.030, prescribed for the assigned noise zone in which the school, hospital or church is located, or which noise level unreasonably disturbs or annoys patients in the hospital.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.090 - Air conditioning, refrigeration and pool equipment.

The noise standards enumerated in Section 7.04.030 shall be increased by eight dBA when the alleged offensive noise source is an air conditioning or refrigeration system or associated equipment which was installed prior to the effective date of the ordinance codified in this chapter. Installation of new equipment must be certified to be within the provisions of this chapter. Installation of new equipment must be certified to be within the provisions of this chapter for night and day operation noise level.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.100 - Noise level measurement.

A. The location selected for measuring exterior noise levels between residential properties shall be at the property line of the affected residential property. Affected residential property shall be the address from which the complaint was received. Interior noise measurement shall be made within the affected residential unit. The measurement shall be made at a point at least four feet from the wall, ceiling or floor nearest the noise source.

The location selected for measuring exterior noise levels between nonresidential properties shall be at the property line of the affected property.

B. The location selected for measuring exterior noise levels between two zoning districts shall be at the boundary of the two districts.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.110 - Interference with authorized personnel is prohibited.

No person shall interfere with, oppose or resist any authorized person charged with enforcement of this chapter while such person is engaged in the performance of his duty.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.120 - Pre-existing noise source—Time extension.

Those commercial and/or industrial noise sources in existence prior to the date of adoption of the ordinance codified in this chapter, which noise sources are an integral part of a building, structure or similar fixed and permanent installation if in compliance with local zoning structures, shall be granted a three-year period from the date of adoption with which to comply with the provisions of the chapter. If, at the end of the three-year period, it can be shown that compliance with the provisions herein constitutes a hardship in terms of technical and economic feasibility, the time to comply may be extended on an annual basis until such time as compliance may be affected.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.130 - Violation—Infractions.

Any person violating any of the provisions of this chapter shall be deemed guilty of an infraction.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.140 - Continuing or subsequent violations—Misdemeanor.

Any person having been convicted of a violation of any provisions of this chapter who thereafter commits a violation of the same provisions of this chapter shall be guilty of a misdemeanor.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

7.04.150 - Severability.

If any provision of this chapter is held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, the remaining provisions of this chapter shall not be invalidated.

(Ord. No. 1022, § 1, 11-17-10; Ord. No. 1024, 11-17-10)

Chapter 7.05 - MULTIPLE RESPONSES TO LOUD OR UNRULY PARTIES, GATHERINGS OR OTHER SIMILAR EVENTS

7.05.010 - Declaration of findings and policy.

It is hereby found and declared that:

A. Due to inadequate supervision, some large gatherings of people, such as parties, frequently become loud and unruly to the point that they constitute a threat to the peace, health, safety, or general welfare of the public as a result of conduct such as one or more of the following: excessive noise, excessive traffic, obstruction of public streets or crowds who have spilled over into public streets, public drunkenness, the service of alcohol to minors, fights, disturbances of the peace, and litter.

B. The city of Coachella is required to make multiple responses to such unruly gatherings in order to restore and maintain the peace and protect public safety. Such gatherings are a burden on scarce city resources and can result in police responses to regular and emergency calls being delayed and police protection to the rest of the city being reduced.

C. In order to discourage the occurrence of repeated loud and unruly gatherings, the persons responsible for the public nuisance created by these gatherings should be fined.

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

7.05.020 - Loud or unruly gatherings—Public nuisance.

It shall be unlawful and a public nuisance to conduct a gathering of ten (10) or more persons on any private property in a manner which constitutes a substantial disturbance of the quiet enjoyment of private or public property in a significant segment of a neighborhood, as a result of conduct constituting a violation of law. Illustrative of such unlawful conduct is excessive noise or traffic, obstruction of public streets by crowds or vehicles, public drunkenness, the service of alcohol to minors, fights, disturbances of the peace, litter. A gathering constituting a public nuisance may be abated by the city by all reasonable means including, but not limited to, an order requiring the gathering to be disbanded and citation and/or arrest of any law violators under any applicable local laws and state statutes.

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

7.05.030 - Notice of unruly gatherings—Posting, mail.

A. When the city intervenes at a gathering which constitutes a public nuisance under this chapter, the premises at which such nuisance occurred shall be posted with a notice substantially in the form attached hereto as Exhibit "A" stating that a public nuisance under this chapter was caused by a gathering at the premises, the date and time of the police intervention, and that any subsequent or second police intervention with respect to a nuisance under this chapter at said premises, including a second intervention that same day or night, within sixty (60) days of the first intervention, shall result in the joint and several liability of any guests causing the public nuisance, persons who are residents or in control of the property at which the public nuisance occurred, persons who sponsored the gathering constituting the public nuisance, and owners of the premises as more fully set forth in Sections

7.05.040—7.05.060, below. The residents and persons in control of such property, and the sponsors of the event, shall be responsible for ensuring that such notice is not removed or defaced and shall be liable for a civil penalty of one hundred dollars ($100.00) in addition to any other penalties which may be due under this chapter, if such notice is removed or defaced, provided, however, that the residents of the premises or sponsor of the event, if present, shall be consulted as to the location in which such notice is posted in order to achieve both the security of the notice and its prominent display. The notice shall remain posted for the entire 60-day period.

B. Notice of the police intervention shall also be mailed to any property owner at the address shown on the city's property tax assessment records and shall advise the property owner that any subsequent gathering resulting in a public nuisance within sixty (60) days on the same premises necessitating city intervention shall result in liability of the property owner for all penalties associated with such intervention as more particularly set forth below.

EXHIBIT A
IMPORTANT NOTICE REGARDING
PUBLIC NUISANCE

NOTICE IS HEREBY GIVEN THAT, pursuant to Coachella Municipal Code (CMC) Chapter 7.05, on:

Date: _____/_____/_____, 20_____, at _____ a.m./p.m.

The Coachella Police Department found that a gathering, at the below-listed premises caused a public nuisance as defined by CMC Chapter 7.05 (e.g., disturbance of the peace, threat to public safety, etc.):

Address: _____, Coachella, California.

WARNING

IF THE POLICE RESPOND TO ANOTHER DISTURBANCE CONSTITUTING A NUISANCE (AS DEFINED BY CMC CHAPTER 7.05) AT THE ABOVE PREMISES WITHIN 60 DAYS OF THIS NOTICE, INCLUDING BUT NOT LIMITED TO A DISTURBANCE LATER TODAY OR TONIGHT, A SUBSEQUENT RESPONSE FEE WILL BE IMPOSED UPON:

1. ALL GUESTS CAUSING THE NUISANCE;
2. ALL SPONSORS OF THE GATHERING;
3. ALL RESIDENTS OF THE PREMISES;
4. ALL PERSONS IN CONTROL OF THE PREMISES; AND
5. ALL OWNERS OF THE PREMISES THAT RESIDE ON OR ADJACENT TO THE PREMISES, OR ARE PRESENT AT THE PREMISES WHEN THIS NOTICE IS FIRST POSTED.

Property owners who do not reside on or adjacent to the above premises, and who are not present when this Notice is first posted, are also jointly and severally liable for said fee, if the next disturbance occurs after two weeks after this Notice is mailed to said owner.

THIS NOTICE MUST REMAIN POSTED ON THE PREMISES FOR 60 DAYS

$100 FINE FOR UNAUTHORIZED REMOVAL OF THIS NOTICE

_____

(Name and Signature of the Officer Issuing This Notice)

_____

(Officer's Phone Number)

Date: _____

Case Number: _____

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

7.05.040 - Persons liable for subsequent response to a gathering constituting a public nuisance.

If the city is required to intervene as to a gathering constituting a public nuisance on the same premises more than once in any 60-day period, including a second intervention during the same day or night as the first intervention, the following persons shall be jointly and severally liable for civil penalties as set forth in Section 7.05.050, below, in addition to liability for any injuries to city personnel or damage to city property.

A. The person or persons who own the premises where the gathering constituting a public nuisance took place if any of the following are the case:
   (1) Said owner resides on or adjacent to the premises;
   (2) Said owner was present when the notice described in Exhibit "A" was first posted; or
   (3) The notice described in Exhibit "A" was mailed to said owner and fourteen (14) days have elapsed since the date of said mailing.

For purposes of this subsection, where a gathering takes place within the confines of a single unit in a building owned by a housing cooperative, the owner of the property shall be deemed to be the owner of the single unit and not the members of the housing cooperative in general. Where the gathering took place in the common area of a building owned by a housing cooperative, only the members of the cooperative owning units in the building where the gathering took place shall be deemed the owners of the property for purposes of this subsection. Other members of the housing cooperative may still be liable if they fall within the categories of person made liable by Section 7.05.040, subsections (B), (C), or (D), below.

B. The person or persons residing on or otherwise in control of the property where such gathering took place.
C. The person or persons who organized or sponsored such gathering.
D. All persons attending such gathering who engaged in any activity resulting in the public nuisance.

E. Nothing in this section shall be construed to impose liability on the resident or owners of the premises or sponsor of the gathering, for the conduct of persons who are present without the express or implied consent of the resident or sponsor, as long as the resident and sponsor have taken all steps reasonably necessary to exclude such uninvited participants from the premises. Where an invited guest engages in conduct which the sponsor or resident could not reasonably foresee and the conduct is an isolated instance of a guest at the event violating the law which the sponsor is unable to reasonably control without the intervention of the police, the unlawful conduct of the individual guest shall not be attributable to the sponsor, owner, or resident for the purposes of determining whether the event constitutes a public nuisance under this section.

F. There shall be no liability for civil penalties under this chapter for a subsequent intervention during the same day or night as the prior intervention, unless a reasonable time has been provided to abate the public nuisance, taking into account the size of the gathering, the time of day, and other relevant factors.

G. There shall be no liability for civil penalties under this chapter for a second response during the same day or night as the first response when a person who would otherwise be liable under subsection (A) seeks assistance from the police department to abate a public nuisance under this chapter, and the person cooperates fully with the police while taking reasonable action to abate the public nuisance.

H. If the city is required to intervene at a gathering constituting a public nuisance on the same premises more than once in any 60-day period, excluding a second intervention during the same day or night as the first intervention, the 60-day period shall be extended by another sixty (60) days from the date of the second intervention.

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

7.05.050 - Recovery of subsequent response fee.

A. After given proper notice pursuant to Section 7.05.030 and a reasonable opportunity to abate a gathering constituting a public nuisance, a subsequent response fee shall be assessed against all persons liable for the city's intervention. The subsequent response fee shall include:

1. The actual cost to the city of law enforcement services incurred as a result of a subsequent response;
2. The actual cost of any medical treatment required by a police officer for injuries sustained during a subsequent response; and
3. The cost of repairing or replacing any city equipment or property damaged or destroyed during a subsequent response.

B. Except as provided in subsection (A) of this section, the subsequent response fee shall not exceed one thousand dollars ($1,000.00) for any subsequent response.

C.

The remedies set forth in this chapter shall be in addition to any other penalties imposed by law for particular violations of law committed during the course of an event which is a public nuisance under this chapter, provided however, that if the only violation of law which constituted the public nuisance under this chapter is excessive noise, the remedies provided under this chapter shall be exclusive of any other remedies provided by law to the city for such excessive noise.

D. The city shall bill all persons liable for subsequent response fees by mail by sending a letter in substantially the form attached hereto as Exhibit "B." Payment of the fees shall be due within thirty (30) days of the date the bill is deposited in the mail. If full payment is not received within the required time for payment, the bill will be delinquent, and all persons liable for the fees shall be charged interest at the maximum legal rate from the date the payment period expires and a further civil penalty in the amount of one hundred dollars ($100.00).

EXHIBIT B

Date:

To:

Dear:

The City of Coachella was required to abate the public nuisance caused by a gathering of 10 or more persons at (location of property), which substantially disrupted the quiet enjoyment of property in a significant segment of the adjacent neighborhood. This is the (second/third/fourth, etc.) such public nuisance at this property within the last 60 days, and thus, a fee of _____/_____/_____ is imposed on you. If you fail to remit this fine to the City of Coachella by (30 days from the date of this notification) you will be liable for an additional $100 penalty, plus interest. The payment should be remitted to the address listed below. Your liability is based on the fact that you were:

[ ] An owner of the property to whom was sent prior notice of a public nuisance at the property within the previous 60 days; and/or

[ ] An owner of the property who resided on or adjacent to the property when the public nuisance took place; and/or

[ ] An owner of the property who was present when a Notice of a public nuisance was first posted at the property; and/or

[ ] A person who resided on or was otherwise in control of the property when the public nuisance took place there; and/or

[ ] A person who organized or sponsored the event that created the public nuisance at such property; and/or

[ ] A person who attended the event constituting the public nuisance at such property and engaged in the conduct which resulted in the public nuisance.

If you believe that you are not liable you may defend this claim in the civil action which the City of Coachella will file against you upon your failure to remit the fee. You should be aware, however, that if you fail to prevail in that action you will be liable for the additional penalty of $100 and interest on the total fee.

Sincerely yours,

(Name, title, address and phone number of signatory)

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

7.05.060 - Collection of delinquent costs for a subsequent city response.

The penalties assessed as a result of a subsequent city response to a loud or unruly gathering shall constitute a debt of all persons liable for the penalties in favor of the city and may be collected in any manner authorized by law and are recoverable in a civil action filed by the city in a court of competent jurisdiction. The remedies provided by this chapter are in addition to all other civil and criminal remedies available to the city with respect to the unlawful conduct constituting the public nuisance which gave rise to the need for the city response under this chapter.

(Ord. No. 1023, § 1, 11-17-10; Ord. No. 1025, 11-17-10)

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APPENDIX 5.1:

NOISE LEVEL MEASUREMENT LOCATION EXHIBITS

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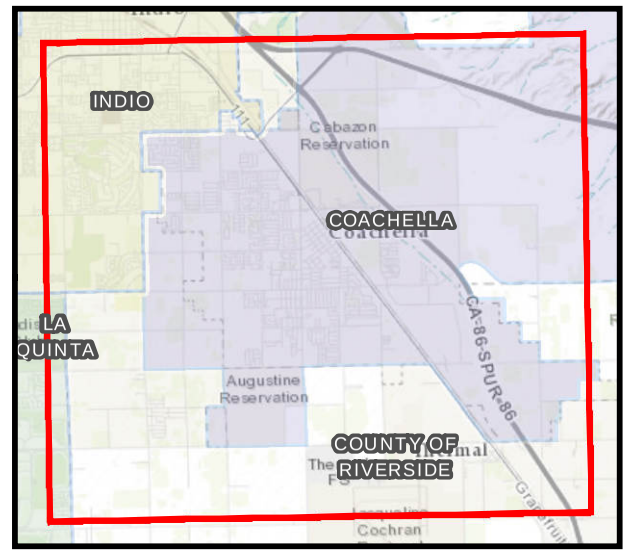
Noise Measurement Locations

LEGEND:

- Noise Level Measurement Locations
- Well Site Location
- 19 Well Site Number/Name



10336_MeasurementsMapbook
11/9/2016

URBAN CROSSROADS

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

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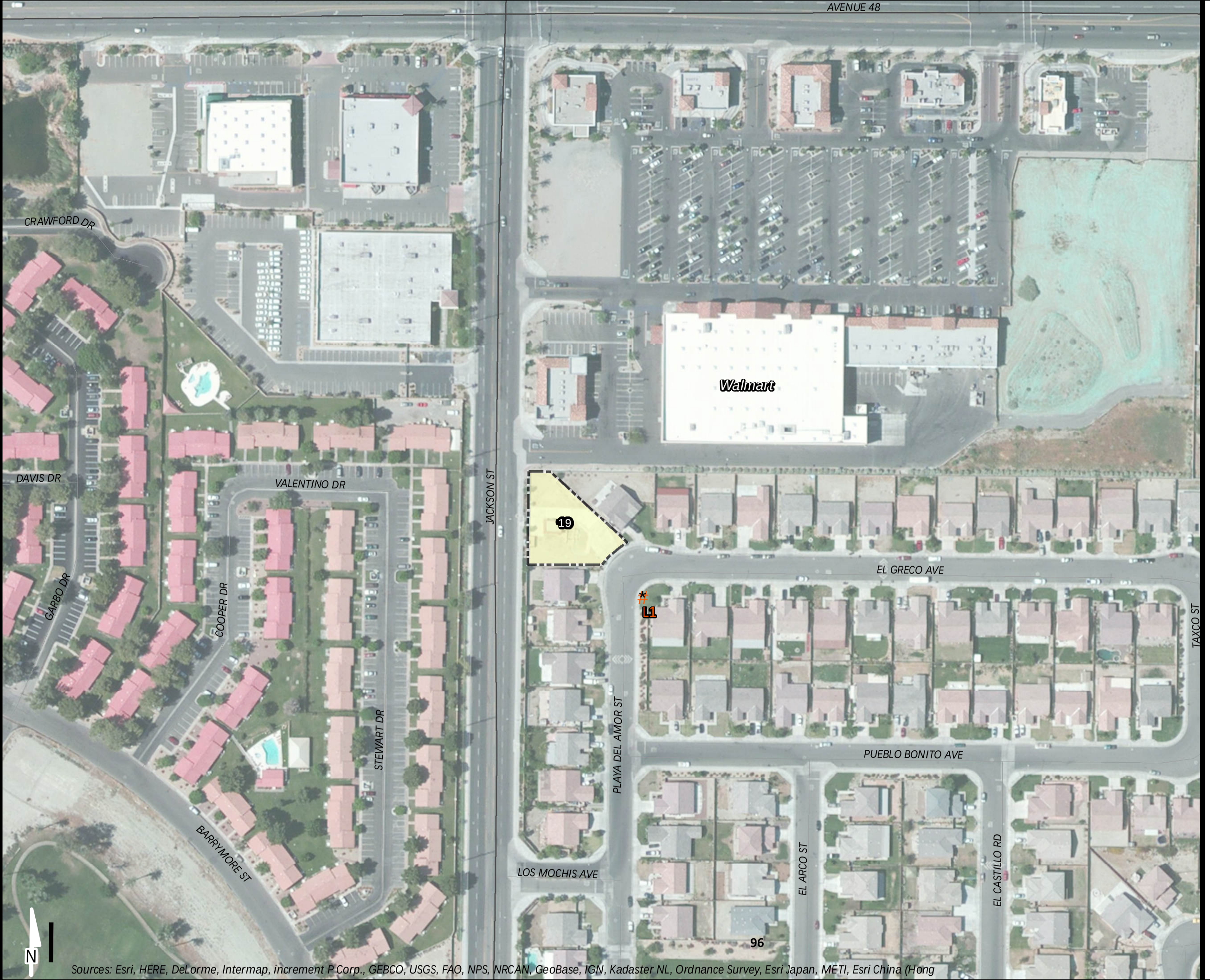

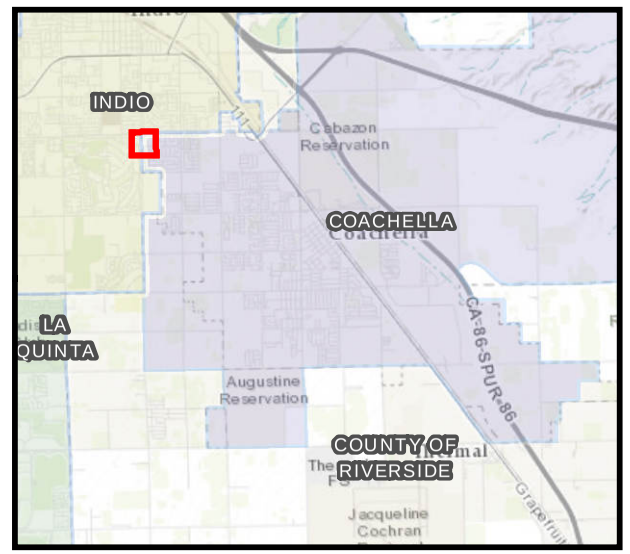

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Feet

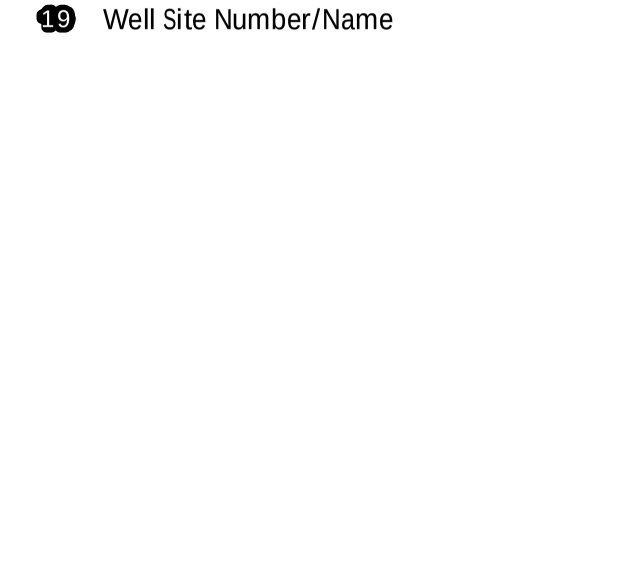
10336_MeasurementsMapbook
11/9/2016

URBAN CROSSROADS

Noise Measurement Locations

LEGEND:

- Noise Level Measurement Locations
- Well Site Location
- Well Site Number/Name



10336_MeasurementsMapbook
11/9/2016

URBAN CROSSROADS

Noise Measurement Locations

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- Noise Level Measurement Locations
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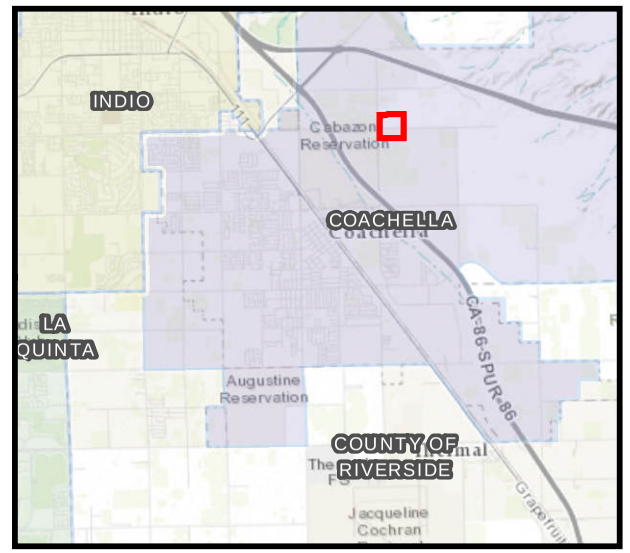

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Feet

10336_MeasurementsMapbook
11/9/2016

URBAN CROSSROADS

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

Noise Measurement Locations

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- Well Site Location
- Well Site Number/Name

0 125

Feet

10336_MeasurementsMapbook
11/9/2016

URBAN CROSSROADS

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

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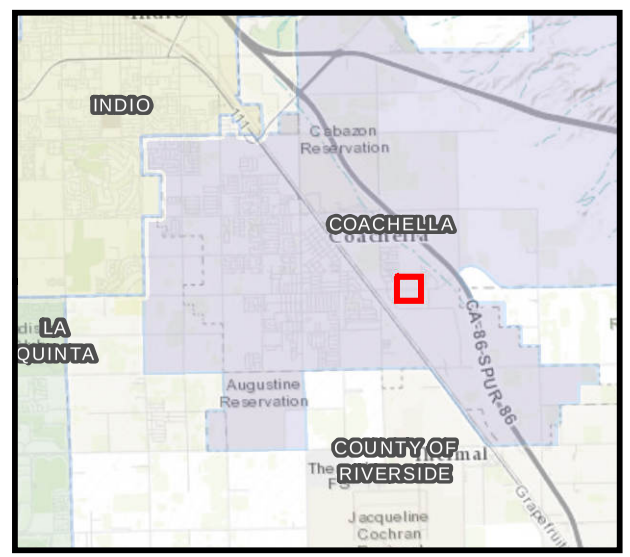

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Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

10336_MeasurementsMapbook
11/9/2016

URBAN CROSSROADS

Noise Measurement Locations

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- Noise Level Measurement Locations
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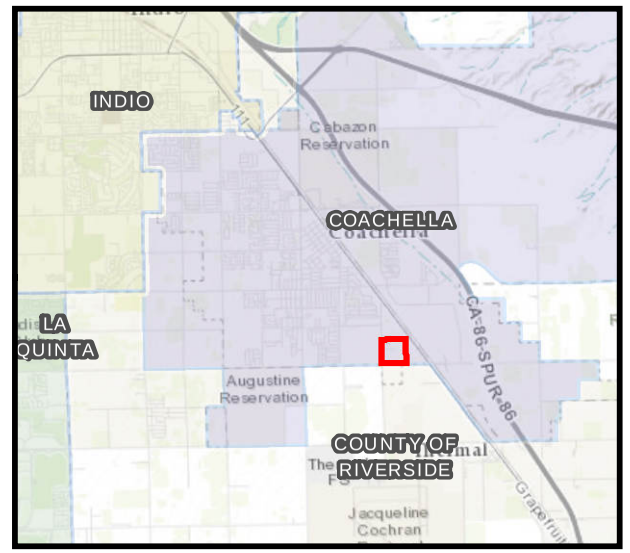

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Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

10336_MeasurementsMapbook
11/9/2016

URBAN CROSSROADS

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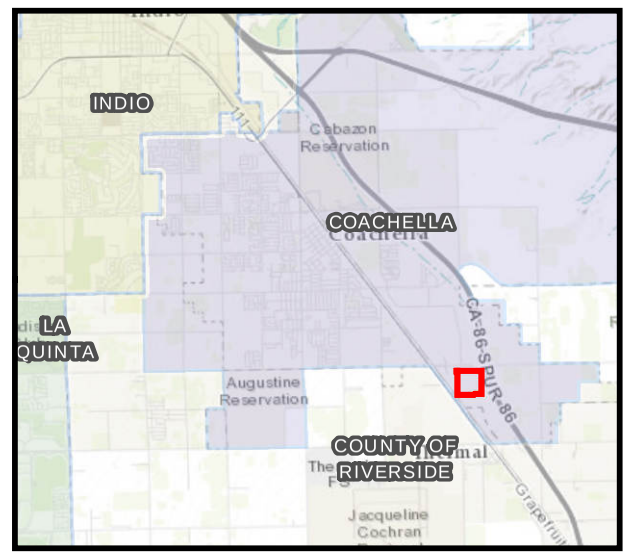

0 330

Feet

URBAN CROSSROADS

APPENDIX 5.2:

STUDY AREA PHOTOS

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L1_E
33, 41' 52.284800", 116, 12' 56.898100"

L1_NE
33, 41' 52.284800", 116, 12' 56.898100"

L1_NW
33, 41' 52.284800", 116, 12' 56.898100"

L2
33, 41' 47.492000", 116, 11' 55.374700"

L2_E
33, 41' 47.492000", 116, 11' 55.374700"

L2_NE
33, 41' 47.492000", 116, 11' 55.374700"

L2_NW
33, 41' 47.492000", 116, 11' 55.374700"

L2_W
33, 41' 47.492000", 116, 11' 55.374700"

L3
33, 42' 0.812900", 116, 9' 50.762300"

L3_E
33, 42' 0.812900", 116, 9' 50.762300"

L3_N
33, 42' 0.812900", 116, 9' 50.762300"

L3_NW
33, 42' 0.812900", 116, 9' 50.762300"

L3_S
33, 42' 0.812900", 116, 9' 50.762300"

L3_W
33, 42' 0.812900", 116, 9' 50.762300"

L4
33, 40' 36.863700", 116, 11' 9.012400"

L4_E
33, 40' 35.229400", 116, 11' 8.930000"

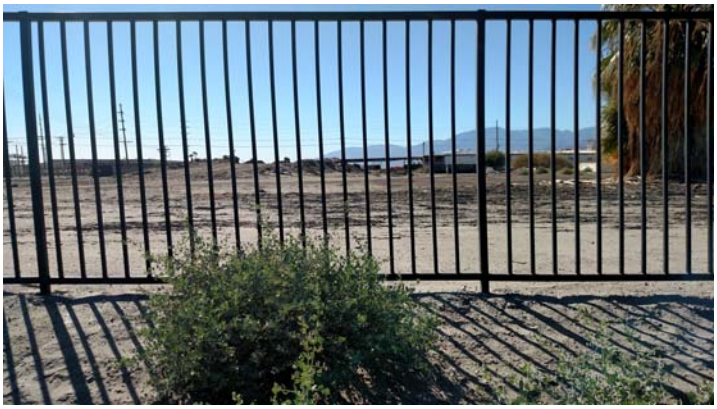
L4_N
33, 40' 35.229400", 116, 11' 8.930000"

L4_W
33, 40' 35.229400", 116, 11' 8.930000"

L5
33, 40' 16.140700", 116, 9' 29.393900"

L5_E
33, 40' 16.058300", 116, 9' 29.036800"

L5_N
33, 40' 16.058300", 116, 9' 29.036800"



L5_S
33, 40' 16.140700", 116, 9' 29.393900"

L5_W
33, 40' 16.058300", 116, 9' 29.036800"

L6
33, 39' 34.859600", 116, 9' 40.133000"

L6_E
33, 39' 34.859600", 116, 9' 40.133000"

L6_S
33, 39' 34.859600", 116, 9' 40.133000"

L6_SW
33, 39' 34.859600", 116, 9' 40.133000"

L6_W
33, 39' 34.859600", 116, 9' 40.133000"

L7
33, 39' 34.859600", 116, 9' 40.133000"

L7_E
33, 39' 34.859600", 116, 9' 40.133000"

L7_NE
33, 39' 34.859600", 116, 9' 40.133000"

L7_SE
33, 39' 34.859600", 116, 9' 40.133000"

L7_W
33, 39' 34.859600", 116, 9' 40.133000"

APPENDIX 5.3:

NOISE LEVEL MEASUREMENT WORKSHEETS

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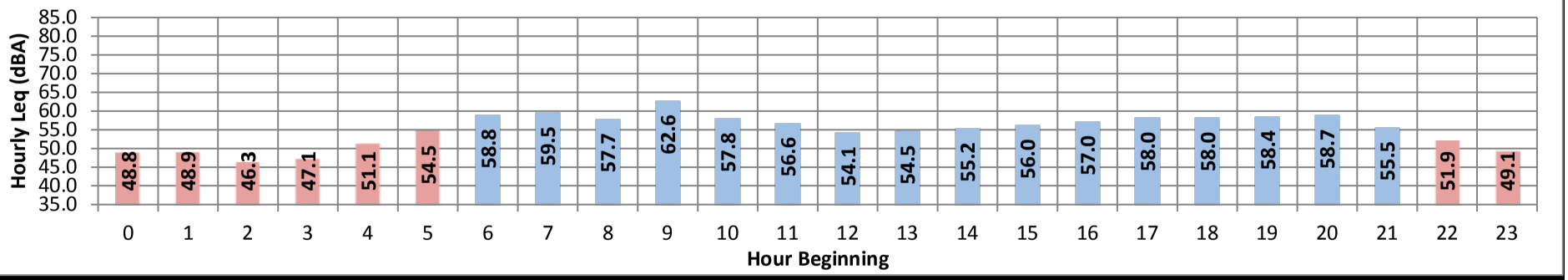
24-Hour Noise Level Measurement Summary

Project Name: Cr6	*JN:* 10336	*Energy Average Leq*		*24-Hour*
Location: L1 - Located adjacent to existing residential homes on Playa Del Amor near Well 19.	*Analyst:* A. Wolfe	*Day*	*Night*	*CNEL*
	Date: 10/20/2016	57.9	50.5	60.9

Hourly Leq dBA Readings (unadjusted)



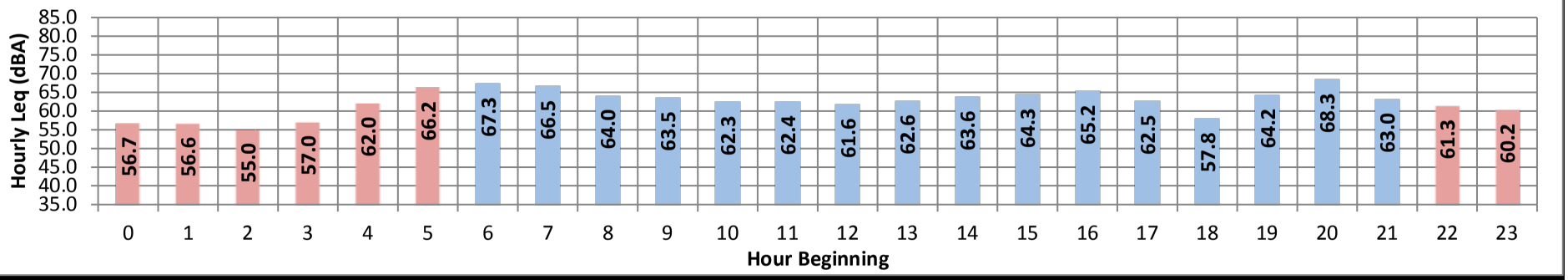
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	54.1	72.8	39.9	64.0	62.0	59.0	57.0	53.0	50.0	46.0	45.0	43.0
	Max	62.6	91.7	51.8	71.0	66.0	63.0	62.0	60.0	58.0	54.0	54.0	53.0
Energy Average:		57.9	Average:		66.1	64.0	61.1	59.4	55.8	53.6	49.8	48.9	47.3
Night	Min	46.3	65.6	39.8	56.0	52.0	49.0	47.0	44.0	42.0	41.0	40.0	39.0
	Max	54.5	70.9	44.5	63.0	61.0	59.0	57.0	54.0	52.0	48.0	47.0	46.0
Energy Average:		50.5	Average:		59.6	56.3	53.1	51.6	48.0	45.9	43.1	42.8	41.8
Hourly Summary													
Night	0	48.8	70.9	41.0	58.0	53.0	50.0	50.0	47.0	45.0	42.0	42.0	41.0
	1	48.9	70.6	41.0	61.0	56.0	52.0	50.0	46.0	44.0	42.0	42.0	41.0
	2	46.3	68.7	39.8	56.0	52.0	49.0	47.0	44.0	42.0	41.0	40.0	39.0
	3	47.1	65.6	39.8	58.0	55.0	50.0	49.0	45.0	43.0	41.0	41.0	40.0
	4	51.1	70.7	41.1	61.0	58.0	56.0	55.0	49.0	46.0	42.0	42.0	41.0
	5	54.5	67.7	44.5	63.0	61.0	59.0	57.0	54.0	52.0	48.0	47.0	46.0
Day	6	58.8	75.9	49.0	67.0	65.0	63.0	61.0	58.0	56.0	53.0	52.0	50.0
	7	59.5	76.4	51.8	66.0	65.0	63.0	62.0	60.0	58.0	54.0	54.0	53.0
	8	57.7	79.3	48.1	65.0	63.0	60.0	59.0	56.0	55.0	51.0	51.0	49.0
	9	62.6	91.7	45.1	71.0	66.0	62.0	60.0	56.0	54.0	49.0	48.0	47.0
	10	57.8	81.6	44.6	66.0	64.0	60.0	59.0	57.0	54.0	49.0	48.0	46.0
	11	56.6	76.6	41.8	68.0	66.0	61.0	58.0	53.0	51.0	47.0	45.0	43.0
	12	54.1	74.3	39.9	64.0	62.0	59.0	57.0	53.0	50.0	46.0	45.0	43.0
	13	54.5	72.8	42.0	64.0	62.0	59.0	57.0	53.0	51.0	47.0	46.0	44.0
	14	55.2	73.9	43.0	65.0	63.0	60.0	58.0	54.0	52.0	48.0	47.0	45.0
	15	56.0	74.4	44.1	65.0	63.0	61.0	59.0	55.0	52.0	49.0	48.0	47.0
	16	57.0	74.9	45.9	65.0	63.0	61.0	60.0	56.0	54.0	50.0	49.0	47.0
	17	58.0	81.0	45.9	67.0	65.0	62.0	60.0	56.0	54.0	51.0	50.0	48.0
	18	58.0	76.1	49.8	66.0	65.0	62.0	60.1	57.0	55.0	53.0	52.0	51.0
	19	58.4	78.8	49.2	67.0	65.0	62.0	62.0	57.0	55.0	51.0	51.0	50.0
	20	58.7	77.1	46.2	67.0	65.0	63.0	62.0	58.0	55.0	51.0	50.0	48.0
	21	55.5	77.5	44.9	65.0	62.0	59.0	57.0	54.0	52.0	48.0	47.0	46.0
Night	22	51.9	67.8	43.5	62.0	59.0	56.0	54.0	51.0	49.0	45.0	45.0	44.0
	23	49.1	66.5	41.8	58.0	56.0	53.0	51.0	48.0	46.0	44.0	43.0	42.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Cr6		*JN:* 10336	*Energy Average Leq*		*24-Hour*
		Analyst: A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L2 - Located within the Rancho Las Flores Coachella City Park near Well 17 and future residential homes to the south.	*Date:* 10/20/2016	64.3	60.9	69.5

Hourly Leq dBA Readings (unadjusted)



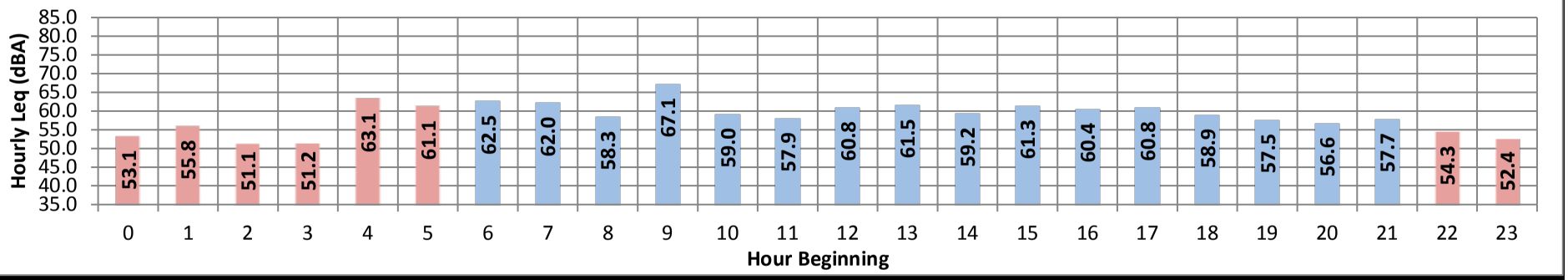
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	57.8	70.2	46.8	64.0	63.0	61.0	61.0	58.0	56.0	48.0	48.0	47.0
	Max	68.3	86.0	54.4	80.0	80.0	73.0	70.0	67.0	65.0	58.0	57.0	55.0
Energy Average:		64.3	Average:		72.4	70.6	68.0	66.8	63.4	60.1	53.3	52.1	50.5
Night	Min	55.0	72.7	47.4	66.0	65.0	61.0	58.0	51.0	49.0	48.0	48.0	47.0
	Max	66.2	84.5	50.0	75.0	73.0	70.0	70.0	67.0	63.0	55.0	54.0	52.0
Energy Average:		60.9	Average:		69.1	67.5	65.1	63.5	57.3	53.4	50.0	49.6	48.8
Hourly Summary													
Night	0	56.7	74.4	47.5	67.0	65.0	63.0	61.0	54.0	50.0	48.0	48.0	48.0
	1	56.6	78.7	47.4	67.0	65.0	62.0	60.0	52.0	50.0	48.0	48.0	47.0
	2	55.0	72.7	47.4	66.0	65.0	61.0	58.0	51.0	49.0	48.0	48.0	47.0
	3	57.0	73.0	47.5	67.0	66.0	64.0	62.0	53.0	50.0	48.0	48.0	48.0
	4	62.0	79.7	49.1	71.0	69.0	68.0	67.0	62.0	55.0	51.0	50.0	49.0
	5	66.2	84.5	50.0	75.0	73.0	70.0	70.0	67.0	63.0	55.0	54.0	52.0
Day	6	67.3	85.0	54.4	76.0	74.0	71.0	70.0	67.0	65.0	58.0	57.0	55.0
	7	66.5	81.0	53.2	74.0	72.0	71.0	70.0	67.0	64.0	57.0	55.0	54.0
	8	64.0	81.1	51.1	72.0	70.0	68.0	68.0	65.0	61.0	54.0	53.0	52.0
	9	63.5	80.5	48.3	73.0	70.0	68.0	67.0	64.0	59.0	52.0	51.0	50.0
	10	62.3	81.4	47.4	72.0	70.0	67.0	65.0	62.0	57.0	50.0	49.0	48.0
	11	62.4	78.1	47.2	72.0	70.0	67.0	66.0	62.0	58.0	50.0	49.0	47.0
	12	61.6	78.0	47.1	71.0	69.0	67.0	65.0	61.0	57.0	48.0	48.0	47.0
	13	62.6	83.2	46.8	71.0	70.0	67.0	66.0	62.0	59.0	50.0	48.0	47.0
	14	63.6	81.3	47.1	73.0	70.0	68.0	67.0	63.0	60.0	52.0	50.0	48.0
	15	64.3	82.0	47.2	73.0	71.0	69.0	67.0	64.0	61.0	53.0	51.0	48.0
	16	65.2	80.6	47.6	74.0	72.0	69.0	68.0	65.0	63.0	56.0	54.0	50.0
	17	62.5	86.0	49.0	71.0	69.0	66.0	65.0	62.0	59.0	53.0	52.0	50.0
	18	57.8	70.2	51.7	64.0	63.0	61.0	61.0	58.0	56.0	54.0	53.0	53.0
	19	64.2	82.0	53.1	71.0	70.0	68.0	67.0	64.0	62.0	58.0	57.0	55.0
	20	68.3	82.6	52.7	80.0	80.0	73.0	69.0	65.0	62.0	56.0	55.0	53.0
	21	63.0	78.8	49.8	71.0	70.0	68.0	67.0	63.0	59.0	52.0	52.0	51.0
Night	22	61.3	79.5	49.5	70.0	68.0	66.0	65.0	61.0	56.0	52.0	51.0	50.0
	23	60.2	77.1	48.7	70.0	69.0	67.0	65.0	58.0	54.0	50.0	50.0	49.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Cr6		*JN:* 10336	*Energy Average Leq*		*24-Hour*
		Analyst: A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L3 - Located west of Well 18 at the southwest corner of Tyler Street and Avenue 48 near an existing mobile home.	*Date:* 10/20/2016	61.0	57.6	65.5

Hourly Leq dBA Readings (unadjusted)



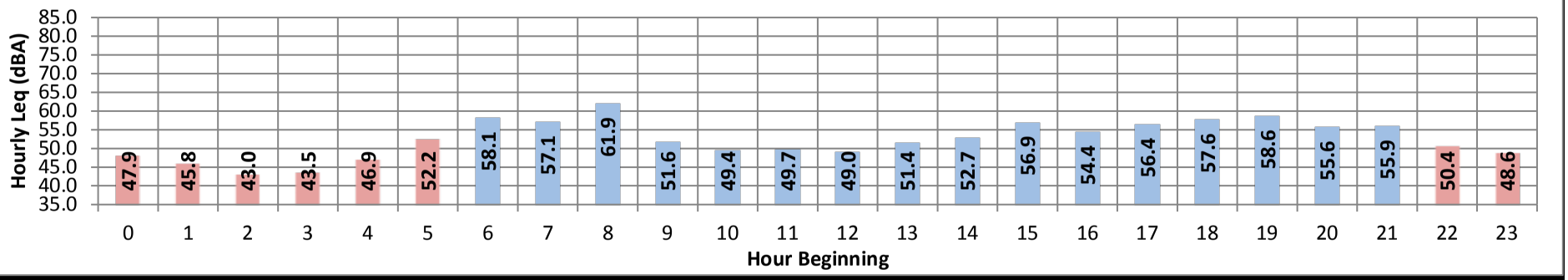
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	56.6	80.2	44.2	68.0	62.0	55.0	53.0	46.0	46.0	45.0	45.0	45.0
	Max	67.1	96.1	48.8	75.0	72.0	63.0	60.0	53.0	51.0	50.0	49.0	49.0
Energy Average:		61.0	Average:		72.4	67.9	60.2	56.2	49.3	47.9	47.0	46.8	46.4
Night	Min	51.1	77.8	46.5	54.0	51.0	50.0	49.0	49.0	48.0	47.0	47.0	47.0
	Max	63.1	91.8	47.7	75.0	71.0	63.0	58.0	51.0	50.0	49.0	49.0	48.0
Energy Average:		57.6	Average:		62.4	57.3	52.9	51.5	49.5	48.5	47.9	47.5	47.1
Hourly Summary													
Night	0	53.1	77.8	47.4	60.0	57.0	54.0	53.0	49.0	48.0	48.0	48.0	47.0
	1	55.8	84.4	46.9	61.0	55.0	50.0	49.0	49.0	48.0	47.0	47.0	47.0
	2	51.1	78.6	47.0	54.0	51.0	50.0	50.0	49.0	48.0	48.0	47.0	47.0
	3	51.2	78.0	46.5	57.0	54.0	50.0	50.0	49.0	48.0	47.0	47.0	47.0
	4	63.1	91.8	47.1	73.0	64.0	55.0	52.0	50.0	49.0	48.0	48.0	47.0
	5	61.1	82.9	47.7	75.0	71.0	63.0	58.0	51.0	50.0	49.0	49.0	48.0
Day	6	62.5	90.5	48.8	75.0	71.0	63.0	60.0	53.0	51.0	50.0	49.0	49.0
	7	62.0	89.8	48.2	75.0	70.0	62.0	58.0	52.0	51.0	49.0	49.0	48.0
	8	58.3	84.2	47.0	71.0	67.0	60.0	57.0	51.0	49.0	48.0	48.0	47.0
	9	67.1	96.1	45.7	75.0	69.0	61.0	56.0	49.0	47.0	46.0	46.0	46.0
	10	59.0	85.5	44.8	72.0	67.0	58.0	53.0	46.0	46.0	45.0	45.0	45.0
	11	57.9	80.2	44.2	71.0	66.0	57.0	53.0	50.0	46.0	45.0	45.0	45.0
	12	60.8	84.0	45.6	74.0	70.0	62.0	57.0	48.0	47.0	46.0	46.0	46.0
	13	61.5	90.4	45.1	74.0	70.0	62.0	57.0	47.0	46.0	46.0	45.0	45.0
	14	59.2	83.9	45.1	72.0	69.0	63.0	58.0	48.0	46.0	46.0	45.0	45.0
	15	61.3	85.2	45.7	75.0	72.0	63.0	58.0	48.0	47.0	46.0	46.0	46.0
	16	60.4	83.9	45.8	73.0	70.0	63.0	58.0	48.0	47.0	46.0	46.0	46.0
	17	60.8	85.6	46.3	74.0	70.0	62.0	58.0	49.0	48.0	47.0	47.0	46.0
	18	58.9	84.2	46.3	72.0	68.0	60.0	56.0	49.0	48.0	47.0	47.0	46.0
	19	57.5	86.3	47.3	69.0	64.0	56.0	53.0	49.0	49.0	48.0	48.0	47.0
	20	56.6	80.9	47.6	68.0	62.0	55.0	53.0	50.0	49.0	48.0	48.0	48.0
	21	57.7	84.4	48.2	69.0	62.0	56.0	54.0	51.0	50.0	49.0	49.0	48.0
Night	22	54.3	79.9	47.0	63.0	55.0	51.0	51.0	50.0	49.0	48.0	47.0	47.0
	23	52.4	82.1	46.9	56.0	51.0	50.0	49.0	49.0	48.0	48.0	47.0	47.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

			Energy Average Leq		24-Hour
Project Name: Cr6	*JN:* 10336		*Day*	*Night*	*CNEL*
Location: L4 - Located on an existing trail, west of Mecca Street, between residential homes to the south and Well 12 to the north.	*Analyst:* A. Wolfe		56.2	48.3	59.4
	Date: 10/20/2016				

Hourly Leq dBA Readings (unadjusted)



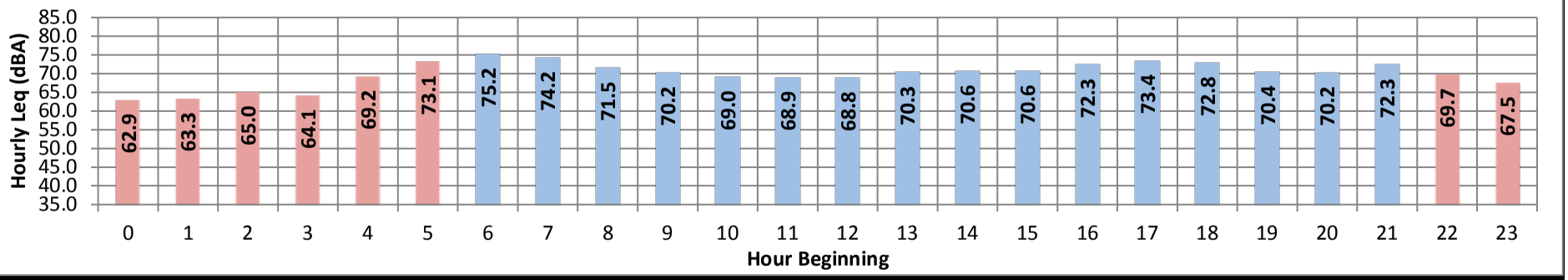
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	49.0	64.4	37.6	58.0	57.0	54.0	53.0	48.0	43.0	40.0	39.0	38.0
	Max	61.9	85.1	47.8	70.0	69.0	68.0	67.0	62.0	58.0	51.0	50.0	49.0
Energy Average:		56.2	Average:		62.9	61.1	58.8	57.6	53.8	50.0	45.8	44.8	43.8
Night	Min	43.0	59.2	37.9	52.0	48.0	45.0	44.0	42.0	40.0	38.0	38.0	38.0
	Max	52.2	69.2	42.1	61.0	60.0	57.0	56.0	52.0	48.0	44.0	43.0	43.0
Energy Average:		48.3	Average:		56.3	54.4	51.6	50.4	46.0	43.8	41.4	40.8	39.9
Hourly Summary													
Night	0	47.9	69.2	40.1	56.0	54.0	52.0	51.0	47.0	44.0	42.0	41.0	40.0
	1	45.8	60.7	39.1	54.0	52.0	50.0	49.0	45.0	43.0	41.0	40.0	39.0
	2	43.0	59.2	37.9	52.0	51.0	48.0	46.0	42.0	40.0	38.0	38.0	38.0
	3	43.5	64.9	37.9	53.0	48.0	45.0	44.0	42.0	41.0	39.0	39.0	38.0
	4	46.9	61.3	38.0	57.0	55.0	53.0	51.0	45.0	42.0	40.0	40.0	39.0
	5	52.2	69.1	40.9	61.0	60.0	57.0	56.0	52.0	48.0	44.0	43.0	41.0
Day	6	58.1	85.1	44.8	66.0	63.0	60.0	59.0	55.0	51.0	48.0	47.0	46.0
	7	57.1	69.4	46.2	63.0	62.0	61.0	60.0	57.0	55.0	51.0	49.0	47.0
	8	61.9	73.2	46.5	70.0	69.0	68.0	67.0	62.0	58.0	51.0	50.0	48.0
	9	51.6	64.4	40.3	60.0	59.0	57.0	55.0	52.0	48.0	43.0	42.0	41.0
	10	49.4	67.4	37.6	58.0	57.0	55.0	54.0	49.0	44.0	40.0	39.0	38.0
	11	49.7	65.7	39.2	59.0	58.0	55.0	54.0	49.0	44.0	41.0	40.0	40.0
	12	49.0	67.1	39.0	59.0	57.0	54.0	53.0	48.0	43.0	40.0	40.0	39.0
	13	51.4	71.2	40.0	61.0	58.0	56.0	55.0	51.0	46.0	42.0	41.0	40.0
	14	52.7	68.5	40.6	61.0	60.0	58.0	56.0	53.0	48.0	43.0	42.0	41.0
	15	56.9	83.1	41.0	65.0	62.0	58.0	57.0	53.0	49.0	44.0	43.0	42.0
	16	54.4	77.0	41.5	63.0	61.0	59.0	57.0	53.0	49.0	44.0	43.0	43.0
	17	56.4	77.9	44.1	66.0	63.0	60.0	59.0	56.0	53.0	47.0	46.0	45.0
	18	57.6	74.7	47.8	66.0	65.0	61.0	60.0	57.0	55.0	51.0	50.0	49.0
	19	58.6	82.4	47.8	63.0	61.0	60.0	59.0	57.0	54.0	51.0	50.0	49.0
	20	55.6	68.8	47.3	63.0	62.0	60.0	59.0	56.0	53.0	49.0	49.0	48.0
	21	55.9	82.5	45.0	63.0	61.0	58.0	57.0	53.0	50.0	47.0	46.0	45.0
Night	22	50.4	66.5	42.1	59.0	58.0	55.0	54.0	49.0	47.0	44.0	43.0	43.0
	23	48.6	66.2	40.9	58.0	57.0	53.0	52.0	46.0	45.0	43.0	42.0	41.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Cr6	*JN:* 10336	*Energy Average Leq*		*24-Hour*
Location: L5 - Located on Avenue 52 at the northern property line of the proposed Resin Regen Facility.	*Analyst:* A. Wolfe	*Day*	*Night*	*CNEL*
	Date: 10/20/2016	71.7	68.3	76.8

Hourly Leq dBA Readings (unadjusted)



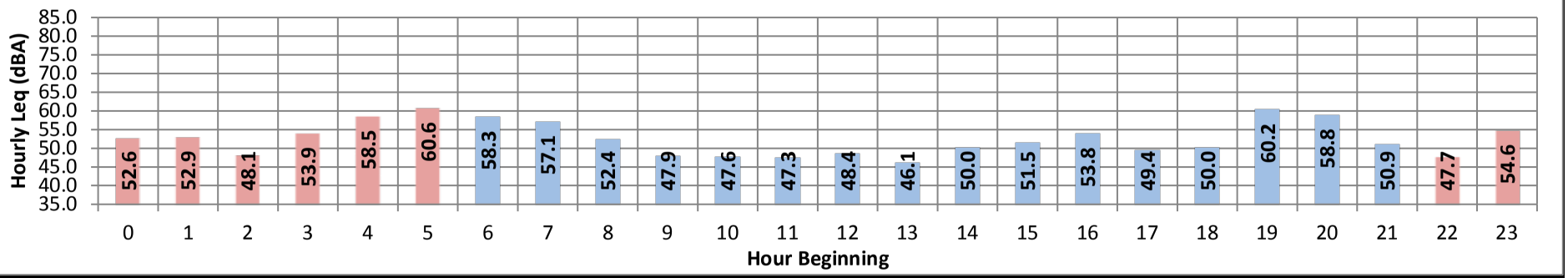
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	68.8	85.8	42.0	79.0	78.0	75.0	73.0	66.0	58.0	46.0	45.0	43.0
	Max	75.2	94.3	55.4	84.0	83.0	81.0	80.0	75.0	71.0	63.0	61.0	58.0
Energy Average:		71.7	Average:		81.1	79.6	77.0	75.5	70.1	64.4	53.9	51.8	48.7
Night	Min	62.9	82.0	43.5	75.0	72.0	69.0	67.0	54.0	48.0	45.0	44.0	44.0
	Max	73.1	90.5	47.9	82.0	81.0	79.0	78.0	73.0	67.0	56.0	54.0	49.0
Energy Average:		68.3	Average:		78.3	76.1	72.8	70.6	61.9	54.4	47.5	46.8	45.5
Hourly Summary													
Night	0	62.9	82.0	43.7	75.0	72.0	69.0	67.0	57.0	48.0	45.0	45.0	44.0
	1	63.3	83.8	43.6	75.0	73.0	69.0	67.0	57.0	49.0	45.0	45.0	44.0
	2	65.0	89.5	44.3	77.0	74.0	70.0	68.0	55.0	48.0	46.0	45.0	45.0
	3	64.1	84.4	43.5	77.0	74.0	71.0	67.0	54.0	48.0	45.0	44.0	44.0
	4	69.2	90.5	45.0	81.0	79.0	75.0	73.0	66.0	57.0	47.0	46.0	46.0
	5	73.1	89.4	47.9	82.0	81.0	79.0	78.0	73.0	67.0	56.0	54.0	49.0
Day	6	75.2	89.0	53.3	84.0	83.0	81.0	80.0	75.0	71.0	61.0	58.0	55.0
	7	74.2	90.9	55.4	83.0	82.0	80.0	79.0	74.0	70.0	63.0	61.0	58.0
	8	71.5	87.4	49.3	81.0	80.0	77.0	76.0	71.0	66.0	57.0	55.0	52.0
	9	70.2	92.3	44.4	80.0	79.0	76.0	74.0	69.0	62.0	50.0	48.0	45.0
	10	69.0	85.8	43.3	79.0	78.0	75.0	74.0	68.0	61.0	48.0	46.0	44.0
	11	68.9	86.9	42.0	80.0	78.0	75.0	73.0	67.0	59.0	47.0	46.0	44.0
	12	68.8	88.1	42.7	80.0	78.0	75.0	73.0	66.0	58.0	46.0	45.0	43.0
	13	70.3	93.6	44.0	81.0	79.0	76.0	74.0	67.0	59.0	48.0	46.0	45.0
	14	70.6	92.4	45.0	81.0	79.0	76.0	74.0	69.0	63.0	53.0	50.0	46.0
	15	70.6	86.3	45.0	80.0	79.0	77.0	75.0	70.0	64.0	52.0	49.0	46.0
	16	72.3	92.3	45.9	83.0	81.0	78.0	76.0	71.0	65.0	53.0	51.0	47.0
	17	73.4	88.2	46.4	82.0	81.0	79.0	78.0	73.0	69.0	59.0	56.0	49.0
	18	72.8	88.6	49.3	81.0	80.0	78.0	77.0	73.0	69.0	60.0	57.0	52.0
	19	70.4	87.8	48.9	79.0	78.0	76.0	75.0	70.0	65.0	56.0	54.0	51.0
	20	70.2	90.3	51.0	80.0	78.0	76.0	74.0	69.0	64.0	56.0	54.0	52.0
	21	72.3	94.3	49.6	83.0	81.0	77.0	76.0	70.0	65.0	54.0	52.0	50.0
Night	22	69.7	88.5	45.4	80.0	79.0	76.0	74.0	68.0	61.0	49.0	48.0	46.0
	23	67.5	88.0	44.3	79.0	77.0	73.0	71.0	65.0	57.0	47.0	47.0	46.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Cr6		*JN:* 10336	*Energy Average Leq*		*24-Hour*
Location: L6 - Located at the cul-de-sac of of Tyler Lane north of Well 16 and south of existing residential homes on Tyler Street.		*Analyst:* A. Wolfe	*Day*	*Night*	*CNEL*
		Date: 10/20/2016	54.2	55.6	62.6

Hourly Leq dBA Readings (unadjusted)



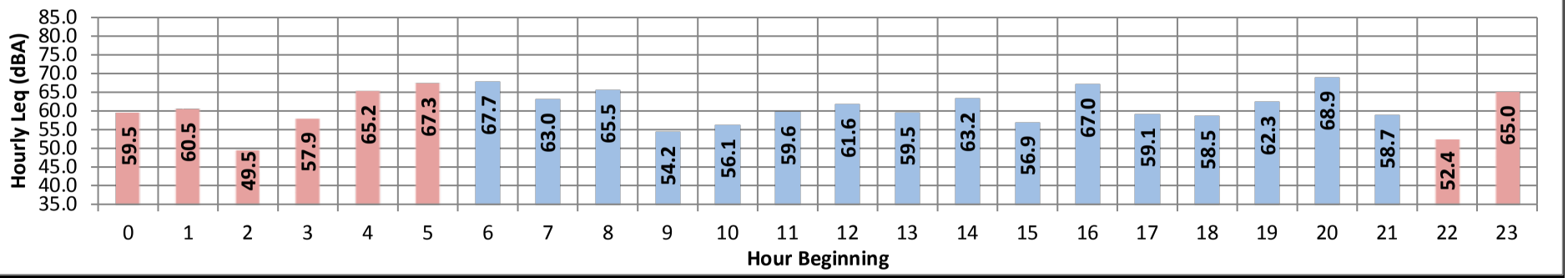
Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	46.1	58.4	38.3	53.0	52.0	50.0	49.0	44.0	42.0	40.0	39.0	39.0
	Max	60.2	86.1	49.2	70.0	67.0	63.0	59.0	56.0	54.0	52.0	51.0	50.0
Energy Average:		54.2	Average:		59.9	57.3	54.6	52.8	49.3	47.2	44.6	43.9	43.3
Night	Min	47.7	55.6	41.7	52.0	51.0	50.0	49.0	48.0	47.0	44.0	43.0	42.0
	Max	60.6	84.7	50.9	70.0	69.0	63.0	61.0	57.0	56.0	53.0	53.0	52.0
Energy Average:		55.6	Average:		61.9	60.3	55.8	53.1	50.8	49.4	46.8	46.4	45.5
Hourly Summary													
Night	0	52.6	79.6	43.6	61.0	59.0	55.0	51.0	49.0	47.0	45.0	44.0	44.0
	1	52.9	76.9	42.8	62.0	61.0	53.0	52.0	49.0	47.0	44.0	44.0	43.0
	2	48.1	62.9	41.7	53.0	52.0	51.0	50.0	48.0	47.0	44.0	43.0	42.0
	3	53.9	77.7	44.2	64.0	58.0	54.0	54.0	52.0	50.0	46.0	46.0	45.0
	4	58.5	82.1	48.2	66.0	65.0	63.0	58.0	54.0	53.0	51.0	50.0	49.0
	5	60.6	84.7	50.9	70.0	69.0	63.0	61.0	57.0	56.0	53.0	53.0	52.0
Day	6	58.3	78.8	49.2	68.0	66.0	63.0	59.0	56.0	54.0	52.0	51.0	50.0
	7	57.1	80.4	45.2	68.0	64.0	62.0	59.0	52.0	50.0	47.0	46.0	46.0
	8	52.4	74.5	42.1	61.0	60.0	57.0	56.0	52.0	47.0	44.0	43.0	43.0
	9	47.9	67.1	41.3	58.0	55.0	51.0	49.0	47.0	45.0	43.0	42.0	42.0
	10	47.6	58.9	43.8	54.0	52.0	51.0	50.0	47.0	46.0	45.0	44.0	44.0
	11	47.3	70.2	39.5	56.0	53.0	51.0	49.0	46.0	43.0	40.0	40.0	39.0
	12	48.4	64.3	40.7	58.0	55.0	51.0	50.0	48.0	46.0	43.0	42.0	41.0
	13	46.1	58.4	39.5	53.0	52.0	50.0	49.0	46.0	44.0	41.0	40.0	39.0
	14	50.0	74.2	38.9	60.0	56.0	55.0	54.0	44.0	42.0	40.0	39.0	39.0
	15	51.5	74.5	40.2	59.0	55.0	51.0	51.0	49.0	47.0	42.0	41.0	40.0
	16	53.8	80.1	38.3	56.0	54.0	52.0	50.0	46.0	44.0	41.0	41.0	39.0
	17	49.4	64.5	43.3	56.0	54.0	52.0	51.0	49.0	48.0	45.0	44.0	44.0
	18	50.0	69.8	44.2	54.0	53.0	52.0	51.0	50.0	49.0	46.0	46.0	45.0
	19	60.2	86.1	47.1	70.0	65.0	59.0	54.0	52.0	50.0	49.0	48.0	48.0
	20	58.8	80.4	45.8	69.0	67.0	63.0	59.0	53.0	51.0	49.0	48.0	47.0
	21	50.9	65.8	45.2	58.0	56.0	54.0	53.0	51.0	49.0	47.0	47.0	46.0
Night	22	47.7	55.6	44.3	52.0	51.0	50.0	49.0	48.0	47.0	45.0	45.0	44.0
	23	54.6	68.9	45.1	67.0	67.0	57.0	50.0	49.0	48.0	46.0	46.0	45.0

URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Project Name: Cr6		*JN:* 10336	*Energy Average Leq*		*24-Hour*
		Analyst: A. Wolfe	*Day*	*Night*	*CNEL*
Location:	L7 - Located west of the proposed wastewater treatment plant on Wallace Road near existing residential homes.	*Date:* 10/20/2016	63.4	62.7	70.3

Hourly Leq dBA Readings (unadjusted)



Time Period	*Hour*	*Leq*	*Lmax*	*Lmin*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	54.2	70.9	37.7	64.0	63.0	59.0	57.0	52.0	48.0	42.0	40.0	39.0
	Max	68.9	94.9	50.1	79.0	78.0	74.0	71.0	59.0	56.0	53.0	52.0	51.0
Energy Average:		63.4	Average:		70.8	68.6	64.8	62.3	55.8	52.0	46.1	44.8	43.1
Night	Min	49.5	68.5	40.8	58.0	56.0	53.0	52.0	48.0	46.0	43.0	43.0	42.0
	Max	67.3	93.4	49.2	77.0	75.0	72.0	69.0	62.0	58.0	54.0	52.0	51.0
Energy Average:		62.7	Average:		71.0	68.3	61.8	57.9	51.6	48.8	45.8	45.0	43.9
Hourly Summary													
Night	0	59.5	85.9	41.6	72.0	70.0	61.0	55.0	48.0	46.0	44.0	43.0	42.0
	1	60.5	83.1	40.8	73.0	71.0	60.0	54.0	48.0	46.0	43.0	43.0	42.0
	2	49.5	68.5	41.2	58.0	56.0	53.0	52.0	48.0	46.0	44.0	43.0	42.0
	3	57.9	78.9	41.7	73.0	67.0	58.0	55.0	50.0	47.0	44.0	44.0	43.0
	4	65.2	93.4	44.6	75.0	72.0	70.0	65.0	57.0	53.0	47.0	47.0	45.0
	5	67.3	91.0	49.2	77.0	75.0	72.0	69.0	62.0	58.0	54.0	52.0	51.0
Day	6	67.7	92.9	48.3	76.0	73.0	68.0	65.0	59.0	56.0	52.0	52.0	50.0
	7	63.0	86.0	50.1	74.0	71.0	68.0	65.0	58.0	56.0	53.0	52.0	51.0
	8	65.5	91.0	43.6	74.0	71.0	68.0	64.0	56.0	53.0	47.0	46.0	45.0
	9	54.2	72.5	39.4	64.0	63.0	59.0	57.0	53.0	49.0	43.0	42.0	40.0
	10	56.1	70.9	39.5	68.0	67.0	61.0	59.0	53.0	49.0	45.0	43.0	41.0
	11	59.6	84.1	37.7	69.0	67.0	63.0	61.0	53.0	49.0	43.0	41.0	39.0
	12	61.6	89.9	38.5	66.0	64.0	60.0	58.0	52.0	48.0	42.0	40.0	39.0
	13	59.5	82.3	39.4	69.0	68.0	65.0	64.0	57.0	50.0	43.0	42.0	40.0
	14	63.2	89.9	37.8	69.0	67.0	64.0	62.0	55.0	51.0	43.0	41.0	39.0
	15	56.9	83.1	39.0	66.0	64.0	61.0	59.0	54.0	51.0	44.0	42.0	40.0
	16	67.0	94.9	39.7	76.0	70.0	67.0	65.0	57.0	53.0	47.0	45.0	42.0
	17	59.1	78.4	41.7	69.0	67.0	64.0	62.0	58.0	55.0	48.0	46.0	44.0
	18	58.5	82.6	43.0	68.0	66.0	63.0	61.0	57.0	53.0	47.0	46.0	44.0
	19	62.3	85.3	44.6	74.0	73.0	67.0	63.0	57.0	54.0	48.0	47.0	46.0
	20	68.9	94.7	43.8	79.0	78.0	74.0	71.0	59.0	54.0	47.0	46.0	44.0
	21	58.7	78.6	44.0	71.0	68.0	64.0	61.0	55.0	51.0	46.0	46.0	45.0
Night	22	52.4	69.2	42.8	63.0	60.0	57.0	56.0	50.0	47.0	45.0	44.0	43.0
	23	65.0	91.8	42.3	77.0	75.0	63.0	57.0	50.0	47.0	45.0	44.0	43.0

URBAN CROSSROADS

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APPENDIX 7.1:

OPERATIONAL NOISE CONTOUR BOUNDARIES

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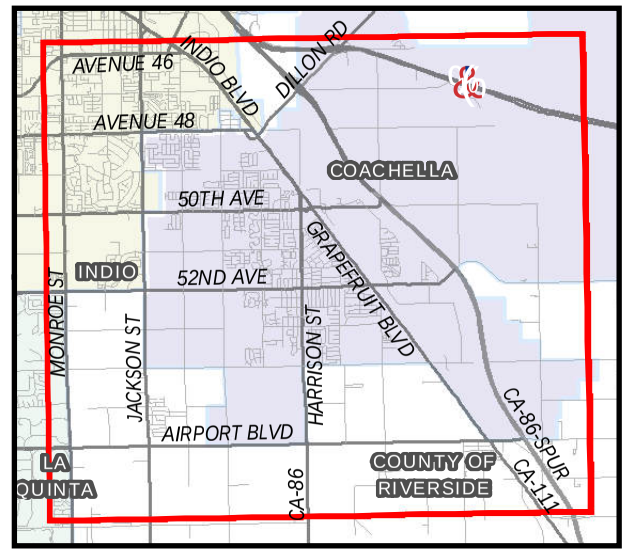
Operational Noise Source & Contour Locations

LEGEND:

- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated Project-Only Noise Levels

- 55 dBA Leq Contour Boundaries
- 45 dBA Leq Contour Boundaries



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Feet

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

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11/16/2016

URBAN CROSSROADS

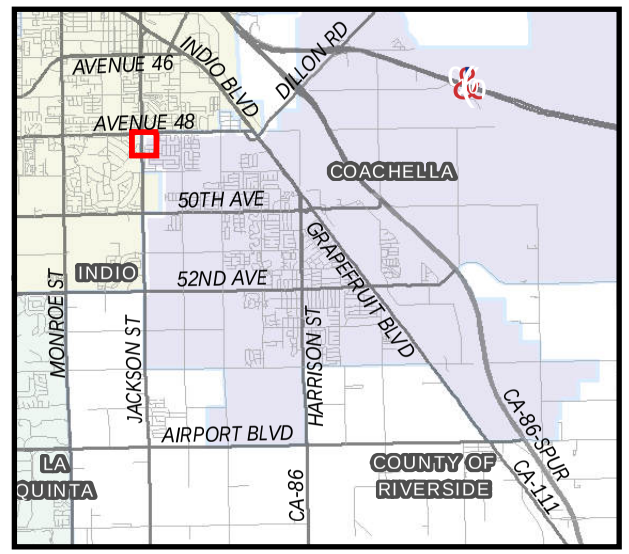
Operational Noise Source & Contour Locations

LEGEND:

- < Closest Receiver Locations
- Distance from noise source to closest sensitive receiver location (in feet)
- Existing 6-Foot High Noise Barrier
- Emergency Backup Generator
- Peak Well Pump & Storage Tank Activity
- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated Project-Only Noise Levels

- 55 dBA Leq Contour Boundaries
- 45 dBA Leq Contour Boundaries



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Feet

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URBAN CROSSROADS

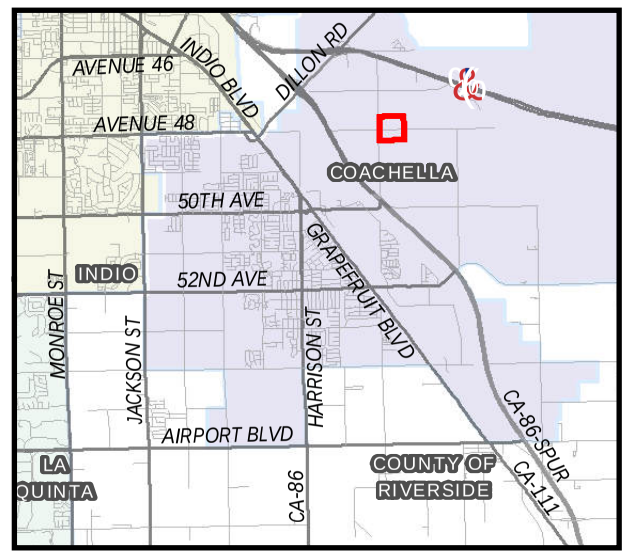
Operational Noise Source & Contour Locations

LEGEND:

- < Closest Receiver Locations
- Distance from noise source to closest sensitive receiver location (in feet)
- Proposed 6-Foot High Noise Barrier
- Peak Well Pump & Storage Tank Activity
- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated Project-Only Noise Levels

- 55 dBA Leq Contour Boundaries
- 45 dBA Leq Contour Boundaries



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Feet

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

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URBAN CROSSROADS

Rancho Las Flores Park

17

R3 Future Residential Homes

51'

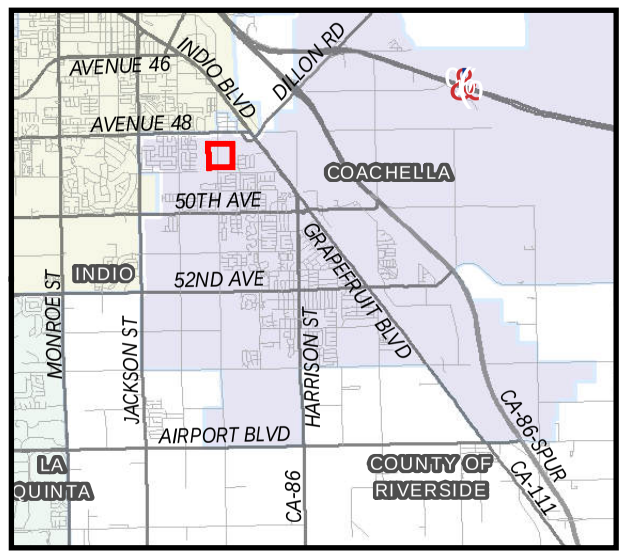
VAN BUREN ST

LEGEND:

- < Closest Receiver Locations
- Distance from noise source to closest sensitive receiver location (in feet)
- Existing 6-Foot High Noise Barrier
- Proposed 6-Foot High Noise Barrier
- Peak Well Pump & Storage Tank Activity
- Existing Well Site Location
- Proposed Well Site Location
- 19 Well Site Number/Name

Unmitigated Project-Only Noise Levels

- 55 dBA Leq Contour Boundaries
- 45 dBA Leq Contour Boundaries



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Feet

N

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

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Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

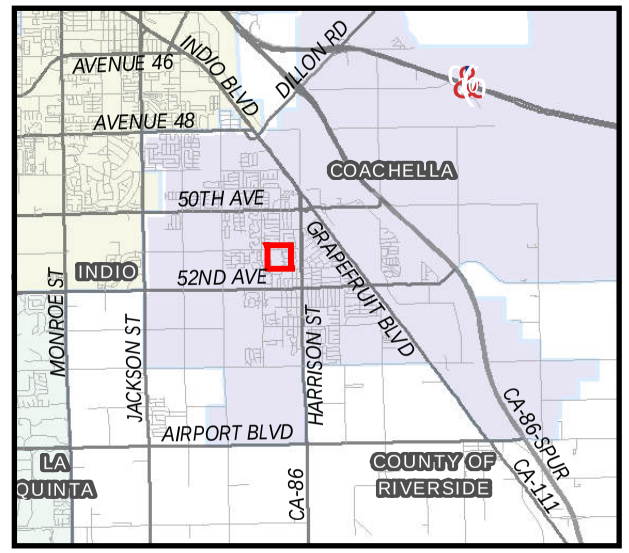
Operational Noise Source & Contour Locations

LEGEND:

- < Closest Receiver Locations
- Distance from noise source to closest sensitive receiver location (in feet)
- Proposed 6-Foot High Noise Barrier
- Peak Well Pump & Storage Tank Activity
- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated Project-Only Noise Levels

- 55 dBA Leq Contour Boundaries
- 45 dBA Leq Contour Boundaries



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Feet

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URBAN CROSSROADS

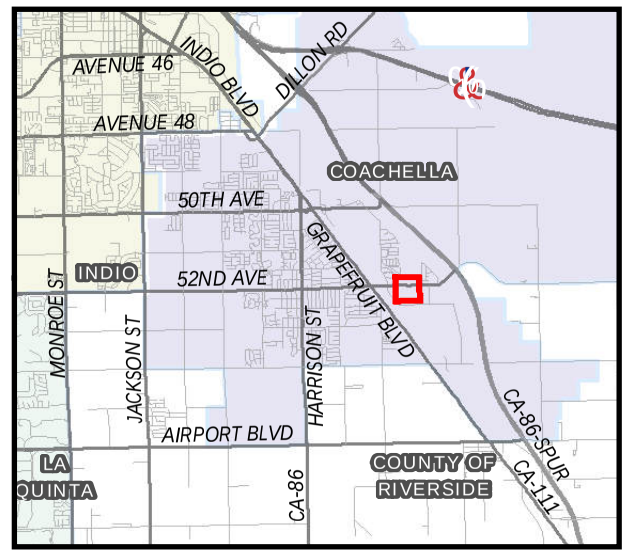
Operational Noise Source & Contour Locations

LEGEND:

- < Closest Receiver Locations
- Distance from noise source to closest sensitive receiver location (in feet)
- Existing 6-Foot High Noise Barrier
- Transformer
- Emergency Backup Generator
- Well Pump Building Exhaust Louver
- Proposed Well Building
- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated Project-Only Noise Levels

- 55 dBA Leq Contour Boundaries
- 45 dBA Leq Contour Boundaries



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Feet

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

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URBAN CROSSROADS

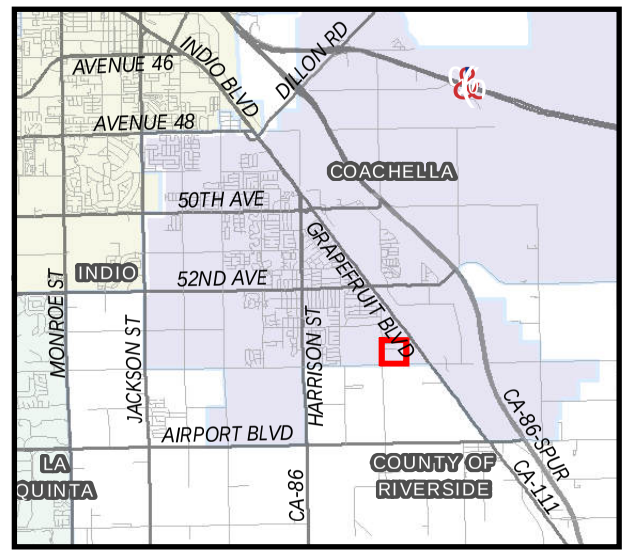
Operational Noise Source & Contour Locations

LEGEND:

- < Closest Receiver Locations
- Distance from noise source to closest sensitive receiver location (in feet)
- Existing 6-Foot High Noise Barrier
- Proposed 6-Foot High Noise Barrier
- Emergency Backup Generator
- Peak Well Pump & Storage Tank Activity
- Existing Well Site Location
- Proposed Well Site Location
- 19 Well Site Number/Name

Unmitigated Project-Only Noise Levels

- 55 dBA Leq Contour Boundaries
- 45 dBA Leq Contour Boundaries



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Feet

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

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URBAN CROSSROADS

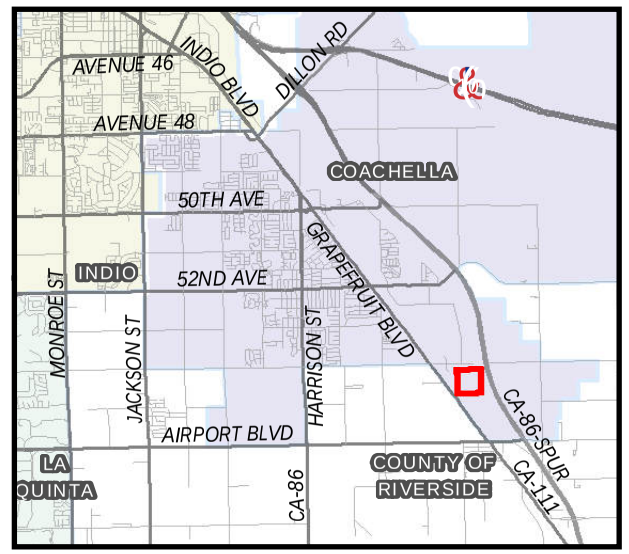
Operational Noise Source & Contour Locations

LEGEND:

- < Closest Receiver Locations
- Distance from noise source to closest sensitive receiver location (in feet)
- Well Pump Building Exhaust Louver
- Peak Well Pump & Storage Tank Activity
- Proposed Well Building
- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated Project-Only Noise Levels

- 55 dBA Leq Contour Boundaries
- 45 dBA Leq Contour Boundaries



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Feet

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URBAN CROSSROADS

APPENDIX 7.2:

OPERATIONAL NOISE LEVEL CALCULATIONS

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STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R1**
Source: Peak Well Pump/Surge Tank Activity
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	46.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	10.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	36.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	-1.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	45.4	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	46.0	0.7	0.7	0.7	0.7	0.7	0.7
Shielding (Barrier Attenuation)	10.0	-6.8	-6.8	-6.8	-6.8	-6.8	-6.8
Raw (Distance + Barrier)		39.3	-6.1	-6.1	-6.1	-6.1	-6.1
60 Minute Hourly Adjustment		**39.3**	**-6.1**	**-6.1**	**-6.1**	**-6.1**	**-6.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R1**
Source: Emergency Generator
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	44.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	18.0 feet	*Noise Source Height:*	9.0 feet
Barrier Distance to Observer:	26.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	-1.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	44.5	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	44.0	1.1	1.1	1.1	1.1	1.1	1.1
Shielding (Barrier Attenuation)	18.0	-4.6	-4.6	-4.6	-4.6	-4.6	-4.6
Raw (Distance + Barrier)		41.0	-3.5	-3.5	-3.5	-3.5	-3.5
60 Minute Hourly Adjustment		**41.0**	**-3.5**	**-3.5**	**-3.5**	**-3.5**	**-3.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R2**
Source: Peak Well Pump/Surge Tank Activity
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,211.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,211.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	45.4	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	1,211.0	-27.7	-27.7	-27.7	-27.7	-27.7	-27.7
Shielding (Barrier Attenuation)	1,211.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		17.7	-27.7	-27.7	-27.7	-27.7	-27.7
60 Minute Hourly Adjustment		**17.7**	**-27.7**	**-27.7**	**-27.7**	**-27.7**	**-27.7**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R3**
Source: Peak Well Pump/Surge Tank Activity
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	51.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	41.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	10.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	45.4	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	51.0	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Shielding (Barrier Attenuation)	41.0	-5.6	-5.6	-5.6	-5.6	-5.6	-5.6
Raw (Distance + Barrier)		39.6	-5.8	-5.8	-5.8	-5.8	-5.8
60 Minute Hourly Adjustment		**39.6**	**-5.8**	**-5.8**	**-5.8**	**-5.8**	**-5.8**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R4**
Source: Peak Well Pump/Surge Tank Activity
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	261.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	183.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	78.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	45.4	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	261.0	-14.4	-14.4	-14.4	-14.4	-14.4	-14.4
Shielding (Barrier Attenuation)	183.0	-5.1	-5.1	-5.1	-5.1	-5.1	-5.1
Raw (Distance + Barrier)		25.9	-19.5	-19.5	-19.5	-19.5	-19.5
60 Minute Hourly Adjustment		**25.9**	**-19.5**	**-19.5**	**-19.5**	**-19.5**	**-19.5**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R5**
Source: Well Pump Building
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	574.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	574.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	34.8	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	574.0	-21.2	-21.2	-21.2	-21.2	-21.2	-21.2
Shielding (Barrier Attenuation)	574.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		13.6	-21.2	-21.2	-21.2	-21.2	-21.2
60 Minute Hourly Adjustment		**13.6**	**-21.2**	**-21.2**	**-21.2**	**-21.2**	**-21.2**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/16/2016

Observer Location: **R5**
Source: Exhaust Louver
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	643.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	643.0 feet	*Noise Source Height:*	6.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	47.0	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	643.0	-22.2	-22.2	-22.2	-22.2	-22.2	-22.2
Shielding (Barrier Attenuation)	643.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		24.8	-22.2	-22.2	-22.2	-22.2	-22.2
60 Minute Hourly Adjustment		**24.8**	**-22.2**	**-22.2**	**-22.2**	**-22.2**	**-22.2**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/16/2016

Observer Location: **R5**
Source: Emergency Generator
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	566.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	566.0 feet	*Noise Source Height:*	9.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	44.5	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	566.0	-21.1	-21.1	-21.1	-21.1	-21.1	-21.1
Shielding (Barrier Attenuation)	566.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		23.4	-21.1	-21.1	-21.1	-21.1	-21.1
60 Minute Hourly Adjustment		**23.4**	**-21.1**	**-21.1**	**-21.1**	**-21.1**	**-21.1**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R5**
Source: Transformer
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	534.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	534.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	37.6	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	534.0	-20.6	-20.6	-20.6	-20.6	-20.6	-20.6
Shielding (Barrier Attenuation)	534.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		17.0	-20.6	-20.6	-20.6	-20.6	-20.6
60 Minute Hourly Adjustment		**17.0**	**-20.6**	**-20.6**	**-20.6**	**-20.6**	**-20.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R6**
Source: Peak Well Pump/Surge Tank Activity
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	804.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	804.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	45.4	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	804.0	-24.1	-24.1	-24.1	-24.1	-24.1	-24.1
Shielding (Barrier Attenuation)	804.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		21.3	-24.1	-24.1	-24.1	-24.1	-24.1
60 Minute Hourly Adjustment		**21.3**	**-24.1**	**-24.1**	**-24.1**	**-24.1**	**-24.1**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/16/2016

Observer Location: **R6** *Project Name:* Cr6
Source: Emergency Generator *Job Number:* 10336
Condition: Operational *Analyst:* A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	785.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	785.0 feet	*Noise Source Height:*	9.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	44.5	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	785.0	-23.9	-23.9	-23.9	-23.9	-23.9	-23.9
Shielding (Barrier Attenuation)	785.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		20.6	-23.9	-23.9	-23.9	-23.9	-23.9
60 Minute Hourly Adjustment		**20.6**	**-23.9**	**-23.9**	**-23.9**	**-23.9**	**-23.9**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/16/2016

Observer Location: **R7** *Project Name:* Cr6
Source: Well Pump Building *Job Number:* 10336
Condition: Operational *Analyst:* A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,577.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,577.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	34.8	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	2,577.0	-34.2	-34.2	-34.2	-34.2	-34.2	-34.2
Shielding (Barrier Attenuation)	2,577.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		0.6	-34.2	-34.2	-34.2	-34.2	-34.2
60 Minute Hourly Adjustment		**0.6**	**-34.2**	**-34.2**	**-34.2**	**-34.2**	**-34.2**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/16/2016

Observer Location: **R7** *Project Name:* Cr6
Source: Exhaust Louver *Job Number:* 10336
Condition: Operational *Analyst:* A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,577.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,577.0 feet	*Noise Source Height:*	6.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	47.0	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	2,577.0	-34.2	-34.2	-34.2	-34.2	-34.2	-34.2
Shielding (Barrier Attenuation)	2,577.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		12.8	-34.2	-34.2	-34.2	-34.2	-34.2
60 Minute Hourly Adjustment		**12.8**	**-34.2**	**-34.2**	**-34.2**	**-34.2**	**-34.2**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/16/2016

Observer Location: **R7** *Project Name:* Cr6
Source: Peak Well Pump/Surge Tank Activity *Job Number:* 10336
Condition: Operational *Analyst:* A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	2,107.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	2,107.0 feet	*Noise Source Height:*	5.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	45.4	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	2,107.0	-32.5	-32.5	-32.5	-32.5	-32.5	-32.5
Shielding (Barrier Attenuation)	2,107.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		12.9	-32.5	-32.5	-32.5	-32.5	-32.5
60 Minute Hourly Adjustment		**12.9**	**-32.5**	**-32.5**	**-32.5**	**-32.5**	**-32.5**

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APPENDIX 8.1:

CONSTRUCTION NOISE CONTOUR BOUNDARIES & MITIGATION

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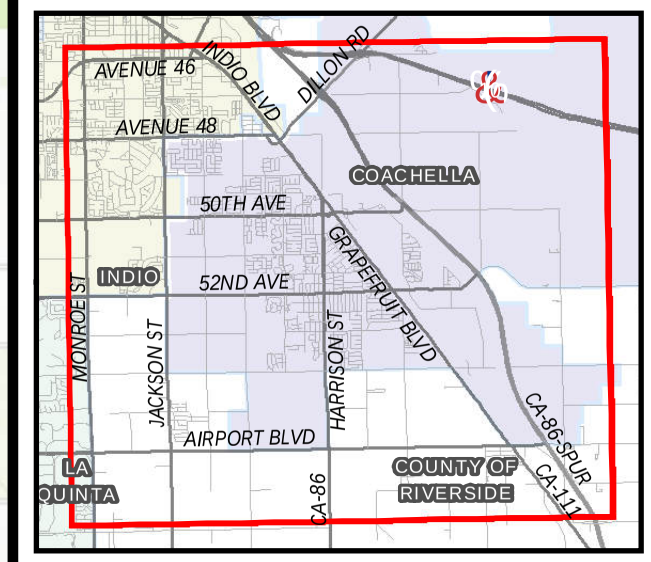
Operational Noise Source & Contour Locations

LEGEND:

- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated 85 dBA Leq Construction Noise Level Contours by Stage

- Architectural Coating
- Paving
- Demolition & Building Construction
- Grading/Excavation



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Feet

10336_ConstructionMapbook
11/17/2016

URBAN CROSSROADS

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

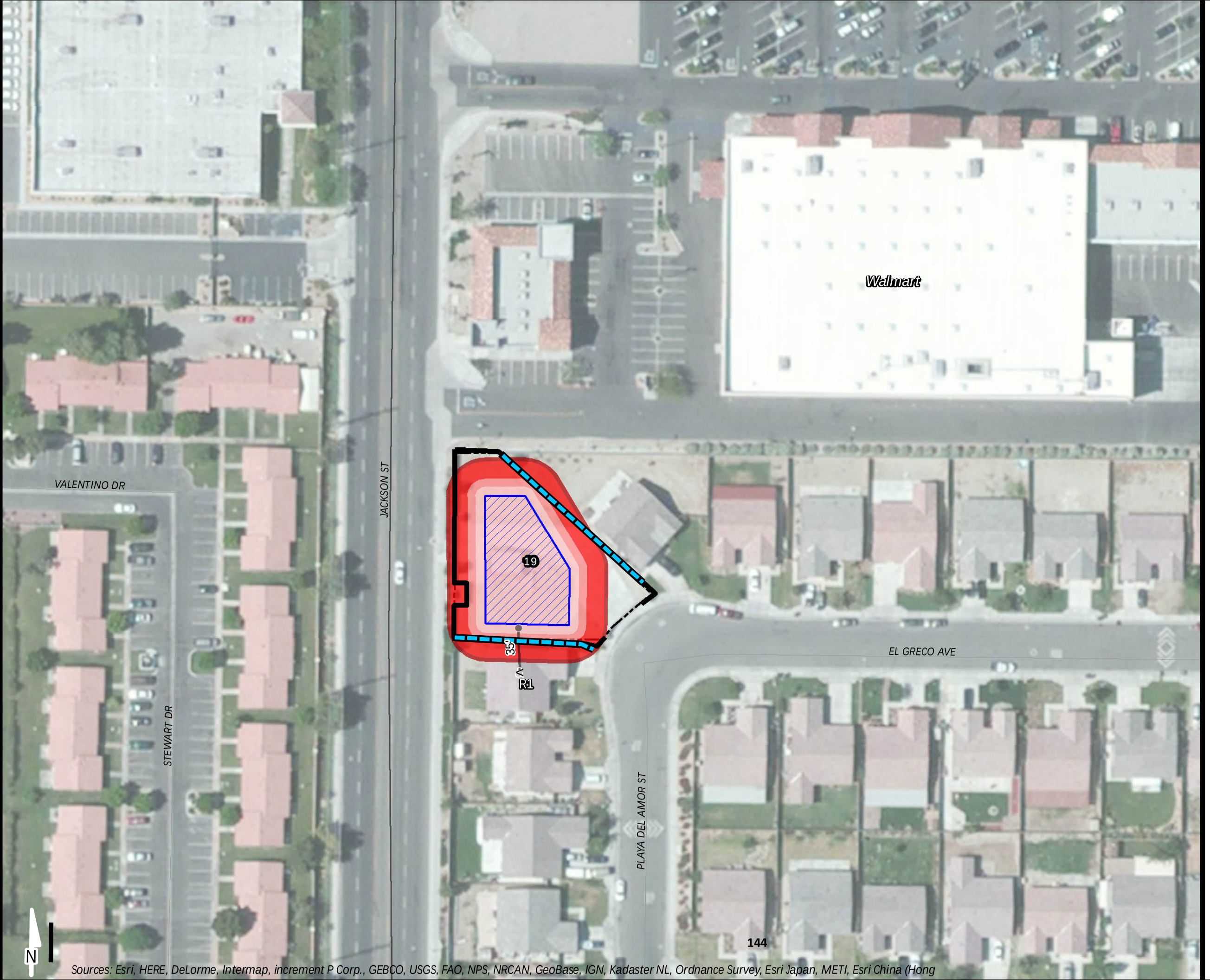
Operational Noise Source & Contour Locations

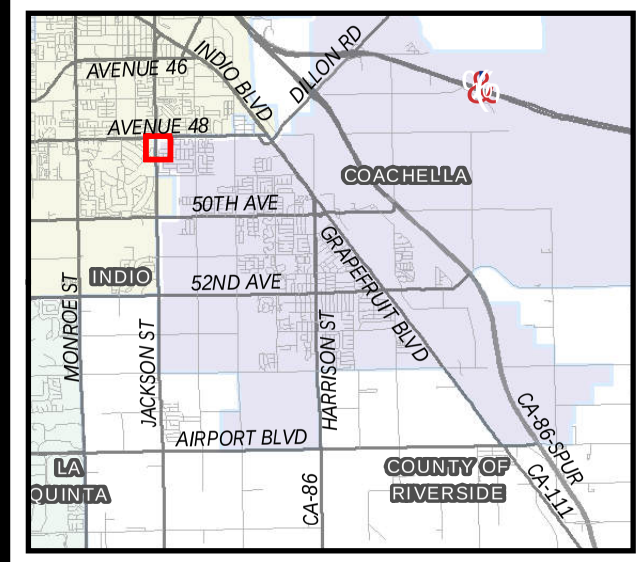
LEGEND:

- < Closest Receiver Locations
- Distance from center of construction activity to closest sensitive receiver location (in feet)
- Center of Construction Activity
- Existing 6-Foot High Noise Barrier
- Temporary 10-Foot High Noise Barrier
- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated 85 dBA Leq Construction Noise Level Contours by Stage

- Architectural Coating
- Paving
- Demolition & Building Construction
- Grading/Excavation





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URBAN CROSSROADS

Operational Noise Source & Contour Locations

TYLER ST

AVENUE 48

1,185'

R2

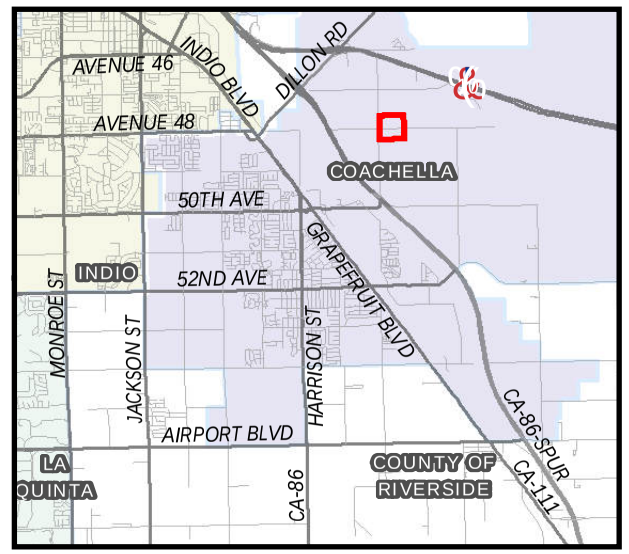
18

LEGEND:

- < Closest Receiver Locations
- Distance from center of construction activity to closest sensitive receiver location (in feet)
- Center of Construction Activity
- Proposed 6-Foot High Noise Barrier
- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated 85 dBA Leq Construction Noise Level Contours by Stage

- Architectural Coating
- Paving
- Demolition & Building Construction
- Grading/Excavation



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Feet

N

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

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Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

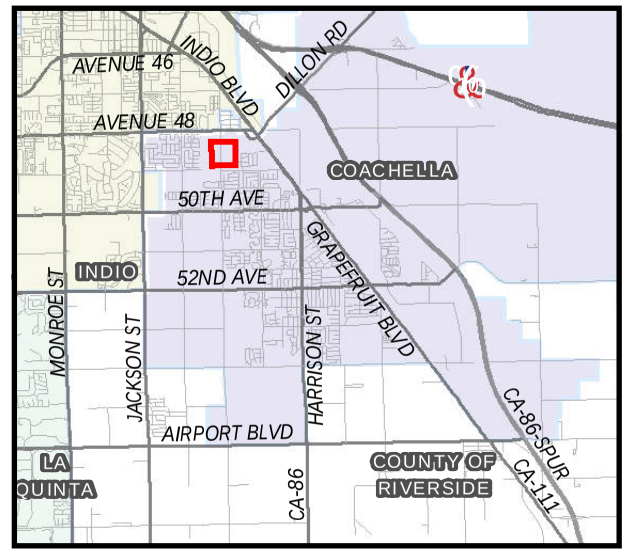
Operational Noise Source & Contour Locations

LEGEND:

- < Closest Receiver Locations
- Distance from center of construction activity to closest sensitive receiver location (in feet)
- Center of Construction Activity
- Existing 6-Foot High Noise Barrier
- Proposed 6-Foot High Noise Barrier
- Temporary 10-Foot High Noise Barrier
- Existing Well Site Location
- Proposed Well Site Location
- 19 Well Site Number/Name

Unmitigated 85 dBA Leq Construction Noise Level Contours by Stage

- Architectural Coating
- Paving
- Demolition & Building Construction
- Grading/Excavation



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URBAN CROSSROADS

Operational Noise Source & Contour Locations

Bagdouma Park

MECCA ST

12

130'

R4

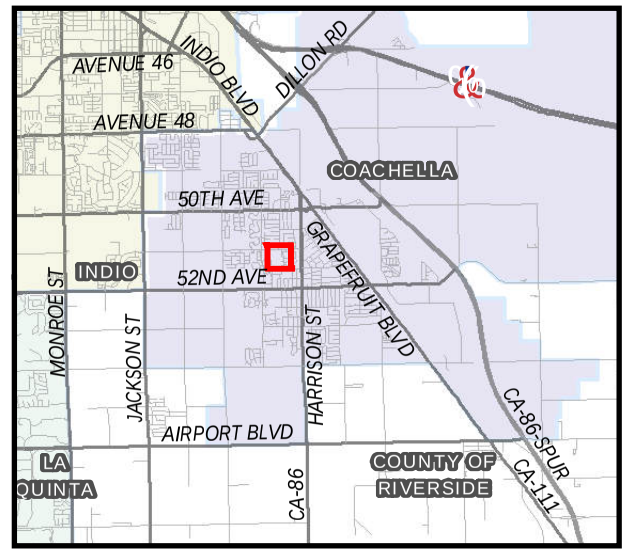
147

LEGEND:

- < Closest Receiver Locations
- Distance from center of construction activity to closest sensitive receiver location (in feet)
- Center of Construction Activity
- Proposed 6-Foot High Noise Barrier
- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated 85 dBA Leq Construction Noise Level Contours by Stage

- Architectural Coating
- Paving
- Demolition & Building Construction
- Grading/Excavation



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Feet

N

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong

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11/17/2016

URBAN CROSSROADS

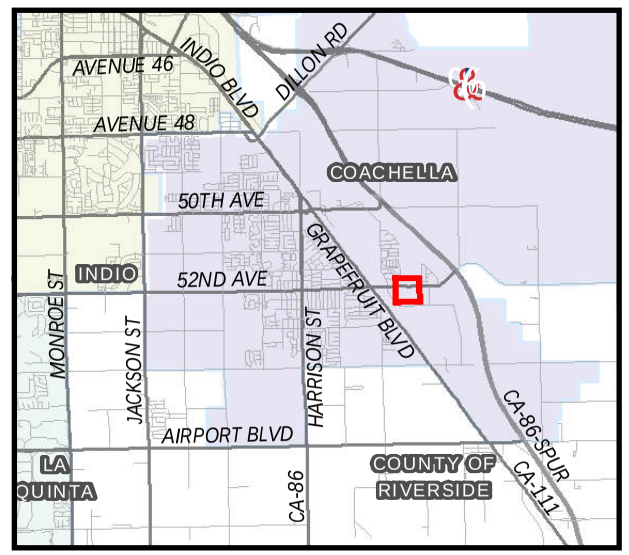
Operational Noise Source & Contour Locations

LEGEND:

- < Closest Receiver Locations
- Distance from center of construction activity to closest sensitive receiver location (in feet)
- Center of Construction Activity
- Existing 6-Foot High Noise Barrier
- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated 85 dBA Leq Construction Noise Level Contours by Stage

- Architectural Coating
- Paving
- Demolition & Building Construction
- Grading/Excavation



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Feet

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URBAN CROSSROADS

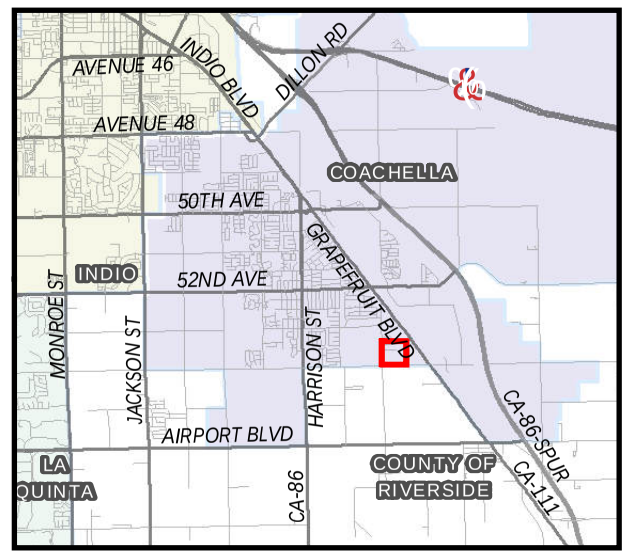
Operational Noise Source & Contour Locations

LEGEND:

- < Closest Receiver Locations
- Distance from center of construction activity to closest sensitive receiver location (in feet)
- Center of Construction Activity
- Existing 6-Foot High Noise Barrier
- Proposed 6-Foot High Noise Barrier
- Existing Well Site Location
- Proposed Well Site Location
- 19 Well Site Number/Name

Unmitigated 85 dBA Leq Construction Noise Level Contours by Stage

- Architectural Coating
- Paving
- Demolition & Building Construction
- Grading/Excavation



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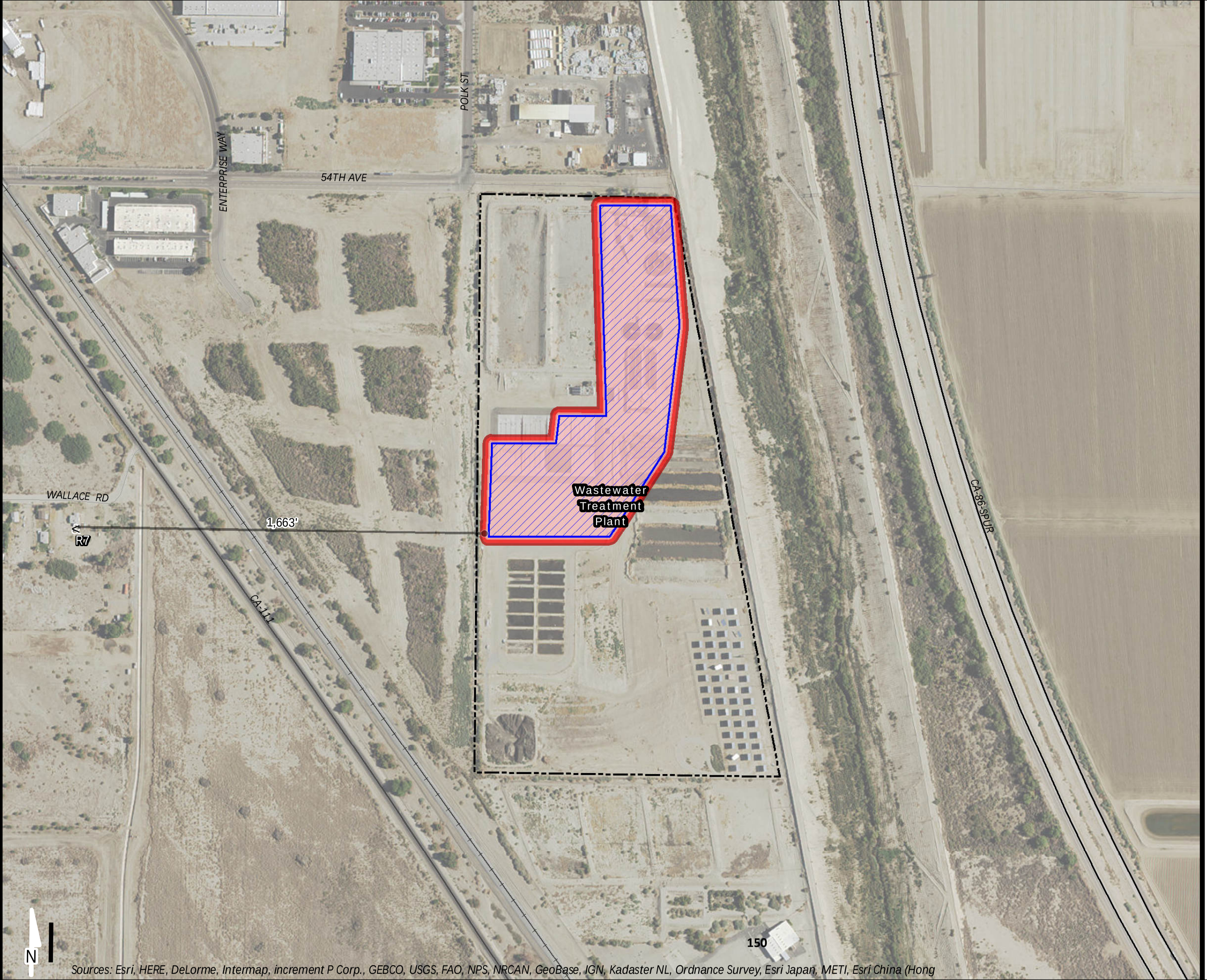
URBAN CROSSROADS

Operational Noise Source & Contour Locations

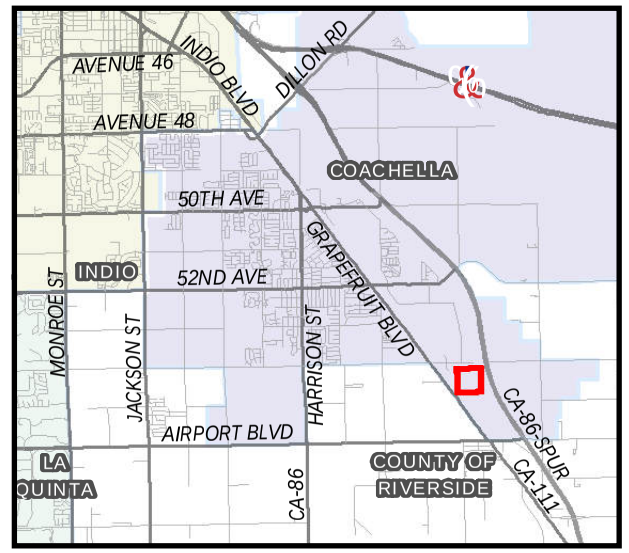


LEGEND:

- < Closest Receiver Locations
- Distance from center of construction activity to closest sensitive receiver location (in feet)
- Center of Construction Activity
- Existing Well Site Location
- 19 Well Site Number/Name

Unmitigated 85 dBA Leq Construction Noise Level Contours by Stage

- Architectural Coating
- Paving
- Demolition & Building Construction
- Grading/Excavation



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Feet

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11/17/2016

URBAN CROSSROADS

APPENDIX 8.2:

CONSTRUCTION NOISE LEVEL CALCULATIONS

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STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R1**
Source: Peak Construction Noise Level
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	35.0 feet	***Barrier Height:***	**10.0 feet**
Noise Distance to Barrier:	10.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	25.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	79.6	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	35.0	3.1	3.1	3.1	3.1	3.1	3.1
Shielding (Barrier Attenuation)	10.0	-8.7	-8.7	-8.7	-8.7	-8.7	-8.7
Raw (Distance + Barrier)		74.0	-5.6	-5.6	-5.6	-5.6	-5.6
60 Minute Hourly Adjustment		**74.0**	**-5.6**	**-5.6**	**-5.6**	**-5.6**	**-5.6**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R2**
Source: Peak Construction Noise Level
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,185.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	10.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	1,175.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	79.6	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	1,185.0	-27.5	-27.5	-27.5	-27.5	-27.5	-27.5
Shielding (Barrier Attenuation)	10.0	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7
Raw (Distance + Barrier)		50.4	-29.2	-29.2	-29.2	-29.2	-29.2
60 Minute Hourly Adjustment		**50.4**	**-29.2**	**-29.2**	**-29.2**	**-29.2**	**-29.2**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/16/2016

Observer Location: **R3** *Project Name:* Cr6
Source: Peak Construction Noise Level *Job Number:* 10336
Condition: Operational *Analyst:* A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	43.0 feet	***Barrier Height:***	**10.0 feet**
Noise Distance to Barrier:	10.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	33.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	79.6	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	43.0	1.3	1.3	1.3	1.3	1.3	1.3
Shielding (Barrier Attenuation)	10.0	-8.3	-8.3	-8.3	-8.3	-8.3	-8.3
Raw (Distance + Barrier)		72.6	-7.0	-7.0	-7.0	-7.0	-7.0
60 Minute Hourly Adjustment		**72.6**	**-7.0**	**-7.0**	**-7.0**	**-7.0**	**-7.0**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/16/2016

Observer Location: **R4** *Project Name:* Cr6
Source: Peak Construction Noise Level *Job Number:* 10336
Condition: Operational *Analyst:* A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	130.0 feet	***Barrier Height:***	**6.0 feet**
Noise Distance to Barrier:	17.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	113.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	79.6	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	130.0	-8.3	-8.3	-8.3	-8.3	-8.3	-8.3
Shielding (Barrier Attenuation)	17.0	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8
Raw (Distance + Barrier)		67.5	-12.1	-12.1	-12.1	-12.1	-12.1
60 Minute Hourly Adjustment		**67.5**	**-12.1**	**-12.1**	**-12.1**	**-12.1**	**-12.1**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/16/2016

Observer Location: **R5** *Project Name:* Cr6
Source: Peak Construction Noise Level *Job Number:* 10336
Condition: Operational *Analyst:* A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	517.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	517.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	79.6	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	517.0	-20.3	-20.3	-20.3	-20.3	-20.3	-20.3
Shielding (Barrier Attenuation)	517.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		59.3	-20.3	-20.3	-20.3	-20.3	-20.3
60 Minute Hourly Adjustment		**59.3**	**-20.3**	**-20.3**	**-20.3**	**-20.3**	**-20.3**

STATIONARY SOURCE NOISE PREDICTION MODEL 11/16/2016

Observer Location: **R6** *Project Name:* Cr6
Source: Peak Construction Noise Level *Job Number:* 10336
Condition: Operational *Analyst:* A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	552.0 feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	552.0 feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	0.0 feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0 feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0 feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0 feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	79.6	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	552.0	-20.9	-20.9	-20.9	-20.9	-20.9	-20.9
Shielding (Barrier Attenuation)	552.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		58.7	-20.9	-20.9	-20.9	-20.9	-20.9
60 Minute Hourly Adjustment		**58.7**	**-20.9**	**-20.9**	**-20.9**	**-20.9**	**-20.9**

STATIONARY SOURCE NOISE PREDICTION MODEL

11/16/2016

Observer Location: **R7**
Source: Peak Construction Noise Level
Condition: Operational

Project Name: Cr6
Job Number: 10336
Analyst: A. Wolfe

NOISE MODEL INPUTS

Noise Distance to Observer	1,663.0	feet	***Barrier Height:***	**0.0 feet**
Noise Distance to Barrier:	1,663.0	feet	*Noise Source Height:*	8.0 feet
Barrier Distance to Observer:	0.0	feet	*Observer Height:*	5.0 feet
Observer Elevation:	0.0	feet	*Barrier Type (0-Wall, 1-Berm):*	0
Noise Source Elevation:	0.0	feet	*Drop Off Coefficient:*	20.0
Barrier Elevation:	0.0	feet		

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

NOISE MODEL PROJECTIONS

Noise Level	*Distance (feet)*	*Leq*	*L50*	*L25*	*L8*	*L2*	*Lmax*
Reference (Sample)	50.0	79.6	0.0	0.0	0.0	0.0	0.0
Distance Attenuation	1,663.0	-30.4	-30.4	-30.4	-30.4	-30.4	-30.4
Shielding (Barrier Attenuation)	1,663.0	0.0	0.0	0.0	0.0	0.0	0.0
Raw (Distance + Barrier)		49.2	-30.4	-30.4	-30.4	-30.4	-30.4
60 Minute Hourly Adjustment		**49.2**	**-30.4**	**-30.4**	**-30.4**	**-30.4**	**-30.4**