



LEADERS IN  
ENVIRONMENTAL  
PROTECTION

## Hearing Conservation Program



Approved: November 1, 2018  
Revised: June 2024

**Leucadia Wastewater District  
HEARING CONSERVATION PROGRAM**


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I certify the Hearing Conservation Program for the Leucadia Wastewater District (LWD) has been reviewed and revised as necessary.

  
\_\_\_\_\_  
General Manager

6/27/2024  
\_\_\_\_\_  
Date Certified

**1.0 Program Review and Certification**

The Hearing Conservation Program (HCP) at LWD will be reviewed and revised as necessary to ensure the program is current. All revisions are documented on Attachment A – Program Review and Certification Log.

**2.0 Purpose**

Noise exposures above certain thresholds can cause permanent hearing loss at frequencies that are necessary to function in day-to-day life. The purpose of the Hearing Conservation Program is to protect workers from occupational hearing losses due to unhealthful levels of noise as required by California Code of Regulations, Title 8 (8 CCR), Section 5095 - 5100.

**3.0 Application**

The Hearing Conservation Program applies to all LWD employees who have potential occupational exposure to noise in the workplace at or above permissible noise exposures (i.e. action levels). These employees are herein referred to as “Affected Employees.”

**4.0 Definitions**

**Action Level** – An 8-hour time-weighted average (TWA) of 85 decibels measured on the A-Scale, slow response or equivalently a noise dose of 50%.

**Affected Employees** – Employees who could be exposed to noise in the workplace at or greater than the CalOSHA permissible level of an 8-hour time-weighted average dose of 85 decibels. Noise surveys indicate that the following employees could exceed this permissible level and are,



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therefore, considered "affected employees." Affected employees include Field Service Employees and the Field Service Supervisor.

**Audiogram** – A graph or table resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

**Baseline Audiogram** – The audiogram against which future audiograms are compared.

**Decibel (dBA)** – Sound level measurement unit corrected to the A-weighted scale defined in ANSI S1.4-1971 (R1976) using a reference level of 20 micropascals ( $2 \times 10^{-5}$  Nt/m<sup>2</sup>).

**Dose** – Percentage representation of exposure level, based on an 8-hour criterion. Employees exposed to a dose of 50% must be part of a Hearing Conservation Program.

**Hertz** – A unit of measurement of frequency, numerically equal to cycles per second.

**Recordable Downward Shift** – An OSHA recordable downward shift of 25 dB (2-4K avg.) in either ear requires an entry in the OSHA 300 log.

**Representative Exposure** – Measurements of an employee's noise dose (or 8-hour time-weighted average sound level) determined to be representative of exposures of other employees in the workplace.

**Sound Level** – Ten times the logarithm of the ratio of the square of the measured A-weighted sound pressure to the square of the standard reference pressure of 20 micropascals. Sound level is measured in decibels (dB) and in slow time response in accordance with ANSI S1.4-1971.

**Standard Threshold Shift** – A change in hearing threshold relative to the baseline audiogram of an average of 10 dB, or more at 2000, 3000, and 4000 Hz in either ear.

**Suspect High Noise Areas** – Those work areas or job activities in which workers must raise their voice to be heard by another person in close proximity.

**Threshold** – The lowest level of sound that can be heard 50% of the time.

**Temporary Threshold Shift (TTS)** – Hearing loss suffered as a result of noise exposure, with total or partial recovery when the noise source is removed. To reduce the TTS, audiometric tests on noise-exposed workers are conducted at least 14 hours following the removal from workplace noise exposure.

## 5.0 Responsibilities

5.1 **Field Services Superintendent:** The Field Services Superintendent has the authority and responsibility for implementing the provisions of this HCP for LWD. Specific responsibilities include, but are not limited to:

- Implementing and maintaining a noise monitoring program to ensure that noise surveys are performed and documented in all high noise areas and work activities.
- Ensuring that the program and its requirements are enforced.
- Recommends that funding is provided to successfully implement the program requirements.

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- Informing the Administrative Supervisor to record employee's recordable downward shifts on the OSHA 300 log.

## 5.2 **Field Services Supervisor:** The Field Services Supervisor is responsible for:

- Reviewing and updating the HCP as required.
- Investigating high noise complaints.
- Implementing procedures to identify and correct unsafe work conditions that result in noise exposures in accordance with the HCP requirements.
- Recommending and/or providing suitable hearing protection to employees.
- Documenting that procedures and programs are being followed.
- Ensuring hearing protective devices are available in sufficient quantity and in good condition.
- Ensuring that the type and size of hearing protection properly fit employees, or that other types and/or sizes are made available if needed.
- Ensuring that the hearing protective devices provide adequate attenuation rates.
- Correcting unsafe work conditions that result in noise exposures over the threshold limits wherever practical to do so.
- Implementing and maintaining the baseline and annual audiometric testing program requirements.
- Implementing the required procedures when an employee experiences a Standard Threshold Shift (STS).
- Coordinating annual hearing conservation training for affected employees.
- Maintaining sound level measurements and ensuring they are accessible for employee review. (Attachment C)
- Ensuring that employees sign and acknowledge that they received a written notice of a Standard Threshold shift.

## 5.3 **Employees:** All Field Service Employees are responsible for:

- Recognizing high noise areas or work activities and wearing the appropriate level and/or type of hearing protection in accordance with the OSHA exposure limits found in Attachment B.
- Reporting suspect high noise areas that are not identified in Attachment C of this program to their immediate supervisor so that noise levels can be determined.
- Reporting to their immediate supervisor when hearing protective devices are missing, damaged, or when inventory is low and needs to be replenished.

## 6.0 **Control Measures**

### 6.1 **Administrative Controls**

To the extent possible, administrative controls have been implemented to reduce noise exposure levels to employees. Administrative controls typically involve limiting employees' exposures to noise through job task rotation or scheduling arrangements, and by purchase agreements that specify maximum noise levels on new equipment.

### 6.2 **Engineering Controls**

To the extent possible, engineering controls are used in high noise areas. These controls include; enclosing individual machines, using sound baffles or other acoustic barriers, substitution of quieter machines, use of vibration-isolation mountings, and implementing preventive maintenance programs to replace or adjust worn, loose, or unbalanced parts or machines.

### 6.3 **Personal Protective Equipment**

6.3.1 Hearing protectors are made available, at no cost, to all employees.

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- 6.3.2 The following hearing-protective devices are provided by LWD:
- **Inserts:** Formable-type ear inserts are readily available to all employees. These are single-user devices require proper fitting techniques to ensure a healthy fit.
  - **Earmuffs:** Earmuffs are strategically placed within close proximity to all suspect high noise areas. These are multiple-user devices.
- 6.3.3 Hearing protectors will be worn whenever:
- Employees are subjected to sound levels exceeding OSHA Exposure Limits (Attachment B).
  - The work location is posted as "Hearing Protection Required."
  - Affected Employees who have experienced a standard threshold shift and who are performing job activities with a noise exposure of 85 decibels or more for any length of time.
- 6.3.4 All work locations where noise exposures are at or greater than 85 dB's will be posted as "Hearing Protection Required," or similar.
- 6.3.5 All hearing protectors shall reduce employee exposure at least to an 8-hour time-weighted average of 85 decibels.
- 6.3.6 For employees who have experienced a standard threshold shift, hearing protectors shall reduce their exposure to an 8-hour time-weighted average of 85 decibels or less.
- 6.3.7 Hearing protectors shall be inspected for signs of aging / damage and if the protectors require replacement, the District will replace the hearing protectors.

### 7.0 Monitoring

In order to determine noise exposures, sound level measurements (surveys) have been performed on many widely used high noise tools and vehicles. This information is used to determine necessary control measures such as wearing hearing protective devices.

- 7.1 **Personal and/or area monitoring will be done in all suspect high noise locations.**
- 7.1.1 High noise tools and vehicles are listed in Attachment C of this program. Other job activities considered suspect of high noise usage are those in which workers must raise their voice to be heard by another in close proximity.
- 7.1.2 Workers will wear adequate hearing protection during monitoring activities assuming worst-case noise levels will be encountered.
- 7.1.3 Employees exposed at or above the action level will be notified of the noise monitoring results.
- 7.2 **Field Service Technicians will perform noise measurements using a sound level meter.**
- 7.2.1 Sound level meters will be set on A-weighted scale, slow response and used according to manufacturer instructions and specifications.
- 7.2.2 All continuous, intermittent and impulsive sound levels from 80 dB to 130 dB shall be integrated into the noise exposure computations.

7.2.3 Monitoring will be repeated if process changes or conditions indicate such action is necessary.

## **8.0 Calculating Noise Exposure**

### **8.1 Continuous Noise Exposure**

When an employee is exposed to noise that is constant during the entire work shift, the noise will be surveyed and calculated to determine if they exceed the action level of a 50% dose which will require them to be part of the HCP. Continuous noise exposures are calculated as follows:

$$D = 100 [C/T]$$

D = Dose

C = Total length of the workday in hours

T = OSHA time duration for the measured sound level (Refer to Attachment B)

*Note:* Noise levels < 85 dBA are not considered when calculating daily noise dose.

*Example:* An employee spends 6 hours a day near a pump room. The sound level that occurs regularly in the area where the operator normally works is 90 dBA. Other work areas of this employee have sound levels less than 85 dBA. As Attachment B shows the OSHA permissible limit for exposure to 90 dBA is 8 hours.

OSHA Dose:  $100 (6/8) = 75\%$ : This employee's exposure is over the dose limit of 50% and would be required to be part of a HCP.

### **8.2 Variable Noise Exposure**

When an employee's work shift is composed of two or more periods of noise at different levels, the noise dose will be calculated as:  $D = 100 (C1/T1 + C2/T2 + C3/T3 + \dots Cn/Tn)$

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**Example #1:** A maintenance worker is exposed to the following noise level during a workday:

		<u>OSHA Limits</u>
1 hour at	65 dBA	no time limit
3 hours at	75 dBA	no time limit
1 hour at	85 dBA	16 hours
1/2 hour at	97 dBA	3 hours
1/2 hour at	100 dBA	2 hours

$$D = 100 (0 + 0 + 1/16 + 0.5/3 + 0.5/2)$$

$$D = 100 (.0478) = 48\%$$

This employee's exposure is not over the dose limit of 50% and would not be required to be part of a HCP.

**Example #2:** A maintenance worker is exposed to the following noise level during a workday:

		<u>OSHA Limits</u>
1 hour at	65 dBA	no time limit
2 hours at	85 dBA	16 hours
4 hours at	92 dBA	6 hours
1 hour at	100 dBA	2 hours

$$D = 100 (0 + 2/16 + 4/6 + 1/2)$$

$$D = 100 (1.295) = 130\%$$

This employee's exposure is over the dose limit of 50% and would be required to be part of an HCP.

## 9.0 Audiometric Testing Program

### 9.1 General Requirements

- 9.1.1 All Affected Employees (see definitions) will be provided with a baseline audiogram within six months of being exposed at or above the OSHA action levels. If a mobile van is used to conduct the audiometric, the baseline test will be made available within one year of being exposed at or above the OSHA action level.
- 9.1.2 All Affected Employees will have an annual audiogram to determine if noise-induced hearing shifts have occurred.
- 9.1.3 Audiograms will be scheduled by the Administrative Services Supervisor and will be provided at no cost to the employee.
- 9.1.4 Audiograms will be performed by a licensed or certified audiologist, otolaryngologist, physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation.
- 9.1.5 Results will be confidentially held on file with the Administrative Services Supervisor.
- 9.1.6 Employees will have access to their audiogram records, upon request.

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**9.2 Standard Threshold Shifts**

9.2.1 If results indicate a standard threshold shift has occurred when compared to the baseline audiogram, the employee will be notified, in writing, within 21 days of this determination.

- This written notification must be signed by the affected employee to acknowledge that they received a notice of a standard threshold shift.
- A copy of this signed notice will be kept on file with the Administrative Services Supervisor and will be handled in accordance with LWD's personnel confidentiality procedures.

9.2.2 If deemed necessary, testing will be repeated within (30) days. The results of the retest will be considered as the annual audiogram.

9.2.3 If the physician determines that the standard threshold shift is work related, the following will be done:

- Employees will be fitted (or refitted) with hearing protectors, trained in their use and care, and be required to wear them in accordance with section 6.3 of this program.
- LWD will refer the employee for a clinical audiological evaluation if additional testing is necessary or if a medical pathology of the ear is caused by, or aggravated by, the wearing of hearing protectors.
- The employee will be provided with hearing protectors that attenuate their exposure to an 8-hour time-weighted average of 85 decibels or less.
- The employee will be required to wear hearing protectors at all times when exposed to 85 decibels or more.

9.2.4. The audiologist, otolaryngologist, physician, or certified technician shall determine whether there is a need for further evaluations.

**9.3 Recordable Downward Shift**

If an employee experiences a recordable downward shift, this information will be recorded in the OSHA 300 log.

**10.0 Training**

**10.1 Refresher Trainings**

Affected Employee will have annual refresher training including program revisions, new work practices, and hearing protective devices available to them.

**10.2 Training topics will include:**

- Advantages and disadvantages of hearing protectors.
- Selection, use and proper fitting techniques.
- Purpose of audiograms and testing procedures.
- Effects of noise on hearing.

**11.0 Record Keeping**

11.1 Noise monitoring results will be available for review and stored by the Administrative Services Supervisor.

11.2 Audiometric tests will include the following information:

- Name and job classification
- Date of audiogram



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- Examiner name
- Date of last audiometer calibration
- Employee's last noise exposure evaluation

**11.3 Record Retention**

11.3.1 Noise monitoring results are kept indefinitely or until new testing results are available.

11.3.2 Audiometric testing results are kept on file by the Administrative Services Supervisor.

11.3.3 Employee notifications of a Standard Threshold Shift are kept on file by the Administrative Services Supervisor.

**11.4 Record Transfer**

Records may be transferred with employees to their new employers for administrative maintenance upon request.






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**Attachment B:  
OSHA EXPOSURE LIMITS AS AN 8-hr TWA**

Sound Level (dBA)	OSHA Permissible Exposure Limit (PEL)		
	Hours	Minutes	Seconds
80	32	–	–
81	27	54	–
82	24	18	–
83	21	6	–
84	18	24	–
85	16	–	–
86	13	54	–
87	12	6	–
88	10	36	–
89	9	12	–
90	8	–	–
91	7	–	–
92	6	6	–
93	5	18	–
94	4	36	–
95	4	–	–
96	3	30	–
97	3	–	–
98	2	36	–
99	2	18	–
100	2	–	–
101	1	42	–
102	1	30	–
103	1	18	–
104	1	6	–
105	1	–	–
106	–	52	12
107	–	45	36
108	–	39	36
109	–	34	18
110	–	30	–
111	–	26	24
112	–	22	48
113	–	19	48
114	–	17	24
115	–	15	–
116	–	13	18
117	–	11	24
118	–	9	36
119	–	8	24
120	–	7	30
121	–	6	36
122	–	5	42
123	–	4	55
124	–	4	19
125	–	3	47

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**ATTACHMENT C  
WORK AREA AND JOB ACTIVITIES - NOISE EXPOSURES (page 1 of 9)**




Test Date	Equipment/Process	Noise Level (DBA)	Where Measured	Est. Time Exposure Occurs (mins)	Allowable Exposure (Hrs) (PEL)	Hearing Protection Required	Special Considerations & Recommendations	Photo
7/27/18	Chain Saw	114.0 est.	~3' from unit (Operator's head level)	20	0.1724	YES	These noise levels can vary. All chainsaws will emit different noise levels and change depending on material being cut. LWD requires the use of ear muff type of hearing protection with a minimum 24db of noise reduction when using any fuel powered chainsaw. Source of carbon monoxide.	
7/27/18	Drill Press	77.2	~2' from unit (Operator's head level)	15	24.00	NO	These noise levels can vary depending on material being drilled.	
7/27/18	Chop Saw	107.0 Est.	~2' from unit (Operator's head level)	15	0.4536	YES	These noise levels can vary depending on material being cut. LWD requires use of hearing protection when working with this saw.	

\*While OSHA may or may not require hearing protection while operating the equipment included in this list, LWD recommends always using ear protection while operating this equipment.



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**ATTACHMENT C  
WORK AREA AND JOB ACTIVITIES - NOISE EXPOSURES (page 2 of 9)**

Test Date	Equipment/Process	Noise Level (DBA)	Where Measured	Est. Time Exposure Occurs (mins)	Allowable Exposure (Hrs) (PEL)	Hearing Protection Required	Special Considerations & Recommendations	Photo
7/27/18	Impact Drill	90.0	~3' from unit	10	8.00	YES		
7/27/18	Rigid Portable Rodder	83.0	~2' from unit	10	21.6	NO	Keep safe distance from unit when in use.	
7/27/18	Shop Vacuum	91.0	~2' from unit	10	7.00	YES	These noise levels can vary depending on material being entering unit.	

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**ATTACHMENT C  
WORK AREA AND JOB ACTIVITIES - NOISE EXPOSURES (page 3 of 9)**




Test Date	Equipment/Process	Noise Level (DBA)	Where Measured	Est. Time Exposure Occurs (mins)	Allowable Exposure (Hrs) (PEL)	Hearing Protection Required	Special Considerations & Recommendations	Photo
7/27/18	Small Portable Compressor	103.0	~3' from unit	20	1.18	YES	LWD requires use of hearing protection when working with this compressor. Source of carbon monoxide.	
7/27/18	Large Compressor	89.0	~3' from unit	20	9.12	YES	When bleeding air out of tank, the noise levels can vary.	
7/27/18	Water Pump	88.0	~3' from unit	30	10.36	YES	These noise levels can vary depending on material entering and exiting unit. Source of carbon monoxide.	

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**ATTACHMENT C  
WORK AREA AND JOB ACTIVITIES - NOISE EXPOSURES (page 4 of 9)**

Test Date	Equipment/Process	Noise Level (DBA)	Where Measured	Est. Time Exposure Occurs (mins)	Allowable Exposure (Hrs) (PEL)	Hearing Protection Required	Special Considerations & Recommendations	Photo
7/27/18	Small Portable Generator (Honda)	82.0	~2' from unit	20	24.18	NO	Source of carbon monoxide.	
7/27/18	Medium Portable Generator (Honda)	87.0	~3' from unit	20	12.60	YES	Source of carbon monoxide.	
7/27/18	Bypass Pump (Pioneer)	94.0	~2' from unit	40	4.36	NO (see special considerations & recommendations)	The pump typically does not require the operator to stay at the unit during operation. In the event of continuous presence within 20' of pump, refer to attachment B for hearing protection requirements. Source of carbon monoxide.	

*\*While OSHA may or may not require hearing protection while operating the equipment included in this list, LWD recommends always using ear protection while operating this equipment.*

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**ATTACHMENT C  
WORK AREA AND JOB ACTIVITIES - NOISE EXPOSURES (page 5 of 9)**




Test Date	Equipment/Process	Noise Level (DBA)	Where Measured	Est. Time Exposure Occurs (mins)	Allowable Exposure (Hrs) (PEL)	Hearing Protection Required	Special Considerations & Recommendations	Photo
7/27/18	Large Portable Generator	85.0	~2' from unit with doors closed	40	16.00	NO (see special considerations & recommendation)	The generator typically does not require the operator to stay at the unit during operation. In the event of continuous presence within 20' of the generator, refer to attachment B for hearing protection requirements. Source of carbon monoxide.	
		94.0	~2' from unit with doors open	25	4.36	YES		
7/27/18	Trailer Jetter	94.0	~3' from unit while at idle	40	4.36	YES	LWD requires use of hearing protection when working with the trailer mounted jetter. Source of carbon monoxide.	
		106.0	~3' from unit while running at high speed	25	0.5212	YES		
7/27/18	Vactor Truck	94.0	~2' from engine compartment while engine is revving.	240	4.36	YES	LWD requires use of hearing protection when working with any Vactor truck. Also required if working within 10' of this equipment. Source of carbon monoxide.	
		100.0	~2' from front hose reel while in use	240	2.00	YES		
		110.0	~2' from suction hose while in use	60	0.30	YES		

\*While OSHA may or may not require hearing protection while operating the equipment included in this list, LWD recommends always using ear protection while operating this equipment.



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**ATTACHMENT C  
WORK AREA AND JOB ACTIVITIES - NOISE EXPOSURES (page 6 of 9)**

Test Date	Equipment/Process	Noise Level (DBA)	Where Measured	Est. Time Exposure Occurs (mins)	Allowable Exposure (Hrs) (PEL)	Hearing Protection Required	Special Considerations & Recommendations	Photo
7/27/18	Rodder Truck	92.0	~3' from rear of unit near operator's chair and controls	20	6.60	NO (see Special Considerations & Recommendations)	Noise protection is recommended, but not required. If working for an extended period of time, see attachment B. Source of carbon monoxide.	
7/27/18	Leaf Blower	112.0	~2' from unit while running	30	0.2248	YES	In addition to hearing protection, hand and eye protection along with a dust mask should be utilized. Source of carbon monoxide.	
7/27/18	Brush Hedger	93.0	~2' from unit while at idle	30	5.18	YES	In addition to hearing protection, hand and eye protection should be utilized. Source of carbon monoxide.	
		107.0	~3' from unit while running	30	0.4536	YES		

\*While OSHA may or may not require hearing protection while operating the equipment included in this list, LWD recommends always using ear protection while operating this equipment.

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**ATTACHMENT C  
WORK AREA AND JOB ACTIVITIES - NOISE EXPOSURES (page 7 of 9)**

Test Date	Equipment/Process	Noise Level (DBA)	Where Measured	Est. Time Exposure Occurs (mins)	Allowable Exposure (Hrs) (PEL)	Hearing Protection Required	Special Considerations & Recommendations	Photo
7/27/18	Weed Whacker	90.0	~2' from unit while at idle	60	8.00	YES	In addition to hearing protection, hand and eye protection should be utilized. Source of carbon monoxide.	
		106.0	~3' from unit while running	60	0.5212	YES		
9/18/18	Electric Jack Hammer	102.0	~2' from unit while at idle	10	1.30	YES	In addition to hearing protection, hand and eye protection are also recommended.	
		122.0-130.0	~3' from unit while running	10	0.0542	YES		
9/18/18	Portable Chop Saw	102.0	~2' from unit while at idle	10	1.30	YES	In addition to hearing protection, hand and eye protection should be utilized. Source of carbon monoxide.	
		127.0	~3' from unit while running	10	0.0319	YES		
5/22/24	Easement Crawler	103.8	~2' from unit while running	120	1.18	YES	LWD requires use of hearing protection. Also required if working within 10' of this equipment. Source of carbon monoxide.	



\*While OSHA may or may not require hearing protection while operating the equipment included in this list, LWD recommends always using ear protection while operating this equipment.





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**ATTACHMENT C  
WORK AREA AND JOB ACTIVITIES - NOISE EXPOSURES (page 9 of 9)**

Test Date	Equipment/Process	Noise Level (DBA)	Where Measured	Est. Time Exposure Occurs (mins)	Allowable Exposure (Hrs) (PEL)	Hearing Protection Required	Special Considerations & Recommendations	Photo
9/18/18	Station Compressors	118.0	LWD P. S.	10	0.0936	YES	Be aware that blow-off/air release can be sudden and is louder than when the compressor is in use.	
		109.0	AWT	10	0.3418	YES		
10/22/18	Station Generators	N/A	Avocado P.S. (No generator on site)	N/A	N/A	N/A	Two decibel readings: Low = cabinet door closed. High = cabinet door open.	
		92.0 / 111.0	Batiquitos P.S.	10	.30 – 6.6	YES		
		N/A	Diana P.S. (No generator on site)	N/A	N/A	N/A		
		87.0/ 98.0	Encinitas Estates P.S.	10	2.36 – 12.6	YES		
		91.0 / 106.0	La Costa P.S.	10	.5212 - 7	YES		
		113.0	LWD P.S.	10	.1948	YES		
		N/A	Rancho Verde P.S. (No generator on site)	N/A	N/A	N/A		
		93.0 / 103.0	Saxony P.S.	10	1.18 – 5.18	YES		
		96.0 / 102.0	VP5 P.S.	10	1.30 - 3.30	YES		
4/16/24		106.5	VP7 P.S.	10	.0.75	YES		

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