Fulton-Fitch Mountain Reconductoring Project

Noise Study Report

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1 INTRODUCTION

1.1 PURPOSE OF STUDY

The purpose of this noise study is to evaluate existing noise in the surrounding environment for the Pacific Gas and Electric Company (PG&E) Fulton-Fitch Mountain Reconductoring Project (proposed project) and analyze noise and vibration that would result from implementation of the proposed project. This study supports the basis for an evaluation of noise and vibration impacts for the proposed project required under the California Environmental Quality Act (CEQA).

This report presents the results of background noise measurements collected by The RCH Group (RCH), and an assessment of noise and vibration that would result from the proposed project during construction, operation, and maintenance, including recommendations to address the effects of noise and vibration increases.

1.2 PROJECT DESCRIPTION

The proposed project is primarily located in unincorporated Sonoma County, California, and passes through a small portion of the Town of Windsor. **Figure 1-1** shows the regional project location. The project alignment originates at the Fulton Substation in Fulton and travels north through residential neighborhoods in Larkfield-Wikiup, regional parks, rural residential, vineyards, rangeland, woodland, and other open space. The project alignment terminates at the Fitch Mountain #1 Tap, located south of Bailhache Avenue and the Russian River. Project activities would also occur at Fitch Mountain Substation, located east of the City of Healdsburg, between the Russian River and Bailhache Avenue.

PG&E is proposing to reinforce the electric transmission and distribution system in Sonoma County by replacing existing conductor ("reconductoring") on two power lines. PG&E proposes to replace the conductor on a 9.8-mile-long section of the Fulton-Hopland 60-kilovolt (kV) Power Line (Fulton-Hopland line) between Fulton Substation and Fitch Mountain Substation. The proposed project would also include replacing poles along 8 miles of the Fulton-Hopland line, replacing conductor on 1.4 miles of the Geysers #12-Fulton 230-kV Transmission Line (Geysers #12 line), and making modifications to Fitch Mountain Substation.

The proposed project would be comprised of two segments: the Southern Segment and the Northern Segment. The Southern Segment would extend from Fulton Substation to Shiloh Ranch Regional Park, and the Northern Segment would extend between Shiloh Ranch Regional Park and the Fitch Mountain #1 Tap 60-kV Power Line (Fitch Mountain #1 Tap).

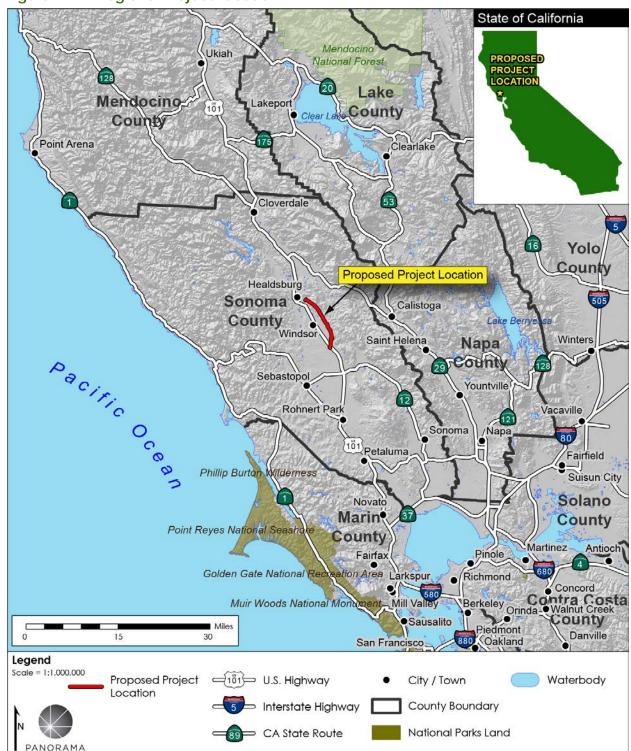


Figure 1-1 Regional Project Location

Sources: (ESRI 2016), (USGS 2012), (PG&E 2016)

2.1 EXISTING LAND USES AND NOISE SOURCES

2.1.1 Southern Segment

Land uses surrounding the Fulton Substation and along the project alignment in the Southern Segment include agricultural and residential. Northeast of Highway 101, the Southern Segment passes through the residential neighborhood of Larkfield-Wikiup, which includes Maddux Ranch Regional Park, two schools, and low- and medium-density residential development. As the alignment leaves the residential neighborhoods, it crosses Faught Road and continues northward, where land uses transition to rural residential and agriculture.

The noise environment along the Southern Segment is typical of a residential setting. Existing noise sources include motor vehicle traffic, construction activities, dogs barking, children playing, and other miscellaneous noises coming from residences, schools, and parks.

2.1.2 Northern Segment

Land uses along the Northern Segment include open space, agriculture, rural residential, and regional parks. The Northern Segment passes through Shiloh Ranch Regional Park, Foothill Regional Park, vineyards, rangeland, woodland, and agricultural preserves.

The noise environment along the Northern Segment is typical of a rural setting. Existing noise sources include intermittent vehicle traffic, wildlife, and regional park activities.

2.1.3 Fitch Mountain Substation

Fitch Mountain Substation and surrounding parcels are located on land designated as rural residential. Noise near Fitch Mountain Substation is dominated by noise from the existing substation and noise from an adjacent gravel quarry.

2.2 AMBIENT NOISE MEASUREMENTS

To characterize the existing ambient noise environment, noise measurements and observations were performed near the project alignment at the locations shown in **Figure 2-1**.

Healdsburg 101 Site 1 Site 2 Site 3 101 Windsor Site 4 Site 5 Site 6 Larkfield-Wikiup Corona Noise Site 2 Site 7 Corona Noise Site 1 Site 8 Fulton Site 9 101 Santa Rosa Legend **Noise Measurement Sites** Scale = 1:100.000 Northern Segment Short Term Short Term and Long Term Southern Segment Corona Short Term Substation

Figure 2-1 Noise Measurement Locations

Sources: (ESRI 2016), (PG&E 2016)

On Monday, May 23, 2016, RCH Staff conducted short-term (10 to 20 minutes) noise measurements at eight different locations and programmed long-term noise meters at four different locations to measure noise for 48 hours beginning at 12 a.m. Tuesday morning, May 24, 2016. RCH staff used Metrosonics db308 sound level meters equipped with a windscreen, which were calibrated before and after the noise measurement. The temperature ranged from 67 to 74 degrees Fahrenheit under sunny and generally calm wind conditions, with a humidity ranging from 41 to 56 percent.

On Thursday, May 26, 2016, RCH Staff conducted short-term (10 to 20 minutes) noise measurements at five different locations and collected the long-term noise meter measurements at the four locations mentioned above. The temperature ranged from 68 to 77 degrees Fahrenheit under sunny and generally steady wind conditions, with a humidity ranging from 44 to 56 percent.

Noise measurement locations and observations are summarized in **Table 2-1** and detailed in data sheets included in Attachment A. Measured existing outdoor ambient noise levels are displayed in **Table 2-2** and detailed in Attachment A.

Table 2-1 Noise Measurement Locations

Site ID	Location	Approximate Distance from Alignment	Land Use	Dominant Noise Source
1	Adjacent to Fitch Mountain Substation on Bumpy Road	2,250 feet from Shiloh-Fitch Segment	Residential	Substation noise
2	Brooks Road	85 feet	Residential/ Recreation	Wildlife, airplanes, and cars on Brooks Road
3	Foothill Regional Park	1,350 feet	Recreation	Wildlife, airplanes, people using trails
4	Leslie Road	Underneath	Residential	Cars on Chalk Hill Road and Leslie Road
5	Shiloh Ridge Road near alignment	35 feet	Residential	Cars on Shiloh Ridge Road and tractor in field across road
6	Shiloh Ridge Regional Park trail near bend in Faught Road	15 feet	Residential/Recreation	Cars on Faught Road, distant construction, insects, birds
7	East side of Faught Road north of Faught Court	Underneath	Residential	Traffic on Faught Road, residential noise
8	Park Across from Mark West Elementary School	Underneath	Residential/Recreation	Traffic on Lavell Road, construction at school, children at School
9	Fulton Substation	30 feet	Residential	Traffic on River Road

Table 2-2 Outdoor Ambient Noise Levels

Site ID	Time Period	CNEL	L _{eq} a	L _{max}	L2 b	L50 °
Site 1 LT ^d	Tuesday May 24, 2016, 0:00 to Wednesday May 25, 2016, 23:59	62, 63	54-62, 55-61	55-78, 55-79	54-67, 55-67	54-59, 54-58
Site 1	Monday May 23, 2016 14:48 to 14:58	NA	57, 57	63, 59	61,58	56, 56
ST	Thursday May 26, 2016 16:51 to 17:01	NA	57, 57	58, 57	57, 58	57, 57
Site 2 ST	Thursday May 26, 2016 16:10 to 16:30	NA	47, 45, 46, 53	59, 57, 57, 71	55, 51, 51, 63	43, 43, 43, 43
Site 3 ST	Monday May 23, 2016 13:54 – 14:14	NA	45, 46, 46, 47	57, 56, 58, 60	50, 52, 51, 56	43, 44, 43, 43
Site 4 LT ^d	Tuesday May 24, 2016, 0:00 to Wednesday May 25, 2016, 23:59	53, 60	43-53, 43-72	45-84, 43-89	43-58, 43-82	43, 43-57
Site 4 ST	Monday May 23, 2016 13:22 to 13:32	NA	47, 58	63, 79	53, 67	43, 43
	Thursday May 26, 2016 15:43 to 15:53	NA	44, 44	51, 58	47, 49	43, 43
Site 5 ST	Monday May 23, 2016 12:34 to 12:54	NA	46, 46, 47, 47	57, 59, 58, 59	52, 55, 55, 54	43, 43, 43, 43
Site 6 LT ^d	Tuesday May 24, 2016, 0:00 to Wednesday May 25, 2016, 23:59	51, 51	43-50, 42-48	44-71, 42-71	42-58, 42-56	42-45, 42-54
Site 6	Monday May 23, 2016 12:09 to 12:19	NA	45, 47	51, 54	50, 52	43, 45
ST	Thursday May 26, 2016 15:16 to 15:26	NA	46, 48	58, 64	51, 55	43, 45
Site 7 LT ^d	Tuesday May 24, 2016, 0:00 to Wednesday May 25, 2016, 23:59	64, 60	44-76, 44-65	57-91, 53-96	43-84, 43-74	43-63, 43-56
Site 7 ST	Monday May 23, 2016 11:31 to 11:41	NA	54, 54	69, 69	63, 64	46, 45
اد 	Thursday May 26, 2016 14:45 to 14:55	NA	59, 59	69, 70	64, 66	56, 55
Site 8	Monday May 23, 2016 10:57 to 11:07	NA	57,54	64, 62	62, 60	55, 53
ST	Thursday May 26, 2016 14:23 to 14:33	NA	57, 59	66, 67	63, 65	55, 57
Site 9 ST	Monday May 23, 2016 15:18 to 15:38	NA	63, 63, 63, 63	72, 70, 76, 70	66, 67, 69, 68	62, 62, 61, 62
	Monday May 23, 2016	NA	63, 63, 63, 63	72, 70, 76, 70	66, 67, 69, 68	62, 62, 61, 62

Notes:

Source: RCH Group 2016

Short-term L_{eq} measurements are 20-minute intervals. Long-term L_{eq} measurements are the range of 1-hour intervals for each 24-hour period.

b The L2 is the value exceeded 2% of the time or 72 seconds in any hour.

 $^{^{\}circ}$ The L50 is the value exceeded 50% of the time or 30 minutes in any hour; the median noise level.

The range of L_{eq}, L_{max}, L2, and L50 values for a 24-hour period are listed for long-term measurements. Long-term measurements were continuous 48-hour measurements.

2.3 AUDIBLE CORONA NOISE MEASUREMENTS

On May 26, 2016, RCH staff attempted to measure corona noise levels from the existing transmission line at two different sites. Corona Site 1, as shown in **Figure 2-1**, is under the existing transmission in an empty grassy area northwest of ASAP at The Cove (an after school arts program for kids). Corona Site 2 is under the existing transmission line that runs above Shiloh Park Trail near Site 7. RCH staff used a Larson Davis SoundTrack LxT sound level meter equipped with a windscreen, calibrated before the noise measurements. At Corona Site 1, the temperature was 68 degrees Fahrenheit and sunny, with steady wind conditions and a humidity of 56 percent. At Corona Site 2, the temperature was 68 degrees Fahrenheit and sunny, with calm wind conditions and a humidity of 56 percent.

A short-term 10-minute noise measurement was recorded at Corona Site 1 from 18:46 to 18:56. The L_{eq} was 57.3 dB, the L_{min} was 44.8 dB, and the L_{max} was 67.9 dB. Corona noise levels could not be measured as RCH staff was unable to hear audible corona noise from the existing transmission line. The outdoor ambient noise at Corona Site 1 was too loud at the time of the measurement due to traffic noise on Faught Road and Old Redwood Highway. Therefore, RCH staff moved to a more remote location (Corona Site 2) to attempt to measure corona noise levels from the existing line.

A short-term 10-minute noise measurement was recorded at Corona Site 2 from 19:04 to 19:14. The L_{eq} was 41.4 dB, the L_{min} was 36.5 dB, and the L_{max} was 54.7 dB. Corona noise levels could not be measured as RCH staff was unable to hear audible corona noise from the existing transmission line. At the L_{min} of 36.5 dB, RCH staff was unable to hear any audible corona noise, and could only hear background noise from insects and birds, therefore under the aforementioned conditions, corona noise levels from the existing transmission line are less than 36.5 dB.

3.1 CONSTRUCTION

3.1.1 Noise

Methodology

Construction noise is considered temporary and short-term in duration. Construction noise at its source varies depending on construction activity, duration, and type and usage of equipment involved. Noise impacts from construction are dependent on the construction noise levels generated, the timing and duration of the construction activities, proximity to sensitive receptors, and impact thresholds, including noise regulations and standards. Construction equipment can be stationary or mobile. Stationary equipment operates in one location for various periods of time with fixed-power operation, such as pumps, generators, and compressors, or a variable noise operation, such as rock drills or augers. Mobile equipment, such as bulldozers, graders, and loaders, move around construction areas.

Proposed Equipment and Hourly Usage

Project construction is broken into different phases, each with specific construction activities and equipment. Maximum noise levels (L_{max}) are instantaneous measurements that vary by equipment. Average noise levels (L_{eq}) are also used to quantify construction noise. L_{eq} levels for individual equipment are often lower than L_{max} noise levels because L_{eq} considers the mobility and usage factor (the percentage of time during a construction noise operation that a piece of equipment is operating at full power) for each piece of equipment.

Cumulative Noise Levels

Cumulative noise levels were determined using the Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM), which is the national model for prediction of construction noise based on noise calculations and extensive construction noise data. Cumulative noise levels are estimated using the Leq for the two loudest pieces of equipment that would be used during a given activity.

Noise Attenuation

Noise levels from construction activities would attenuate with distance at a rate of approximately 6 dB per doubling of distance over acoustically hard sites, such as streets and parking lots. Noise levels from construction activities would attenuate with distance at a rate of 7.5 dB per doubling of distance over acoustically soft sites, such as soft dirt and grass. Natural terrain features such as hills and manmade features, such as buildings and walls, can significantly alter noise levels (Caltrans 2013). These factors generally limit the distance

construction noise travels. Noise attenuation rates for this project have been conservatively estimated using a 6 dB decrease per each doubling of distance.

Ground-Based Activities

Table 3-1 lists the maximum noise levels for ground-based equipment identified by PG&E.

Table 3-1 Maximum Noise Levels from Proposed Ground-Based Equipment

Equipment	L _{max} at 50 Feet	1-Hour L _{eq} at 50 Feet	Usage Factor
ASV mower or similar equipment on rubber tracks ^a	82 dB	78 dB	40%
Back hoe	78 dB	74 dB	40%
Bobcat	78 dB	74 dB	40%
Boom truck	83 dB	79 dB	40%
Bucket truck	74 dB	70 dB	40%
Concrete truck	79 dB	75 dB	40%
Chipper truck with chipper b	81 dB	74 dB	20%
Compressor	78 dB	74 dB	40%
Crane	81 dB	73 dB	16%
Crawler mounted with auger	84 dB	77 dB	20%
D4/D6 dozer	82 dB	78 dB	40%
Drill rig	79 dB	72 dB	20%
Dump truck	76 dB	73 dB	40%
Excavator	81 dB	77 dB	40%
Forklift	80 dB	76 dB	40%
Generator	81 dB	78 dB	50%
Jackhammer	89 dB	82 dB	20%
Light tower	70 dB	70 dB	100%
Line truck with auger attachment	84 dB	77 dB	20%
Line truck with tensioner or puller attachment ^d	74 dB	70 dB	75%
Line truck with trailer ^d	74 dB	70 dB	40%
ine truck with worker lift attachment ^a	74 dB	70 dB	40%
Man lift	75 dB	68 dB	20%
Motor grader	85 dB	81 dB	40%
Paver	77 dB	74 dB	50%

Equipment	L _{max} at 50 Feet	1-Hour L _{eq} at 50 Feet	Usage Factor
Pickup truck/crew-cab truck/ F550 truck	75 dB	71 dB	40%
Rigging truck d	74 dB	70 dB	40%
Semi-truck with trailer ^c	76 dB	73 dB	40%
Shiflet truck ^d	74 dB	70 dB	40%
Skip loader	80 dB	75 dB	40%
Skid steer	78 dB	74 dB	40%
UTV mounted with hydraulic jack	82 dB	78 dB	40%
UTV with excavator a	82 dB	78 dB	40%
UTV with worker-lift attachment a	82 dB	78 dB	40%
Water truck ^c	76 dB	73 dB	40%

Notes:

- Noise level based on EPA requirements for off-highway vehicles greater than 170 cc built 1986 or newer
- b Tetra Tech 2011
- c Based on dump truck
- d Based on flat-bed truck

Source: (U.S. DOT 2008) (unless noted otherwise)

Table 3-2 provides the maximum noise level for the loudest piece of construction equipment, and the calculated cumulative noise level (L_{eq}) of the two loudest pieces of construction equipment that would be used during ground-based construction activities (i.e., no helicopters). The table identifies which construction activities would be conducted in the Northern Segment and in the Southern Segment. The L_{max} and L_{eq} are provided at a reference distance of 50 feet.

Table 3-2 Cumulative Noise Levels from Ground-Based Construction Activities

Construction Activity	Southern Segment	Northern Segment	Equipment (Two Loudest "*")		Levels a	tive Noise at 50 Feet dB)
				Loudest Scenario Assumptions	L _{max} a	L _{eq} b
Survey	•	•	1 Pickup truck*		75	71
Vegetation Clearing	•	•	1-2 Pickup trucks*	Up to 3 pieces of equipment could		
			1-2 Bucket trucks	 operate at the same time in close proximity. 	81	76
			1-2 Chipper trucks with chippers*			
Grading and Blading	• •		1 ASV mower or similar equipment on rubber tracks*	Up to 3 pieces of equipment could operate at the same time in close		
			1 D4 dozer*	 proximity. The mower and dozer would not operate at the same 		80
			1 Pickup truck	time.	82	
			1 Semi-truck with trailer to haul grader	_		
			1 Water truck			
Drainage Crossing	N/A	•	1 Crawler backhoe*	Both pieces of equipment could be	70	7.
Establishment			1 Pickup truck*	 used at the same time in close proximity. 	78	76
LDSP Hole Auguring	•	•	1 UTV with excavator*	Up to 2 pieces of equipment could		
			1 Pickup truck	 operate at the same time in close proximity. 	84	81
			1 Line truck with auger attachment*	_		
LDSP Installation c	•	•	1 Shiflet truck	Up to 3 pieces of equipment could		
			1 Crew-cab truck	 operate at the same time in close proximity. 		
			1 UTV with worker-lift attachment	_	89	85
			1 Line truck with trailer	_		
			1 UTV mounted with hydraulic jack*			

Construction Activity	Southern Segment	Northern Segment	Equipment (Two Loudest "*")		Levels a	tive Noise at 50 Feet dB)
	J	J		Loudest Scenario Assumptions	L _{max} a	L _{eq} b
			1 Back hoe		_	
			1 Jackhammer*	_		
			1 Compressor	_		
TSP Hole Auguring	N/A	•	1 Crawler mounted auger*	Both pieces of equipment could be		
			1 Dump truck*	 used at the same time in close proximity. 	84	79
TSP Installation	N/A	•	1 Shiflet truck	Up to 3 pieces of equipment could		
			1 Crane	 operate at the same time in close proximity. 		
			1 Boom truck*			
			1 Rigging truck (2-ton)	_	83	81
			1 Crew-cab truck			
			1 Pickup truck	_		
			1 Concrete truck*	_		
Guard Structure	•	N/A	1 Light tower	Up to 4 pieces of equipment could		
Installation at US 101 Crossing			1 Bucket truck*	 operate at the same time in close proximity. 	7.5	77 -ID
			2 Pickup trucks	_	75	77 dB
			1 Crew cab*	_		
Reconductoring (Poles and Mid-Span Locations)	•	•	3 100-ton cranes (or alternatively a boom truck, bucket truck, or line truck with a worker lift attachment)*	Up to 2 pieces of equipment could operate at the same time in close proximity. Either a crane, boom	83	79
			3 Pickup trucks*	 truck, bucket truck, or worker lift attached to a line truck would operate with a single pickup truck. 		

Construction Activity	Southern Segment	Northern Segment	Equipment (Two Loudest "*")		Levels a	tive Noise at 50 Feet dB)
				Loudest Scenario Assumptions	L _{max} a	L _{eq} b
Reconductoring	•	•		Wire reel would not have a motor,		
(Pull-and-Tension Sites)			1 Line truck with a wire reel attachment or trailer	 and the line truck would be turned off during reconductoring. Up to 3 trucks would operate intermittently 		
			3 Pickup trucks*	at the same time in close proximity to a line truck with either a puller or	75	77
			1 Line truck with a puller attachment*	tensioner attachment.		
			1 Line truck with a tensioner attachment*	_		
Miscellaneous	• •		1 Boom truck*	Both pieces of equipment could be	83 dB	00 15
Transport			1 F550 truck*	used at the same time in close proximity.		80 dB
Material and	• •		1 100-ton crane*	Up to 4 pieces of equipment could		
Equipment Staging			1 F550 truck	operate at the same time in close proximity.		
			1 Pickup truck	_	84 dB	00 dp
			1 Crew-cab truck	_	84 QB	82 dB
			1 Boom truck*	_		
			1 Line truck with auger attachment			
Cleanup and	•	•	1 Motor grader*	Up to 3 pieces of equipment could		
Restoration			1 D6 dozer*	operate at the same time in close proximity. The motor grader and	85 dB	82 dB
			1 Semi-truck with trailer	dozer would not operate at the same time.	65 GB	82 GB
			1 Pickup truck			
Substation	N/A	N/A	1 Bobcat	Up to 4 pieces of equipment could	83 dB	83 dB
Equipment			1 Excavator*	operate at the same time in close	os ud	OS UD

Construction Activity	Southern Segment	Northern Segment	Equipment (Two Loudest "*")		Cumulati Levels at (d	t 50 Feet
				Loudest Scenario Assumptions	L _{max} a	L _{eq} b
Modifications			1 Fork lift	proximity. The crane, boom truck	-	
(includes cleanup and restoration)			1 Crane	would not operate at the same time.		
			1 Boom truck*			
			1 Man lift			
Substation Road	N/A	N/A	3 Crew-cab trucks	Up to 3 pieces of equipment could operate at the same time in close		
Paving			1 Skip loader*	proximity.	79	78
			1 Skid steer*			

Notes:

- ^a The L_{max} refers to the loudest piece of equipment for each activity.
- The Leq time period is one hour. The Leq estimates are obtained by combining noise levels from all pieces of construction equipment operating during a given activity.
- ^c This activity includes both pole delivery and old pole removal.

Source: (PG&E 2016), (U.S. DOT 2008)

Helicopter Activities

PG&E proposes to use two light- or medium-lift helicopters (MD 500 model) and one heavy-lift helicopter (Blackhawk or other similar heavy lift helicopter) to transport construction workers, material, and equipment between staging areas and pole locations. Light- and medium-lift helicopters would be used to transport workers and materials weighing up to approximately 5,000 pounds (e.g., wood or steel poles, conductor support arms, insulators, tools, and portable equipment). Heavy lift helicopters would be used to transport poles or other equipment exceeding the capacity of the light- and medium-lift helicopters. PG&E has identified staging areas near the alignment that may be used as helicopter landing zones. In addition, PG&E has stated that helicopters may touch down to pick up or drop off workers or equipment at any point along the alignment where field conditions permit a safe landing. **Table 3-3** provides the maximum amount of time a helicopter would spend at a single pole, landing zone, or flight path. Light- or medium-lift helicopters would operate at a single pole location for a few days at a time and up to approximately 5 days in total. Heavy-lift helicopters would operate for a maximum of two days at a single pole location.

Table 3-3 Maximum Daily Helicopter Operation – Single Location (Pull Span 1)

Helicopter	Measurement	Pole		Landing Zone		Flight Path a	
Lift/Size	Period	Minutes	Hours	Minutes	Hours	Minutes	Hours
Light/Madium	Entire Day	5.25	0.1	132	2.2	76	1.3
Light/Medium	Single Hour	5.25		30		15	
Hogyay	Entire Day	5 (LDSPs); 7 (TSPs) b	0.1	108	1.8	47	0.8
Heavy	Single Hour	4 (LDSPs); 6 (TSPs) b		30		15	

Notes:

Source: (PG&E 2016)

The main cause of noise from a helicopter is the rotors, especially when a helicopter hovers for a prolonged period over a single location. Helicopters at close proximity dominate the noise environment, and noise from other equipment would indistinguishable. Helicopter noise increases with airspeed and in high-rate climbs and sharp turns. A doubling of height or distance of the helicopter from the receptor would reduce the noise level by approximately 6 or 7 dB. If the height or distance was increased by a factor of three, the noise level would be reduced by approximately 10 dB (Helicopter Association International 2007). **Table 3-4** provides the maximum noise level for the helicopters that are anticipated to be used during construction.

Values for flight path represent the period traveling through a single 800-foot portion of the total flight path.

b If necessary, concrete for the TSP foundation at Pole 92 could be delivered using a heavy-lift helicopter. If this occurred, heavy-lift helicopter operation at Pole 92 would be as much as 25 minutes in a day and 15 minutes in a single hour. Pole 92 is approximately 800 feet from the closest landing zone and approximately 900 feet from the closest residence.

Table 3-4 Maximum Helicopter Noise Levels

Helicopter Type	Example Models	L _{max} (50 feet)	L _{max} (100 feet)
Light/Medium-Lift Helicopter	MD 500	90 dB	84 dB
Heavy-Lift Helicopter	Blackhawk	108 dB	102 dB

Source: (TRC 2015)

3.1.2 Vibration

Vibrational impacts were assessed using the FTA's Transit Noise and Vibration Impact Assessment guidance manual (May 2006). FTA thresholds used for determining potential vibrational impacts on structures are found in **Table 3-5**. Nuisance or annoyance can occur at 0.1 in/sec PPV.

Table 3-5 Vibration Thresholds for Minor Cosmetic or Structural Damage

Category	Continuous Source PPV (inches/second)
Extremely Fragile Historic Buildings, Ruins, Ancient Monuments ^a	0.08
Fragile Buildings ^a	0.10
Historic and Some Old Buildings ^b	0.25
Older Residential Structures ^c	0.30
New Residential Structures	0.50
Modern Industrial/Commercial Buildings	0.50

Notes:

- ^a There are no extremely fragile historic buildings, ruins, ancient monuments, or fragile buildings within the vicinity of the proposed project; therefore, this category is not relevant to the proposed project.
- ^b Few, if any, structures that are susceptible to minor cosmetic damage from vibration at levels lower than 0.3 in/sec PPV are anticipated.
- ^c This threshold was chosen as the CEQA significance threshold for the proposed project because it would be sufficient to protect most structures along the project alignment.

Source: (FTA 2006)

Vibration levels of construction equipment for the project would be consistent with a large bulldozer or drill rig. The nearest receptor may be as close as 20 feet from drilling activities at the Fitch Mountain Substation. Maximum vibration levels for the project would be approximately 0.114 PPV in/sec, which is below the thresholds for potential structure damage. The project could result in nuisance or annoyance from where vibration would exceed 0.1 in/sec PPV.

3.2 OPERATION AND MAINTENANCE

3.2.1 Noise

Modern transmission lines are designed, constructed, and maintained so that they operate below the corona-inception voltage and generate a minimum of corona-related noise during dry conditions. Operation of transmission lines of 230-kV and greater may produce corona noise when wet. Corona noise from the existing 230-kV transmission line was not audible during the May 2016 community noise survey. Humidity levels during the May 2016 survey were 56 percent. The project would reconductor the 230-kV line with a larger conductor than is currently in place. The larger conductor reduces the gradient of voltage on the line and allows less energy to escape. Corona noise is anticipated to reduce on the 230-kV transmission line as a result of the project.

Audible noise from substations is generated predominantly by equipment such as transformers, reactors and other wire-wound equipment. Substation modifications that occur as part of the project would not add additional noise-generating components. It is expected that operational noises from the substation would not change noise levels in the vicinity as a result of the project.

Maintenance activities for the alignment and substation are expected to be similar in scope and frequency to existing maintenance activities. The project is not anticipated to create any new noise impacts after the completion of construction.

3.2.2 Vibration

Maintenance activities for the project lines and substation are expected to be similar in scope and frequency to existing maintenance activities. The project is not anticipated to create any new groundborne vibration impacts after the completion of construction.

4 RECOMMENDATIONS

Construction noise and vibration may be perceived by nearby noise-sensitive receptors as a nuisance and/or cause annoyance. The following measures are recommended to reduce noise levels to the extent possible, and to reduce the potential for significant annoyance:

- Notification. Notify residents within 500 feet of project work areas in advance of
 construction activities, and provide information on methods for reducing indoor
 noise (i.e., closing doors and windows facing the alignment).
- Mufflers and Maintenance. Ensure equipment and vehicles are properly equipped with feasible noise control devices (i.e., mufflers) and maintained in good working order.
- Stationary Equipment. Position stationary construction equipment (i.e., compressors and generators) as far away from nearby residences as feasible. Ensure stationary equipment is equipped with engine-housing enclosures or shielded by portable barriers.
- **Noise Complaints.** Designate a "construction noise coordinator" who would be responsible for responding to any local complaints about construction noise.
- Schools. Notify and coordinate construction activities with schools that may be affected by construction noise.
- Places of Worship. Notify and coordinate construction activities with places of worship (churches, synagogues, temples, etc.) that may be affected by construction noise.
- Helicopters. Restrict excessive helicopter operation near noise-sensitive receptors. Plan helicopter flight paths between construction work areas and helicopter landing zones to avoid sensitive receptors and follow paths with high existing ambient noise levels, such as highways. Restrict helicopter use where adequate ground access is available. Position helicopter landing zones a minimum of 500 feet from receptors, and restrict touch down within 500 feet of receptors.

5 REFERENCES

5 REFERENCES

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Fulton-Fitch Mountain Reconductoring Project

Noise Attachment A

Noise Measurements Data Sheets

Proje	ect Name:		L 0 1				Date	5/	23/16	1	Record: of	
	FUITO	to Fi						<i>)</i> /	****	Veather D)ata	
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		ountail			ŀ	Λτζονο	ge Wind	l Sn	eed: (ກ	Type.	
		nd Terrain)1411610	\dashv		erature:	_		,	Humidity: 46 %	
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Soria	1#: 26	71		<u> </u>		Serial						
	ghting: A					Serial #: 8693 Calibration Level (dBA): 107.0						
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4										Subst	ation humming,	
,										plans		
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1												

Proj	ect Name:							Date:			Record: 2 of
	Fulto	n to Fi	ten					9	5/26/2	7.016	
		Locat	ion							Weather [Data
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F	itch N	nountain	Subst	ation						3 2mpl	
		nd Terrain	ι:		L			ture:			Humidity: 52%
	it, woo					Other	We	eather	Notes:		
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		nd Terrain	ı :					77°F		Humidity: 44°/0
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GPS	Coordin	nates: 389	34132.	311 N 152	64714	650	yy	7		
Pt	16	Sound Leve	el Meter			.2"	70	F	ield Calibr	ation
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vvin	uscreent	es No (ex	(piain)		Pos	st-Test	: 10	LO dBA		
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City D'									NI C		
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Project Name:		Date:	ing in	14	Record: _5_ of
Fulton to Fitch Location		1 5/	123/20	Weather D	Oata
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leslie Road near chalk hill Rd	Average	e Wind S	Speed: (mpr	
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				5-	dB car on bridge on L
				02	dB svy possing on Usue Rd
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	ect Name							Date:	- / /		Record: 6 of
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		o: Site				Wind	: Ste	eady/	Gusty / C	alm	Precipitation: No/Yes
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Proj	ect Name	to Fitch	h			Date	5/23/	7 016	Record: 7	of		
		Local						Weather D	Data			
Mor	itoring II	D: 6			Wind	: Steady /	Gusty C	alm)	Precipitation	No/Yes		
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	Time	Time										
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3	12:44	12:49	46.9		57.8	55	43	traci	tor is 45d1	3		
4	12:49	12:54	46.8		59.2	54	43		ne: 47 dB			
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								20112	191103			
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Add	itional N	otes:										

		ect Name:						Date:		,	Record: 8 of	
Monitoring ID: 7 Location Description: (cross streets/address) bend in faught & Alar Shiloh trail Tropography and Terrain: Precipitation No/Yes Type: Average Wind Speed: 3mph Temperature: 70°F Other Weather Notes: GPS Coordinates: 38°31′06,71′N 122°55′25.51′ Sunny w/Scattered clouds Wildy (3) Sound Level Meter Model #: 48305 Serial #: 8063 Weighting 2/C/Flat Response (Slow) / Fast / Impl Windscreen (Tes) No (explain) Pre-Test: 102.0 dBA D Start Time Time Time Time Time Time Time Time Time		ulton t	-					0/	23/2016			
Location Description: (cross streets/address) bend in fauther to a day Shiloh trail Topography and Terrain: Temperature: 70°F Chief Weather Notes: GPS Coordinates: 38°3/106, 11' N 122 45'25'5' Sunny w/ Scattered (10005) What is a sund level Meter W Field Calibration Model #: C1'364 Weighting 2/C/Flat Response: 6100/Fast/Impl Pre-Test: 102.0 dBA Windscreen: (res) No (explain) Post-Test: 102.0 dBA ID Start Time Tim	1/1	:1		ion		7.77	.(6					
Dend in fauth to Mar Shiloh to a Average Wind Speed: 3mph Temperature: 70° F Humidity: 5ip/s					-/- 11\	→ Wir	nd St	eadly /	Gusty / Ca	alm		
Temperature: 70°F Humidity: 5ip/5 Other Weather Notes: GPS Coordinates: 38°3/106.74°N 122945'25.54° Sunny w/Scattered cloveds Wayof (3) Sound Level Meter W Field Collibration Model #: d B 305 Model #: C -364 Serial #: 26 Serial #: 8073 Weighting (3) C / Flat Calibration Level (dBA): Response: (Slov) / Fast / Impl Pre-Test: 102 0 dBA Windscreen (es) No (explain) Post-Test: 102 0 dBA ID Start Stop Lsq Lmin Lmax Loz Lso Notes/Events -48 dB I 20								****			Type:	
Cither Weather Notes: CFS Coordinates: \$8^3/106.74 N 1229 15^2551 Sunny w/ Scattered Clouds Ways (3) Sound Level Meter W Field Collibration Model #: C1 304 Model #: C1 304 Weighting (A) [C/Flat Calibration Level (dBA): Response: (Slov) / Fast / Impl Windscreen: (Yes) No (explain) Post-Test: 102 0 dBA ID Start Stop Time Time Time Time Time Time Time Time	Dene	1 1/1 tavy	1+ Kd NL	ar Unil	on trail					mph		
GPS Coordinates: 38°3/106.7" N 122°45'25.5" Sunny w/Scattered Clouds	Topo	ograpny a	na Terrain	ı:							Humidity: 549/3	
Model #: dB 305 Model #: C 364	CDS	14 / Woo	100	021100	-1/ M 12	Oth	er vve	eather Su	Notes: nna W/	Scatter	ed cloves	
Model #: d B 308 Model #: C 1 - 304	illa.	Coordin	Sound love	3/ 06,	7" N 12	29452	<u> </u>		77.1.19	in lat Cartilla		
Serial #: 2161 Weighting (A) C / Flat Response: Slow / Fast / Impl Pre-Test: /02 o dBA Windscreen: Yes / No (explain) Post-Test: 102 o dBA ID Start Stop Time Time Time Time Time Time Time Time	Mod	el #: d1	3 208	el Melel				01-		iela Calibr	ation	
Weighting A/C/Flat Response: Slow / Fast / Impl Response: Slow / Fast / Impl Windscreen: Yes / No (explain) Post-Test: 102.0 dBA ID Start Time Time	Seria	ıl #: 21	61									
Response: Slow / Fast / Impl Windscreen: Yes / No (explain) Pre-Test: 102.0 dBA Post-Test: 102.0 dBA ID Start Stop Leq Lmin Time Time	Weig	hting A	/ C / Flat									
Windscreen (Yes) No (explain) Post-Test: 1020 dBA ID Start Stop Time Time Time Time Time Time Time Time				npl								
ID Start Stop Leq Lmin Lmax Lo2 L50 Notes/Events Time Time 1 12 04 12:14 14:17 51:4 50 43 466 ear on bus on faught roc 2 12:14 12:19 47.4 53.8 52 45 43.1 distant luavy machinent of construction of children@nearby School are audible but < 43 dB 52 98 passing van. 50 08 airplany Site Diagram Noise Sources: Cars on faught road distant constructs in sects, birds												
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Cars on faught road distant constructs r insects, birds	Cita	Diagram						_		N. 1 C		
distant construction insects, birds	Site	Diagrain										
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Proj	ect Name:						Date	: 1			Record:_9 of			
	FU	iton to	Fitci	n				2/2	26/20	516				
		Locat	ion							Weather D	Pata			
	itoring ID					Wind	:Steady/	Gus	sty / Ca	lm	Precipitation: (No) Yes			
Loca	tion Desc	ription: (çr	oss street	s/address) Shiloh tru Val	3						Туре:			
Bei	undi	YNLATH	aligno	unt			age Wind			injoh				
Topo	ography a	nd Terrain	:				erature:	_			Humidity: 47%			
	hilly,	woode	<u>d</u>	<u> </u>		Other	Weather	No	tes:					
GPS	Coordin	ates:					Sonny,	W) or m					
		Sound Leve	el Meter				Field Calibration							
Mod	lel #: 98	308				Mode	1#: C1-	30	4					
Seria	al #: 26	71				Serial	#: 80	93	7					
$\overline{}$	ghting (A					Calib	ration Lev	æl (dBA):	02-0				
Resp	onse: Slo	/ Fast / Iı	mpl			Pre-T	est: 107	של	dBA					
Win	dscreen: Y	es / No (ex	(plain)			Post-	Post-Test: 107.0 dBA							
ID	Start	Stop	Leq	Lmin	Ln	***	L ₀₂	L	E0.	Notes/E	vonte			
	Time	Time	Leq			lldX	LUZ	L	50	Notes/ L	vents			
3	15:16	15:21	45.7		5	8.1	51	2	43	UJ di	3 cars on favour rd.			
4	15.21	15:26	48.2			3.5	55		15		dB when no traffic			
	10 =	10.20	70.6		W	J. J		'	73		@ distant school			
								-		447				
								+						
								+-			3 dog barking Q			
								+			home			
								-		48-4	9dB passing Cars			
						_		-		-	1911 Road			
										44 dB	- car engine starting			
Site	Diagram									Noise S	ources:			
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											•			
							960							
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Proj	ect Name:	to Fite	ch				Date:	23/2016	2	Record: To of			
		Locat							Weather [Data			
Mon	itoring ID): 8°			Wind	l: Ste	ady / (Gusty /(Ca	lm	Precipitation: No/Yes			
		ription: (cı	oss street	s/address)			<i>J</i> .			Type:			
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Topo	ography a	nd Terrain	: Undurna	ath live	Temp	erat	ure:	680F		Humidity: 55°/3			
flo	at - mos	tly paver	nent w/	some land:	sa wii Pthei	r We	ather l	Notes:					
GPS	Coordin	nates: 38°	30142.71	N 1220i	15) 37.01	Pal	4113	C 180 a V	}				
Way	point2	Sound Lev	el Meter		W			Fi	eld Calibi	ration			
Mod		48 408	dB3	08	Mode	Model #: C] - 364							
Seria		671			Serial		800						
	ghting:(A)							el (dBA):					
		Fast / In			Pre-T								
Win	dscreen:(\	(es) / No (es	kplain)	. ————	Post-	Test:	102-	O dBA					
ID	Start Time	Stop Time	Leq	Lmin	Lmax	L02		L50	Notes/E	Events			
1	11:31	11:36	53.7		65.9	6	2	46	Ulada	Sownoise @ apartments			
2	11:36	11:41	54.1		(R.5		,4	45	OCVASS	5-treet			
	11 - 50	11 //	71-1		08.3		3	-1 _/	T				
										67 dB fast car 46dB-birds in trees			
										- car slowing to tora			
						ļ				box truck			
					-				acros.	3 woman pushing Stroller/bites street on side walk			
									43dB	when no cars			
									48dB	hamnering across street			
Site	Diagram	<u> </u>							Noise S	Sources:			
									Most	ly traffic on faugh Rd.			
										rume tools, birds			
										,			
Add	litional N	lotes:											
L													

Proj	ect Name	Fulto	n to	Fitc	h		D	ate:	6/1/	/2016	Record: of			
		Local		- 1110		T			2/16		D-1			
Mor	nitoring II					Mind	Ctond		Gusty / C	Weather				
Loca	ation Desc	cription: (cr		s/address)		55			mph	_aim	Precipitation: No / Yes Type:			
F	aught	Road N	Lar Fau	qui Ct.		Avera								
Top	ography a	and Terrain	i: unaeri	Wath lik	ه				75°		Humidity: 47%			
GPS	6+, pai	venuent inates: 38	t lands	scaping 2711 12	2.1	Other	Weatl	ner i	Notes: 5	inny, h	varm			
		Sound Lev					W			Field Calib	ration			
Mod	iel #: 1	3 308				Model #: C1-304								
	al #: 26					Serial #: 809.3								
	ghting					Calibr	Calibration Level (dBA): 102.70							
Resp	onse Slo	w Fast / I	mpl				Pre-Test: 102-0 dBA							
		(es) No (ex							O dBA	,				
ID	Start Time	Stop Time	Leq	Lmin	L	nax	L ₀₂		L50	Notes/E	events			
3		14:50	58.5			20	1.11		61	- 6 - 1	0 10 10			
4	14:50	14:55	-			A.0	64		56	· car (2 62 dB			
7_	14.20	11133	59.3		_(,	,9.9	66							
										background @ 49 dB with no traffic				
							10 traffic							
										Stead	y flow of traffic			
		-								people	yelling (0 66 0B			
											@ 69 dB			
-										4 Car	alarm@52dB			
									_					
-														
Site	Diagram									Noise S	Sources:			
2														
Add	itional N	otes:						_		Э				
• */	bise	predon	unant	ly ve	ni	ele	tra	4	36					
,,,,	1.1	ri.	1. 3010											
·CA	nt	neer	nigh	ly ve										

Proj	ect Name:						Dat			Record: 12 of			
	Fult	on to F						/23		· .			
	<u>-</u>	Local	ion						Weather [
	itoring IE					Wind:	Steady	/ Gusty (Ca	alm	Precipitation No/Yes			
1				s/address)	- 1					Туре:			
ACV	OSS From	· Mark U	nest El	ementar	9	Avera	ge Wind	d Speed: C	mph				
Topo	ography a	nd Terrair g ra	1: Flat	and c	ノ		erature:			Humidity: 55°/3			
								r Notes:					
GPS	Coordin	iates: 30	630' 05,7	N 122°	45)	36.7"	W						
		Sound Lev						ation					
	lel #: 💲	d d	B 308		_			-304					
Seria		2671			_	Serial #: 8093							
	ghting (A)				_	Calibr							
_		w)/ Fast / I						2.0 dBA					
Wine	dscreen:(Y	es)/ No (e)	xplain)			Post-T	est: 1D	20 dBA					
ID	Start	Stop	Leq	Lmin	Lm	ax	L ₀₂	L ₅₀	Notes/E	vents			
	Time	Time											
1	10:57	11:02	56.8		64	1.0	62	55	58 dB	construction express			
2	11:02	11:07	54.1			2.1	60	53	64aB 1	notorycle: 67 d8 loadingsoi			
									into	notoriycle, 62 dB loading soi			
									5441	3 Someone willing @ School			
									55 dB	B Someone yelling @ School backup beeps - 60 dB			
									GI dB	passing car			
										SUV passing			
									4,50				
							_						
Site	Diagram		L						Noise S	OTTECOS			
	214614111												
									_	traffic on Street			
									7	7			
									reas san	en @ school do not over construction norse			
									trattic	on Hwy 101 barely			
									auc	1,ble			
Additional Notes: 63 dB overhead plane													
Aaa	itional iv	otes: 63	dB ove	May pi	ance	2							

Fulton to Fitch Location Monitoring ID: 9 Location Description: (cross streets/address) Mark West Clemanus Topography and Terrain: 30 - 30 - 63 - 71 N 122415 GPS Coordinates: 30 - 30 - 63 - 71 N 122415 GPS Coordinates: 30 - 30 - 63 - 71 N 122415 GPS Coordinates: 30 - 30 - 63 - 71 N 122415 May of 1 sound Level Meter Model #: C1 - 304 Serial #: 30 - 30 Model #: 01 - 304 Serial #: 30 - 30 Model #: 02 - 30	Pro	ject Name		· Citals	1		Dat			Record: 13 of
Monitoring ID: 9 Location Description: (cross streets/address) Mark West Clementary Topography and Terrain: 6 from with 524 flot; glass and pavernant CPS Coordinates: 30 50 103.7 N 1224 5 Model #: 48 308 Model #: 48 308 Model #: 26 71 Weighting (A) C / Flat Response: (lov) / Fast / Impl Windscreen (res) No (explain) Topography and Everain: 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		FU			<u>ر</u>			5/26/2		
Location Description: (cross streets/address) Mark West Clarm thank Topography and Terrain: Information Information Average Wind Speed: Information Temperature: 150 F Humidity: 47 to Humidity: 47 to Other Weather Notes: GPS Coordinates: 30 to 3.7 N 1224 to Ways 1 Sound Level Meter Ways 1 Sound Level Meter Ways 1 Sound Level Meter Weighting (A) C / Flat Response: 600 / Fast / Impl Pre-Test: 102 0 dBA Windscreen (Ves) No (explain) Post-Test: 102 0 dBA ID Start Time Time 3 14:23 14:28 57.0	3.4	- 11 TT		tion						
Topography and Terrain: 16 from unit of 1 temperature: 15 of 1 temperatu					/ 11 >	Wind	Steady			
Other Weather Notes: GPS Coordinates: 30 0 0 0 0 03 7 N 122415 Sunna Waypt 1 Sound Level Meter Waypt 1 Sound Level Meter Serial #: 2671 Weighting (A) / C / Flat Response: Glovy / Fast / Impl Windscreem (Yes) / No (explain) Post-Test: 102 0 dBA Windscreem (Yes) / No (explain) Post-Test: 102 0 dBA ID Start Time Time Time Time Time Time Time Time	Loca	ation Desc	ription: (c	ross street	s/address)			12		
Other Weather Notes: GPS Coordinates: 30 0 0 0 0 03 7 N 122415 Sunna Waypt 1 Sound Level Meter Waypt 1 Sound Level Meter Serial #: 2671 Weighting (A) / C / Flat Response: Glovy / Fast / Impl Windscreem (Yes) / No (explain) Post-Test: 102 0 dBA Windscreem (Yes) / No (explain) Post-Test: 102 0 dBA ID Start Time Time Time Time Time Time Time Time		Mair	- West 6	JUMEN	tary	Avera	ge Wind	d Speed:	mph 5	SW .
Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are Additional Notes: kids @ School are audible, byt not lowner than traffic are lowner	Top	ography a	ind Terrair	וייייייייייייייייייייייייייייייייייייי	Road					Humidity: 4796
Model #: CI - 304 Serial #: 2671 Serial #: 308 Model #: CI - 304	- CD	tlat 1	grass 41	od pav	ement	Other	Weathe	r Notes:		
Model #: 48 308 Serial #: 267 Serial #: 7093 Weighting (A) (C Flat Calibration Level (dBA): 102-0 Response: Flow (Fast / Impl) Pre-Test: 102-0 dBA Windscreen (es) (No (explain)) Post-Test: 102-0 dBA ID Start Time Time Time Time Time 3 14:28 57-0 65.9 63 55 5448 background traffic 4 14:26 14:23 56.8 67.4 65 57 bisk from 103 61 dB passing SW 55 harn honking 57 dis construction equip across street (00 dB - Van 66 dB pickup 65 dB swy 58 dB background traffic 61 dB passing SW Site Diagram Additional Notes: Kids @ School are audible, but not lower than traffic are addible, but not lower than traffic are	GPS	Coordin	nates: 30°	20, 08.	7'N 1226	45'	sunna			
Serial #: 7673 Weighting (A) (C / Flat	Na	ypf 1	Sound Lev	el Meter		JI W		F	ield Calibr	ation
Weighting (A) (C / Flat Calibration Level (dBA): 102.0 Response: 6100 / Fast / Impl Pre-Test: 102.0 dBA Windscreen (ves) / No (explain) Post-Test: 102.0 dBA ID Start Stop Leq Lmin Lmax Lo2 Lso Notes/Events III Start Time Time Time Vest V										
Response: Floy / Fast / Impl Windscreen (Yes) / No (explain) Pre-Test: 102.0 dBA Post-Test: 102.0 dBA ID Start Stop Time Time 3 14:23 14:28 57.0 65.9 63 55 54 dB background traffic 4 14:28 14:23 58.8 67.4 65 57 noix from 10 61 dB passing Sulv 55 horn honking 57 dis construction equip across street 60 dB - Van 60										
Windscreen (Yes)/No (explain) Post-Test: 102 O dBA ID Start Time Time Time 3 14:23 14:28 57.0 65.9 63 55 54 dB background traffic 4 14:28 14:33 58.8 67.4 65 57 noise from 103 61 dB passing SW 55 horn honking 61 dB passing SW 55 horn honking 60 dB - Van 60 dB - Van 60 dB pickup 65 dB puckhoe/loader Noise Sources: Hwy 101 Intermittent Construction Cars picking up kids Additional Notes: Kids @ School are audible, but not lowner than traffic are									102.0	
ID Start Time Time Lea Lea Lea Los Notes/Events 3 14:23 14:28 57:0 65.9 63 55 54 88 background traffic 4 14:26 14:23 58.8 67.4 65 57 noise from 103 55 horn honking 57 dis construction equip across street 60 ds - van 66 ds poschup 65 ds huck hoe loader Noise Sources: Hwy 101 Intermittent construction Cars picking up kids Additional Notes: kids @ School are audible, but not lower than traffic and										
Time Time 3 14:23 14:28 57:0 65.9 63 55 548 background traffic 4 14:28 14:23 58.8 67.4 65 57 noise from 101 61 dB passing SW 55 horn honking 57 dis construction equip across street 60 dB - Van 66 dB pickup 65 dB svv 58 dB hacknow/loader Noise Sources: Hwy 101 Intermittent construction Cars picking up kids Additional Notes: kids @ School are audible, but not louder than traffic and	vvin	ascreen:	(es)/ No (ex	xplain)		Post-T	est: 10	2.0 dBA		
Time Time 3 14:23 14:26 57:0 65:9 63 55 54 dB background traffic 4 14:26 14:33 56:8 67:4 65 57 noise from 103 61 dB passing Sulv 55 horn honking 57 d13 construction equip across street 60 dB - Van 60 dB - Jickup 65 dB background traffic 61 dB passing Sulv 52 d13 construction equip 63 dB background traffic 64 dB passing Sulv 65 dB van 66 dB pickup 65 dB background traffic 67 dB passing Sulv 68 dB pickup 69 dB pickup 65 dB sulv 60 dB - Van 60 dB - Van 60 dB - Van 60 dB pickup 65 dB background traffic 61 dB passing Sulv 52 d13 construction 63 dB background traffic 61 dB passing Sulv 65 dB passing Sulv 66 dB pickup 65 dB sulv 66 dB pickup 66 dB passing Sulv 67 dB pickup 67 dB pickup 68 dB pickup 68 dB pickup 69 dB pickup 69 dB pickup 69 dB pickup 60	ID	Start	Stop	Leq	L _{min} J	_max	L ₀₂	L50	Notes/E	vents
4 14.28 14.23 58.8 67.4 65 57 noise from 10) 61 dB passing SW 55 horn honking 57 di3 construction equip across street 60 dB - van 66 dB pickup 65 dB hukhoe loader Noise Sources: Hwy 101 Intermittent construction cars picking up kids Additional Notes: kids @ School are audible, but not lowder than traffic are		Time	Time							
4 14.28 14:23 58.8 67.4 65 57 noise from 10) 61 dB passing SW 55 horn honking 57 dis construction equip across street 60 dB pickup 63 dB pickup 64 dB pickup 65 dB pickup 65 dB pickup 65 dB pickup 65 dB pickup 66 d		14:23	14:28	57.0		65.9	63	55	54 AR	book around traffic.
Site Diagram 6 I dB passing SW 55 horn honking 57 di3 construction equip across street 60 dB - Van 66 AB pickup 65 dB SW 53 dB bplkhoc/loader Noise Sources: Hwy 101 Intermittent construction (ars picking up kids Additional Notes: Kids @ School are audible, but not louder than traffic and	4			1		67.4	65	57	noise	from ini
Site Diagram Site Diagram Additional Notes: kids @ School are available, but not lower than traffic an				1.4						
Site Diagram Site Diagram Additional Notes: kids @ School are available, but not lower than traffic an									55 h	nen hankina
Additional Notes: kids @ School are audible, but not lowder than traffic an										
Site Diagram Go AB pickup										
Site Diagram Site Diagram Noise Sources: Hwy 101 Intermittent construction Cars picking up kids Additional Notes: kids @ School are audible, but not louder than traffic at										
Site Diagram Noise Sources: Hwy 101 Intermittent construction Cars picking up kids Additional Notes: kids @ School are audible, but not lower than traffic and				`					1	
Site Diagram Noise Sources: Hwy 101 Intermittent construction Cars picking up kids Additional Notes: kids @ School are audible, but not lowder than traffic and			٠.					+		
Noise Sources: Hwy 101 Intermittent Construction Cars picking up kids Additional Notes: Kids @ School are audible, but not louder than traffic an										
Hwy 101 Intermittent construction Cars picking up kids Additional Notes: Kids @ School are audible, but not louder than traffic on	Site	Diagram	-				> -			
Additional Notes: Kids @ School are audible, but not louder than traffic on		0								
Additional Notes: Kids @ School are audible, but not louder than traffic on										
Additional Notes: Kids @ School are audible, but not louder than traffic on										
Additional Notes: Kids @ School are audible, but not louder than traffic or other sources									cars pi	cking up 4as
Additional Notes: Kids @ School are audible, but not louder than traffic or other sources										
Additional Notes: Kids @ School are audible, but not louder than traffic or other sources										ST TO ST
Additional Notes: Kids @ School are audible, but not louder than traffic or other sources										
other sources		itional N	oton le :	11 0	<u> </u>	12	1.60	hat mad	1.	
other sources	Auu	itional N	otes: K	as w	school ar	audi	ble, 6	ivt not	louder	than traffic on
			othu	500	<i>y</i> ,					
· ·										

Proje	ect Name:	ulton t	o Fito	n			Da	ate:	12312	016	Record: 14 of
		Locat								Weather D	Oata
Mon	itoring ID): 10				Wind	: Stead	y / C	Gusty (Ca		Precipitation: No Yes
		ription: (cr	ross street	s/address)			٠	, .	, (Type:
	Fulto	n Sub	station			Avera	age Wir	nd S	peed: 37	mpn	
Торо		nd Terrain					erature		TELETE	TIOF	Humidity: 4 1000 41
	Flat,					Other	Weath	er N	Notes: Sc	astered	Clouds
GPS	Coordin	ates: 3	8029,4	8.2"N	12:	0451	4134	W	_		1
Way	POINT (7)	Sound Lev	el Meter						Fi	eld Calibr	ation
Mod	el#: dE	308				Mode	l#: C	1 -	304		
Seria		671			_		#: 80		-		
	ghting (A)	~							l (dBA):		
_		/ Fast / I) dBA		
Wind	dscreen:(Y	(es)/ No (ex	xplain)			Post-	l'est: [[26	O dBA		
ID	Start	Stop	Leq	Lmin	Ln	nax	L ₀₂		L50	Notes/E	vents
	Time	Time									
1	15:18	15:23	62.5		7	1.9	66		62		Substation wisk
2		15 28	63.0		6	9.5	67		62	when 1	no cars
3	15:28	15:33	63.3		.5-	15.8	69		61	64 05	r car on River Road
4	15:33	15:38	62.8		7	0.1	(0)		62	620B	nearby bird
										67-6	adB plane
										67dB	motoraich on River Rd
										Sammo	Motorcycle on River Rd 15-29 or 28 truck pulling out of
										62 dB	truck pilling out of
										PAYK	n rab
Site	Diagram									Noise S	ources:
										traff	ic on River Road
											tion huming
											,
Add	itional N	otes:									

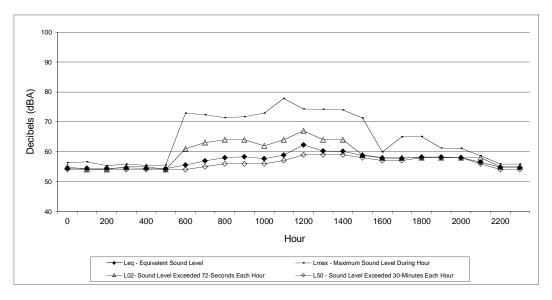
Project Name: Fulton to Fitch		Date:	126 m	16	Record: 15 of		
Location				Weather D	ata		
Monitoring ID: COYONA NOISC MASUREM Location Description: (cross streets/address)			Susty / Ca		Precipitation: No/ Yes Type:		
Faught Road, Old Redward Hully Topography and Terrain: directly under lin Flat grassy CPS Coordinates 22 52 124 110 1 1224	Other W	ture: eather N	68°F	, po	Humidity: 56%		
GPS Coordinates: 38 030 34.0 11 1220 Sound Level Meter	45 3.1.0" V	3	Fi	eld Calibro	ation		
Model #: LxT2	Model #:	CAL	200				
Serial #: 0004337 Weighting (A) C / Flat	Serial #: Calibrati	923 on Level		114			
Response: 6low/ Fast / Impl	Pre-Test:	114.01) dBA				
Windscreen Yes No (explain)	Post-Tes	Post-Test: 114.06 dBA					
ID Start Stop Leq Lmin	L _{max} L	10	L50	L90	Notes/Events		
1 6. 16 6. 56pm					58 dB car on Redwa		
					60 dB Incr w/trailer		
. ,					Masured - covera		
					noise not audible		
					60 dB pickup		
			-		60 dB pickup 54 dB kids yelling 67d13 lova trucks		
Site Diagram				Noise Se	ources:		
					ic Noise		
			ļ				
Additional Notes: W. Corona Nijsc is	s not au	dible					

Proje	ect Name:						Date:	/		Record: 16 of
		rulton t					4/	26/2018		
		Locati			\perp				Weather D	
Mon	itoring ID	: Corona	Noise 2	<u></u>		Wind: St	eady/(Gusty / Ca	lm	Precipitation. No / Yes
	_	ription: (cr		and the second s						Туре:
Beno	in taug	ht Rd - S	hiloh Pa	(k Trail	1	Average	Wind S	Speed: 0	noh	
Topo	ography a	nd Terrain	: Directly	underli	10]	Гетрега				Humidity: 1000-10 560/6
	W 00	did, Hil	14			Other W		Notes:	שתרו טל	
	Coordin	ates: 38	03/100	0.6"N 1	220	45125	.211 W			
way	point 18	Sound Leve	el Meter		\perp				eld Calibr	ation
Mod	el#: Lx	T2			-	Model #:				
Seria	1 #: 000	4337				Serial #:				
	ghting (A)				_			el (dBA):	114	
		/ Fast / In				Pre-Test				
Wind	dscreen: Y	es/No (ex	(plain)		1	Post-Tes	t: 4,(dBA		
ID	Start	Stop	Leq	Lmin	Lmax	x L	10	L50	L90	Notes/Events
	Time	Time								
1	19:04	19:14								10W= 8837
										•
										46 dB car on Rd
										39 dB-ambient when
										no tars passing
										40 dB. distant traffic
										40 dB- distant traffic 43 dB- distant airplant
Site	 Diagram			<u></u>					Noise S	bources:
										nt traffic tairplane
									haise	- wildlife
									1101 &	- <u>(()</u> () () ()
Δ	litional N	Totas:	N 14 10 C 3	1010	100	uvad	141645	n. Jack	Se 14100	537dB-
Auu										
	only i	nsect n	1013C1	C01616 1	1015	5 sti	not	Angip A	-3.	4
	·									

Fulton-Fitch Mountain Reconductoring Project

Noise Attachment B

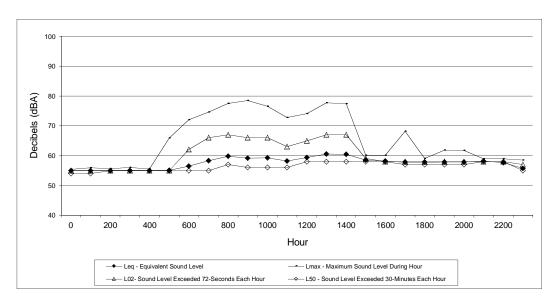
Long-Term Noise Monitoring Plots and Data



Site 1. Fitch Mountain Substation Tuesday May 24, 2016

		Lmax - Maximum	L02- Sound Level	L50 - Sound Level	
		Sound Level During	Exceeded 72-	Exceeded 30-	
Hour	Leq - Equivalent Sound Level	Hour	Seconds Each Hour	Minutes Each Hour	
0	55	56	55	54	
100	55	57	54	54	
200	55	55	54	54	
300	55	56	55	54	
400	55	55	55	54	
500	54	56	54	54	
600	56	73	61	54	
700	57	72	63	55	
800	58	71	64	56	
900	58	72	64	56	
1000	58	73	62	56	
1100	59	78	64	57	
1200	62	74	67	59	
1300	60	74	64	59	
1400	60	74	64	59	
1500	59	71	59	58	
1600	58	60	58	57	
1700	58	65	58	57	
1800	58	65	58	58	
1900	58	61	58	58	
2000	58	61	58	58	
2100	57	59	58	56	
2200	55	56	55	54	
2300	55	56	55	54	

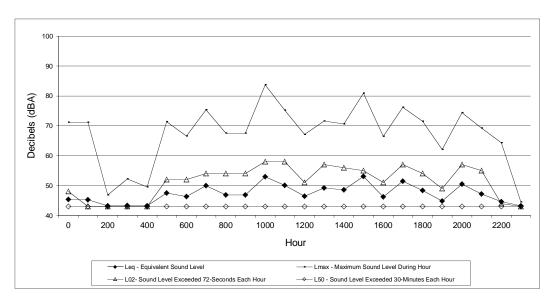
CNEL 62



Site 1. Fitch Mountain Substation Wednesday May 25, 2016

		Lmax - Maximum	L02- Sound Level	L50 - Sound Level	
		Sound Level During	Exceeded 72-	Exceeded 30-	
Hour	Leq - Equivalent Sound Level	Hour	Seconds Each Hour	Minutes Each Hour	
0	55	55	55	54	
100	55	56	55	54	
200	55	56	55	55	
300	55	56	55	55	
400	55	56	55	55	
500	55	66	55	55	
600	57	72	62	55	
700	58	75	66	55	
800	60	78	67	57	
900	59	79	66	56	
1000	59	77	66	56	
1100	58	73	63	56	
1200	59	74	65	58	
1300	61	78	67	58	
1400	60	77	67	58	
1500	59	60	59	58	
1600	58	60	58	58	
1700	58	68	58	57	
1800	58	59	58	57	
1900	58	62	58	57	
2000	58	62	58	57	
2100	58	59	58	58	
2200	58	59	58	58	
2300	56	59	57	55	

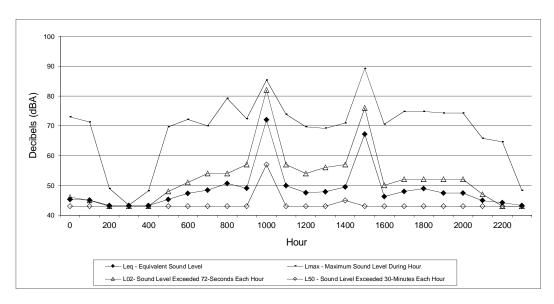
CNEL: 63



Site 4. Leslie Road near Chalk Hill Road Tuesday May 24, 2016

		Lmax - Maximum	L02- Sound Level	L50 - Sound Level
		Sound Level During	Exceeded 72-	Exceeded 30-
Hour	Leq - Equivalent Sound Level	Hour	Seconds Each Hour	Minutes Each Hour
0	45	71	48	43
100	45	71	43	43
200	43	47	43	43
300	43	52	43	43
400	43	50	43	43
500	48	71	52	43
600	46	67	52	43
700	50	75	54	43
800	47	68	54	43
900	47	68	54	43
1000	53	84	58	43
1100	50	75	58	43
1200	46	67	51	43
1300	49	72	57	43
1400	49	71	56	43
1500	53	81	55	43
1600	46	67	51	43
1700	52	76	57	43
1800	48	72	54	43
1900	45	62	49	43
2000	51	74	57	43
2100	47	69	55	43
2200	45	64	44	43
2300	43	45	43	43

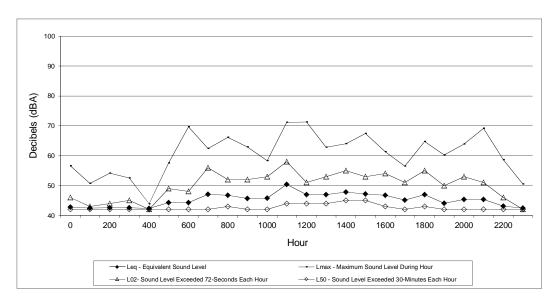
CNEL 53



Site 4. Leslie Road near Chalk Hill Road Wednesday May 25, 2016

		Lmax - Maximum Sound Level During	L02- Sound Level Exceeded 72-	L50 - Sound Level Exceeded 30-
Hour	Leq - Equivalent Sound Level	Hour	Seconds Each Hour	Minutes Each Hour
0	45	73	46	43
100	45	71	45	43
200	43	49	43	43
300	43	43	43	43
400	43	48	43	43
500	45	70	48	43
600	47	72	51	43
700	48	70	54	43
800	51	79	54	43
900	49	72	57	43
1000	72	85	82	57
1100	50	74	57	43
1200	48	70	54	43
1300	48	69	56	43
1400	50	71	57	45
1500	67	89	76	43
1600	46	71	50	43
1700	48	75	52	43
1800	49	75	52	43
1900	47	74	52	43
2000	47	74	52	43
2100	45	66	47	43
2200	44	65	43	43
2300	43	48	43	43

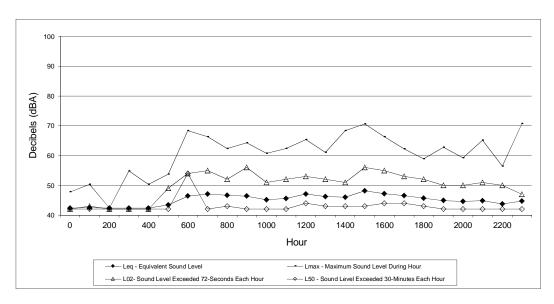
CNEL: 60



Site 6. Bend in Faught Road near Shiloh Trail Tuesday May 24, 2016

		Lmax - Maximum	L02- Sound Level	L50 - Sound Level	
		Sound Level During	Exceeded 72-	Exceeded 30-	
Hour	Leq - Equivalent Sound Level	Hour	Seconds Each Hour	Minutes Each Hour	
0	43	57	46	42	
100	43	51	43	42	
200	43	54	44	42	
300	43	53	45	42	
400	42	44	42	42	
500	44	58	49	42	
600	44	70	48	42	
700	47	62	56	42	
800	47	66	52	43	
900	46	63	52	42	
1000	46	58	53	42	
1100	50	71	58	44	
1200	47	71	51	44	
1300	47	63	53	44	
1400	48	64	55	45	
1500	47	67	53	45	
1600	47	61	54	43	
1700	45	57	51	42	
1800	47	65	55	43	
1900	44	60	50	42	
2000	45	64	53	42	
2100	45	69	51	42	
2200	43	59	46	42	
2300	43	51	42	42	

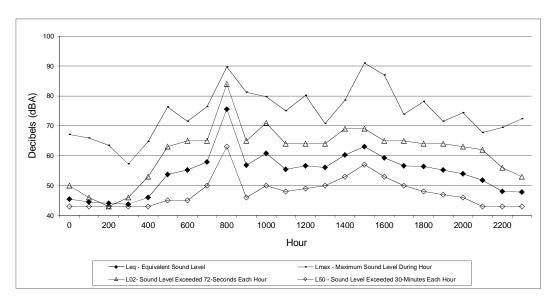
CNEL 51



Site 6. Bend in Faught Road near Shiloh Trail Wednesday May 25, 2016

		Lmax - Maximum	L02- Sound Level	L50 - Sound Level
		Sound Level During	Exceeded 72-	Exceeded 30-
Hour	Leq - Equivalent Sound Level	Hour	Seconds Each Hour	Minutes Each Hour
0	42	48	42	42
100	43	50	43	42
200	42	42	42	42
300	42	55	42	42
400	42	50	42	42
500	43	54	49	42
600	46	68	54	54
700	47	66	55	42
800	47	62	52	43
900	46	64	56	42
1000	45	61	51	42
1100	46	62	52	42
1200	47	65	53	44
1300	46	61	52	43
1400	46	68	51	43
1500	48	71	56	43
1600	47	66	55	44
1700	47	62	53	44
1800	46	59	52	43
1900	45	63	50	42
2000	45	59	50	42
2100	45	65	51	42
2200	44	57	50	42
2300	45	71	47	42

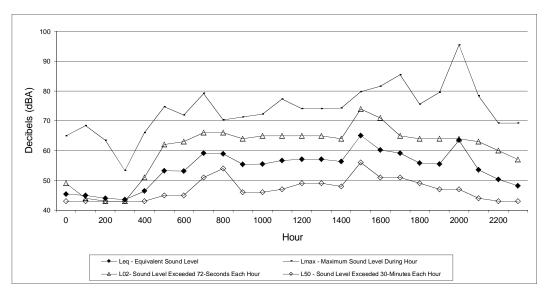
CNEL: 51



Site 7. Faught Road near Faught Court Tuesday May 24, 2016

		Lmax - Maximum	L02- Sound Level	L50 - Sound Level	
		Sound Level During	Exceeded 72-	Exceeded 30-	
Hour	Leq - Equivalent Sound Level	Hour	Seconds Each Hour	Minutes Each Hour	
0	46	67	50	43	
100	45	66	46	43	
200	44	64	43	43	
300	44	57	46	43	
400	46	65	53	43	
500	54	76	63	45	
600	55	72	65	45	
700	58	76	65	50	
800	76	90	84	63	
900	57	81	65	46	
1000	61	80	71	50	
1100	55	75	64	48	
1200	57	80	64	49	
1300	56	71	64	50	
1400	60	79	69	53	
1500	63	91	69	57	
1600	59	87	65	53	
1700	57	74	65	50	
1800	56	78	64	48	
1900	55	72	64	47	
2000	54	74	63	46	
2100	52	68	62	43	
2200	48	70	56	43	
2300	48	72	53	43	

CNEL 64



Site 7. Faught Road near Faught Court Wednesday May 25, 2016

		Lmax - Maximum	L02- Sound Level	L50 - Sound Level	
		Sound Level During	Exceeded 72-	Exceeded 30-	
Ho		Hour	Seconds Each Hour	Minutes Each Hour	
0		65	49	43	
10		68	44	43	
20		63	43	43	
30		53	43	43	
40	0 46	66	51	43	
50	0 53	75	62	45	
60	0 53	72	63	45	
70	0 59	79	66	51	
80	0 59	70	66	54	
90	0 55	71	64	46	
100	00 56	72	65	46	
110	00 57	77	65	47	
120	00 57	74	65	49	
130	00 57	74	65	49	
140	00 56	74	64	48	
150	00 65	80	74	56	
160	00 60	82	71	51	
170	00 59	86	65	51	
180	00 56	76	64	49	
190		80	64	47	
200	00 64	96	64	47	
210		78	63	44	
220		69	60	43	
230		69	57	43	

CNEL: 60