

APPENDIX I – CONSTRUCTION NOISE EVALUATION

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**SUBJECT: Construction Noise Evaluation for the Cherry Valley Drainage Project
City of Beaumont CA**

The firm of Ldn Consulting is pleased to submit the following noise analysis for the proposed Cherry Valley Drainage Project in the City of Beaumont CA. The purpose of the noise evaluation is to examine the construction noise conditions for the Cherry Valley Drainage Project construction and recommend reduction measures, if needed, for compliance with the City of Beaumont Noise standards, plans and policy goals for noise.

Project Location/Description

The proposed project is generally located north of Interstate 10 (I-10) between Beaumont Avenue and Highland Springs Avenue. More specifically, the project runs adjacent to the east side of Cherry Avenue and is approximately 2,500 feet long running from Oak Valley Parkway to the south to Cougar Way to the north. The project vicinity can be seen in Figure 1.

The project consists of improvements to the existing Cherry Avenue Channel that runs adjacent to Cherry Avenue to the east. The proposed improvements include the construction of a concrete-lined open channel to replace the existing graded open channel. The project construction primarily consists of three phases: remediation of the existing soils, import and grading of engineered soil, and construction of the concrete lined open channel. The project site configuration is provided in Figure 2 and shows the proposed site configuration.

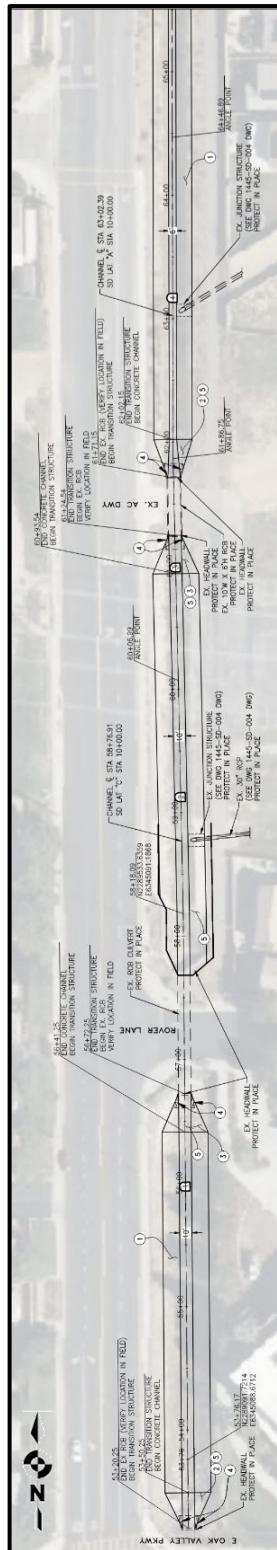
Background

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies.

Figure 1: Project Vicinity



Figure 2: Proposed Project Configuration



The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

Sound from a localized source (a “point” source) radiates uniformly outward as it travels away from the source. The sound level attenuates or drops-off at a rate of 6 dBA for each doubling of distance. A drop-off rate of 6 dBA per doubling of distance was used for this piece of equipment. For example, a noise level of 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor and reduced to 63 dBA at 200 feet from the source.

City of Beaumont Thresholds of Significance

The Beaumont Municipal Code (MC) establishes the following provisions for noise relative to the proposed Project:

Section 9.02.110 – Special Provisions

F. Construction, Landscape, Maintenance or Repair

1. It shall be unlawful for any person to engage in or permit the generation of noise related to landscape maintenance, construction including erection, excavation, demolition, alteration or repair of any structure or improvement, at such sound levels, as measured at the property line of the nearest adjacent occupied property, as to be in excess of the sound levels permitted under this Chapter, at other times than between the hours of 7:00 a.m. and 6:00 p.m. The person engaged in such activity is hereby permitted to exceed sound levels otherwise set forth in this Chapter for the duration of the activity during the above described hours for purposes of construction. However, nothing contained herein shall permit any person to cause sound levels to at any time exceed 55 dB(A) for intervals of more than 15 minutes per hour as measured in the interior of the nearest occupied residence or school.
2. Whenever a construction site is within one-quarter of a mile of an occupied residence or residences, no construction activities shall be undertaken between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September and between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May. Exceptions to these standards shall be allowed only with the written consent of the building official.

Methodology and Assumptions

Construction noise levels were based on typical noise levels generated by construction equipment published by the FTA and the FHWA. Construction noise is assessed in dBA Leq. This unit is appropriate because Leq can be used to describe noise level from operation of each piece of equipment separately, and levels can be combined to represent the noise level from all equipment operating during a given period. Construction noise modeling was conducted using the FHWA Roadway Construction Noise Model (RCNM).

Reference noise levels are used to estimate operational noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Noise level estimates do not account for the presence of intervening structures or topography, which may reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise.

The City of Beaumont does not establish quantitative construction noise standards; therefore, this analysis conservatively uses the FTA's threshold of 80 dBA (8-hour Leq) for residential uses and 90 dBA (8-hour Leq) for non-residential uses to evaluate construction noise impacts.

Remediation Phase Noise Findings

A technical memorandum provided by Converse Consultants examined the existing conditions of the graded open channel and provides recommendations for improvements to the channel (*Source: Technical Memorandum for the Rehabilitation of the Cherry Avenue Channel from Oak Valley Parkway to Cougar Way, Project Number 21-81-290-01, Converse Consultants, April 25, 2022*). According to the technical memo, the existing channel consists of poor soil conditions, deteriorating geotextile fabric, and riprap that requires removal. Remediation of the soil will require the removal of deleterious material and over excavation of up to 3-feet of compressible soils.

Construction operations are expected to be in close proximity to the residential property line to the east. According to the project proponent, the project will require an excavator and dump truck to remove the existing debris and soils. Noise levels along the channel are linear and the equipment will be moving along the property line at an average distance of 40 feet from the existing residences. The amount of equipment utilized would be limited due to alignment and work area constraints, therefore, it is expected that only one excavator and one dump truck could be working in one area at any given time. Not all the equipment will operate continuously

over an 8-hour period, the equipment will be utilized on an as-needed basis depending on the site excavation activities are required.

The noise levels utilized in this analysis for the remediation phase are shown in Table 1. As can be seen in Tables 1, with the equipment working closely together at the nearest location the cumulative noise level would be 78.7 dBA at the residential property line to the east from the remediation activities over an 8-hour period. The equipment will be moving linearly along the length of the channel, therefore, the noise levels are expected to be lower. Therefore, the remediation activities would be expected to comply with the FTA's 80 dBA Leq 8-hour standard at the nearest residential land uses to the east and no impacts are anticipated.

Table 1: Remediation Noise Levels

Equipment Type	Quantity Used	Source @ 50 Feet (dBA)	Cumulative Noise Level @ 50 Feet (dBA)
Excavator	1	72	72.0
Dump Truck	1	75	75.0
Cumulative Levels @ 50 Feet (dBA)			76.8
Distance to Sensitive Use			40
Noise Reduction due to Distance			+1.9
Property Line Noise Level			78.7

¹ Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data

Grading Phase Noise Findings

Grading of the channel in preparation for the pouring of concrete will require import of engineered soil, placement of material, and compaction of the soils. According to the project proponent, the project could potentially use a dump truck, backhoe, laser-grader precise finish grading machine, and a compactor. Noise levels along the channel are linear and the equipment will be moving along the property line at an average distance of 40 feet from the existing residences. Not all the equipment will operate continuously over an 8-hour period, the equipment will be utilized on an as-needed basis depending on the site grading activities are required. The amount of equipment utilized would be limited due to alignment and work area constraints. It is expected that only the dump truck and backhoe would be working in one area to place the engineered fill and the grading machine and compactor would be working in another area to fine grade the channel.

The noise levels utilized in this analysis for the grading activities are shown in Tables 2 and 3. As can be seen in Tables 2 and 3, with the equipment working closely together at the nearest location the cumulative noise levels would be 78.7 dBA for the placement and grading of engineered fill and 79.5 dBA for the precise grading and compaction activities over an 8-hour period. The equipment will be moving linearly along the length of the channel, therefore, the noise levels are expected to be lower. Therefore, the grading activities would be expected to comply with the FTA's 80 dBA Leq 8-hour standard at the nearest residential land uses to the east and no impacts are anticipated.

Table 2: Grading Noise Levels

Equipment Type	Quantity Used	Source @ 50 Feet (dBA)	Cumulative Noise Level @ 50 Feet (dBA)
Tractor/Backhoe	1	72	72.0
Dump Truck	1	75	75.0
Cumulative Levels @ 50 Feet (dBA)			76.8
Distance to Sensitive Use			40
Noise Reduction due to Distance			+1.9
Property Line Noise Level			78.7

¹ Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data

Table 3: Precise Grading Noise Levels

Equipment Type	Quantity Used	Source @ 50 Feet (dBA)	Cumulative Noise Level @ 50 Feet (dBA)
Laser-Grader	1	75	75.0
Roller/Compactor	1	74	74.0
Cumulative Levels @ 50 Feet (dBA)			77.5
Distance to Sensitive Use			40
Noise Reduction due to Distance			+1.9
Property Line Noise Level			79.5

¹ Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data

Concrete Pouring Phase Noise Findings

According to the project proponent, the project could potentially use up to two cement trucks every hour during the concrete pouring phase. Noise levels along the channel are linear and the equipment will be moving along the property line at an average distance of 40 feet from the

existing residences. Not all the equipment will operate continuously over an 8-hour period, the equipment will be utilized on an as-needed basis depending on the concrete pouring activities are required. The amount of equipment utilized would be limited due to alignment and work area constraints. It is expected that up to two concrete trucks would pour concrete in one area at any given time.

The noise levels utilized in this analysis for the concrete pouring activities are shown in Table 4. As can be seen in Table 4, with the equipment working closely together at the nearest location the cumulative noise levels would be 79.9 dBA for the concrete pouring activities over an 8-hour period. The equipment will be moving linearly along the length of the channel, therefore, the noise levels are expected to be lower. Therefore, the concrete pouring activities would be expected to comply with the FTA's 80 dBA Leq 8-hour standard at the nearest residential land uses to the east and no impacts are anticipated.

Table 4: Concrete Pouring Noise Levels

Equipment Type	Quantity Used	Source @ 50 Feet (dBA)	Cumulative Noise Level @ 50 Feet (dBA)
Concrete Trucks	2	75	78.0
		Cumulative Levels @ 50 Feet (dBA)	78.0
		Distance to Sensitive Use	40
		Noise Reduction due to Distance	+1.9
		Property Line Noise Level	79.9

¹ Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data

Conclusions

Based upon the calculations of the noise levels when construction equipment is located near the closest noise sensitive land uses, located to the east, the average noise levels would not exceed the 80 dBA 8-hour standard and no impacts will occur and no mitigation measures are required.

Project construction noise levels are considered exempt if activities do not occur within the hours specified in the City of Beaumont Municipal Code, Section 9.02.030 of 6:00 p.m. and 6:00 a.m. during the months of June through September and between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May unless approval is obtained from the City Building Official or City Engineer.

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At the time of this analysis, no Project construction activity is planned outside of the specified hours. Therefore, no impacts are anticipated and no mitigation is required during construction of the proposed Project. Additionally, all equipment should be properly fitted with mufflers and all staging and maintenance should be conducted as far away from the existing residence as possible.

Sincerely,

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Jeremy Louden, Principal