Supplemental Initial Study and Proposed Mitigated Negative Declaration

for

Proposed Amendments to the Conditional Use Permit authorizing
Motorsports and Concert Events at the Humboldt County Fairgrounds

California Environmental Quality Act (CEQA)

April 1, 2022

Lead Agency:
Humboldt County
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List of Acronyms

CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
EIR	Environmental Impact Report
GHG	Greenhouse Gas
HCF	Humboldt County Fairs
HCFA	Humboldt County Fair Association
IS	Initial Study
MND	Mitigated Negative Declaration
SMND	Supplemental Mitigated Negative Declaration
SCH	State Clearinghouse
NPDES	National Pollutant Discharge Elimination System
PLN-2019-15519	Project ID# for Conditional Use Permit
PLN-2020-16689	Project ID# for Appeal of Use Permit approval by Friends of Ferndale for a Livable Community
PLN-2021-17651	Project ID# for Conditional Use Permit Modification

1. Project Summary

Date:	April 1, 2022
Project Title:	Modification of the Use Permit authorizing Motorcycle Racing and Concert Events at the Humboldt County Fair Grounds
Project Summary:	The requested permit modification would authorize raising the instantaneous noise limit from 90 decibels to 99 decibels during motorcycle racing events. The approved Use Permit allows use of the Humboldt County Fair Ground's facilities for up to four (4) motorcycle racing events (2 gas-powered, 2 electric) as well as five (5) music events per year.
Project Sponsor:	Humboldt County Fair Association Joanna Rodoni, Vice President 1250 5th Street Ferndale, CA 95536 (707)786-5515
Lead Agency:	Humboldt County
Lead Agency Contact:	Lead Agency Contact: Steve Lazar, Senior Planner (707)268-3741 slazar@co.humboldt.ca.us 3015 H St. Eureka, CA 95501
Report Author:	Steven Lazar, Senior Planner, Humboldt County Planning & Building Department
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Contributor Contact:	Whitchurch Engineering 610 9th Street, Fortuna, CA 95540 (707)725-6926
Project Location:	Humboldt County Fairgrounds 1250 5th Street, Ferndale, CA 95536 Latitude:40.5855 Longitude: -124.2635 The project site is located in the Ferndale area, on the east side of 5th street between Van Ness and Arlington Ave., on the property known as 1250 5th Street.

Coastal Zone:	The majority of the Fairgrounds is located within Ferndale city limits and outside of the Coastal Zone, including the dirt racetrack, grandstands, and primary parking areas used during events.
Affected Parcels:	Assessor's Parcel Numbers (APNs): 100-181-003-000, 030-071-001-000, 030-011-003-000, 030-021-003-000, 030-112-017-000, 030-112-020-000, 030-081-006-000
General Plan Designation:	City of Ferndale P-F (Public Facility)
Zoning:	City of Ferndale P-F (Public Facility)
Other Permits and Approvals required	1) Adoption of Supplemental Mitigated Negative Declaration (SMND) 2) Approval of Conditional Use Permit Modification 3) Authorization of Amended Lease Agreement with County of Humboldt
Tribal Consultation	At this time, no requests for Tribal Consultation (pursuant to Public Resources Code section 21080.3.1) have been received.

1.1. CEQA Requirement:

Proposed changes to the Conditional Use Permit allowing Concerts and Motorsports events is a "project" subject to compliance with the requirements of the California Environmental Quality Act (CEQA). CEQA encourages lead agencies and applicants to modify their projects to avoid potentially significant adverse impacts (CEQA Section 20180 [C] [2] and State CEQA Guidelines Section 15070[b] [2]).

The Lead Agency for the proposed project is the County of Humboldt, per CEQA Guidelines Section 21067. Compliance with CEQA is being performed by the Humboldt County Planning & Building Department in association with processing of a Modification to the Conditional Use Permit (PLN-2021-17651). The purpose of this Supplemental Mitigated Negative Declaration (SMND) is to make minor changes to the previously adopted Mitigated Negative Declaration (SCH #2020070478) in concert with the request to modify the terms of the approved Conditional Use Permit (PLN-2019-15519).

Section 15163 of the State CEQA Guidelines governs Supplements to an EIR or MND, and authorizes Lead Agencies to prepare a supplemental document if only minor additions or changes would be necessary to make the previous environmental analysis apply to the project in the changed situation. The Supplemental document need only contain the information necessary to make the previous document adequate.

This Supplemental document primarily focuses on amendments to the mitigation measures found in the Noise section of the adopted ISMND (SCH #2020070478) and includes updated analysis of potential impacts. The SMND also includes revisions to the Project Summary & Project Description (Sections 1 and 2 of the adopted MND), as well as the "Mitigation Monitoring and Reporting Program" sections of the document. Changes and discussion included are designed to help the document better reflect and analyze the current scale & scope of the project and proposed changes to the Noise Mitigation Measures being requested.

The environmental checklist sections contained in this document are based on Appendix G of the CEQA Guidelines (2022). To review analysis of other environmental factors, please refer to the original Mitigated Negative Declaration (https://ceqanet.opr.ca.gov/2020070478/3) for the project.

2. Project Description

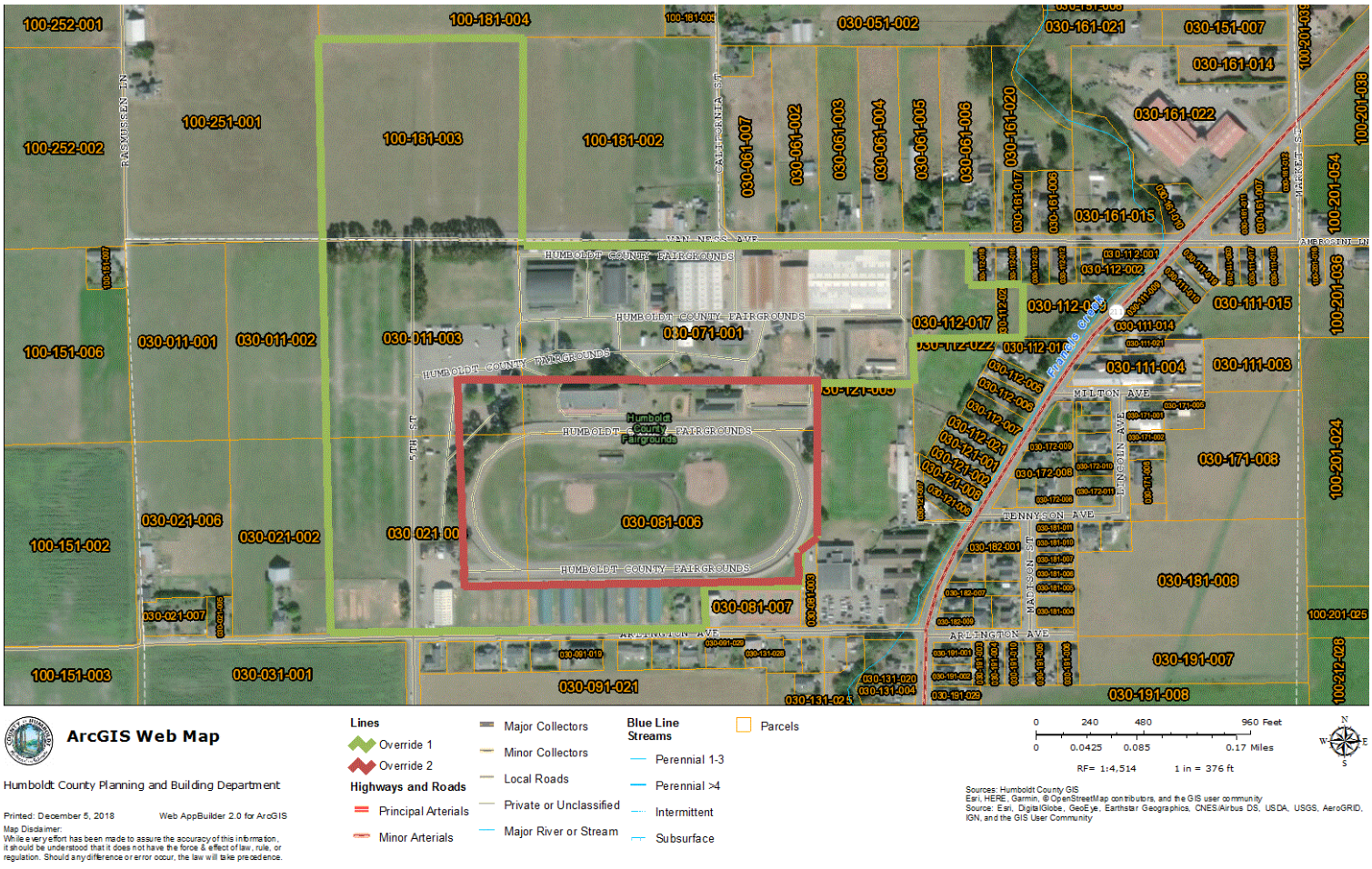
2.1. Project Location

The project is located at the Humboldt County Fairgrounds (HCF) in Ferndale, California. The vicinity map for the project site is provided in Figure 1. The County Fairgrounds are located 5 miles South-West of US- 101 and 600 feet west of CA-211. The fairgrounds lie approximately half a mile north of down-town Ferndale, on the east side of 5th street between Van Ness and Arlington Ave., on the property known as 1250 5th Street. The majority of the Fairgrounds complex is located within Ferndale city limits and outside of the Coastal Zone, including the dirt racetrack, grandstands, and primary parking areas used during events.

Figure 1: Ferndale Fairgrounds Vicinity Map - The project location is approximately 5 miles South-West of US-101.

The approved Conditional Use Permit enables increased use of the dirt racetrack and grandstands for concerts and motorcycle racing events, outside of the 6-week period in August and September associated with the Humboldt County Fair setup, operation, and cleanup. The existing oval flat racing track is located on the HCF premises at the location shown in Figure 2.

Figure 2: Ferndale Fairgrounds Area Map – The Green boundary shows the extent of the fairgrounds and the red boundary shows the location of the flat track.



2.2. Site Background

2.2.1. Site Description

Humboldt County Fairgrounds (HCF) is an approximately 60.5 acre site comprised of eight parcels (APN numbers 030-081-006, 030-071-001, 030-021-003, 030-011-003, 100-181-003, 030-112-017, 100-112-020). The flat racing track falls within APNs 030-081-006-000 and 030-021-003. The site parking lot falls within APN 030-011-003-000. APN 030-071-001-000 contains a variety of event buildings, stables, and other ancillary buildings to the Fairgrounds. This parcel is also the primary location for foot traffic between the fairgrounds parking lot and the flat racing track. The other three parcels would not be in use during events and activities associated with implementation of this project.

The property is currently owned by Humboldt County and leased to the Humboldt County Fair Association (HCFA), a California private nonprofit corporation. The HCFA manages the site and oversees the events and happenings of the fairgrounds.

2.2.2. Zoning/Land Use

Though owned by the County of Humboldt, the majority of the Fairgrounds properties are located within the city limits of Ferndale. All of the lands and facilities to be utilized under the proposed project are planned and zoned "Public Facilities" (PF). However, activities at the site are exempt from the city's zoning and land use regulations (Lawler v. City of Redding, 1992).

2.2.3. Historical Use/Existing Condition

The HCF are an open-air venue currently, and historically, used for a wide variety of events. Numerous buildings exist throughout the site and are used for these events. Figure 3 depicts the existing building layout of the fairgrounds.

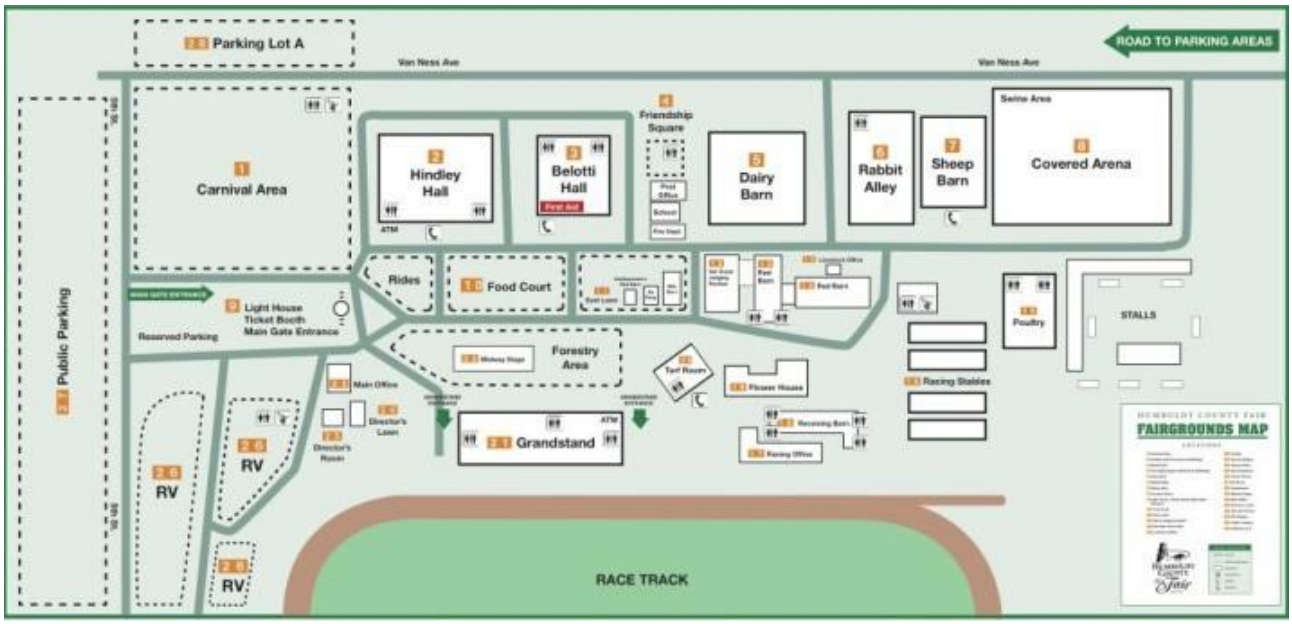


Figure 3: Humboldt County Fairgrounds event area approximate layout.

HCF is in good condition and sees regular use throughout the year. The grounds are maintained on a regular basis, including maintenance on all enclosed buildings, open air structures, and the race track. Buildings in use for events include the following:

- Belotti Hall
- Friendship Square
- Lath House
- Art Barn
- Judging Barn
- Hindley Hall
- Turf Room
- Jockeys Quarters
- Arena
- Grandstands

The fairgrounds and these buildings are either rented out for events or events are hosted by the HCFA. This includes the following events:

- Annual County Fair
- Personal Event Rentals
- Fireworks displays
- Craft and vendor fairs
- Highland Games
- Rodeos
- Athletic Events
- Funeral/Memorial Service
- Religious Retreats
- Auctions
- School events
- Horse Stall rental
- Skating
- Mud Run
- Equestrian Event
- Circus
- Animal Symposiums
- Graduations
- RV Parking
- Fourth of July
- Motorsports
- Logging conference
- Cycling Events
- Expos
- Carnival
- Performances/Theatrical
- Bingo Sporting Events

The grandstands border the race track and provide seating for observers during open-air events (seating for approximately 2500 people). Depending on the event, observers will also watch the events from the asphalt (2500-person approximate capacity) and the grass areas of the race track (5000-person approximate capacity).

Concerts and Motorsports events at the Humboldt County Fairgrounds are not without historic precedent. A review of information received from the Ferndale Enterprise reveals that live outdoor concert events have occurred on at least nine (9) separate occasions during the last twenty five (25) years. Given the nature of the facility, it is likely that use of the Fairgrounds for live concerts has occurred further back in time, especially during operation of the annual Humboldt County Fair each August. Newspaper information from both the Ferndale Enterprise and Humboldt Standard reveals the racetrack at the County Fairgrounds was used for automotive racing events as far back as 1947 and 1954.

year	month	Fair?	artist
1996		N	Willie Nelson
1997	August	Y	Suzy Boguss (concert 1)
1997	August	Y	Suzy Boguss (concert 2)
1997	August	N	Livestock 97
1998	August	Y	Ty Herndon
2001			Tim McGraw
2004	July	N	Lee Greenwood
2004	August		Loverboy
2011	September	N	Willie Nelson


HUMBOLDT STANDARD Thursday, August 5, 1954, P. 10

POWERSLIDING through a turn on a dirt track is Louie Tolstep of Milwaukie, Oregon. Louie is scheduled to make his bid for more points toward the Pacific Coast Championship this coming Sunday at the Ferndale Fairgrounds. The racing program starts at 2 p. m., under sponsorship of the American Racing Association. Time trials start at 1:00 p. m.

According to the archives of the Ferndale Enterprise, a race driver was killed during a meet in 1947. On page 10 of the August 5, 1954 edition of the Humboldt Standard appears an advertisement for a racing event at the Ferndale Fairgrounds.

2.2.4. Surrounding Use

HCF is bordered by agricultural land to on the north and west sides of the property, and residential areas to the south and east. The southern residential area, which resides on the opposite side of Arlington Ave from the fairgrounds, is approximately 200 feet from the closest edge of the fairgrounds flat track. The eastern residential area is located approximately 400 feet to the closest edge of the flat track, and is separated from HCF by the Ferndale High School field. The Ferndale High School buildings are adjacent to the southeast corner of the fairgrounds flat track, with the closest structure being approximately 80 feet from the track.

2.3. Project Description

Humboldt County Fair Association (HCFA) is seeking to modify a Conditional Use Permit which authorizes five (5) concerts and two (2) motorcycle racing events to be held each year at the Humboldt County Fairgrounds. The approved permit places limitations on event-related noise levels, including a 63-decibel limit on composite noise measured by averaging noise readings collected during a 24-hour period surrounding each event (CNEL), as well as a 90-decibel instantaneous noise limit applied to all motorcycles participating in racing events. In their modification request, HCFA is seeking authorization to raise the 90-decibel motorcycle noise limit to 99 decibels to be consistent with common national testing standards for competition established by the American Motorcyclist Association (AMA). Analysis of the proposal's effect on composite noise levels has been performed by Whitchurch Engineering and has determined that composite noise will remain at or below the 63-decibel limit, even with the requested increase. To help reduce event-related noise, HCFA is now proposing: 1. creation of two (2) sound barriers during racing events, fashioned by temporarily placing tractor trailers or strawbales (or some combination thereof) adjacent to motorcycle acceleration zones; and 2. acoustic treatment of the internal wall of the grandstands using special materials designed to decrease reverberation. Under the approved permit, each "event" occurs within the course of a single day, and concerts cannot last longer than 2 consecutive days. An additional day of racing can be allowed if all the racing on that day is by electrical motorcycles, but in no case can the total amount of motorcycle racing exceed 4 days per year. Other types of motorsports events are prohibited, including (but not limited to): Tractor Pulls, 4x4 Trucks, Go Carts, and Monster Trucks.

The two types of events allowed under the approved Use Permit are Motorcycle Racing Events and Open Air Music Events (concerts). Both are intended to occur at the existing, dirt, flat track racing circuit located on the Humboldt County Fair Grounds premises at the location shown above in Figure 2. All events would be pre- scheduled and occur between March and October, excepting the six-week period (August 1st thru September 15th) associated with preparation, operation, and cleanup for the annual Humboldt County Fair. All events would end on or before 10 pm. Parking for spectators would occur through use of existing HCF parking areas.

2.3.1. Motorsports Events

The approved Conditional Use Permit authorizes Humboldt County Fair Association (HCFA) to hold up to two (2) scheduled motorcycle racing events in a given year at HCF's flat track (Figure 2, and 3). Flat track motorcycle racing involves up to 18 riders racing motorcycles, with a typical engine size of 250cc-450cc, on the dirt, oval, flat track. Races can include spectators viewing the events from the grandstands seating area on the north side of the track, as well as from the grassy area in the center of the track and other surrounding areas. Motorsports events are authorized to occur between the hours of 10:00 am and 10:00 pm, with some events ending earlier or starting later depending on the nature of the event. Racing activities ordinarily takes place in the afternoon, with a period for warmup and practice beforehand.

2.3.2. Music Events

The Humboldt County Fair Association (HCFA) is also authorized to hold up to five (5) scheduled music events at HCF's flat track (Figure 2, and 3) in a given year. These music performances range from full band, amplified music to smaller acoustic events. Performers are expected to set up in the interior of the racetrack on an installed temporary stage placed directly in front of the grandstands. Depending on the stage and event configuration, spectators would view the performance from the grandstands in addition to being allowed to stand or sit in the area between the grandstands and the stage. Temporary tents or other such structures may be erected to provide an area for sound and lighting technician work areas or other ancillary activities to the performance. Concerts are authorized to occur between the hours of 12:00 pm and 10:00 pm, with some events ending earlier or starting later depending on the nature of the event.

3. Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by the proposed project, and would involve at least one impact that is determined to be a "Potentially Significant Impact" as indicated by the checklist on the follow pages of this report.

☒ Aesthetics	☐ Agriculture and Forestry Resources	☒ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☒ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities / Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

A detailed explanation of responses for "Noise" and "Land Use / Planning" follows in Section 4 of this report. For explanation and responses concerning all other environmental factors, please review the adopted Mitigated Negative Declaration for the project (available here: https://ceqanet.opr.ca.gov/2020070478/3). All answers take into account the whole action involved, including off-site as well as on-site; cumulative as well as project-level; indirect as well as direct; and construction as well as operational impacts. The explanation of each issue identifies: (a) the significance criteria or threshold, if any, used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to a less than significant level.

3.1.Determination

(To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT AL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

3.2. Evaluation of Environmental Impacts

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each questions. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2) All answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).
5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
    a) Earlier Analysis Used. Identify and state where they are available for review.
    b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c) Mitigation Measures. For effects that are "Less Than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be citied in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The analysis of each issue should identify:

   a) the significance criteria or threshold used to evaluate each question; and

   b) the mitigation measure identified, if any, to reduce the impact to less than significant

3.2.1. Noise

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

Discussion

Modeling and analysis of potential noise impacts from concerts and flat track motorcycle racing has been conducted Whitchurch Engineering Inc. and is discussed within the Noise Impact Study (August, 2018) and Addendum for Concerts (February 2020). A letter from Whitchurch Engineering dated July 13, 2021 serves as a technical memorandum concerning instantaneous noise level limits and includes calculations and discussion confirming that increasing the individual motorcycle noise limit to 100 decibels would be more consistent with the Community Noise Equivalent level (CNEL) applied to the project as derived in the 2018 Noise Study. The results of these studies are summarized below. The studies are also attached as Appendices to this document.

Current ambient noise conditions within the vicinity of the racetrack are due to traffic noise and standard residential noise sources (lawnmowers, power tools, etc.). Residential areas in Ferndale have a continuous noise limit set to approximately 60 dB, with a limit of 45 dB interior (City of Ferndale, 2016). Conditional noise limits are set at 70 dB by the City of Ferndale. The 2016 draft of an updated Noise Element of the Ferndale General Plan remains unadopted at this time. The existing City of Ferndale General Plan Noise Element is included with the Public Safety and Scenic Highway Elements from 1975. This analysis is concerned with adherence to the Humboldt County General Plan and the noise limits set by Table 13-C (Humboldt County, 2016). The Table lists 60 dB as the upper limit of normally acceptable noise levels for noise sources that are regularly occurring and located (eg. daily) within residential areas. A range between 60 and 75 dB is defined as normally unacceptable and over 75 dB as clearly unacceptable. The General Plan Standards for Short-term noises sources define 65 dB as the maximum permissible noise level for residentially zoned areas and 80 dB as the maximum for agriculturally zoned areas. The General Plan explicitly recognizes that it is appropriate to allow

exceptions to the short term noise levels under certain circumstances, including scenarios involving the permitting of temporary events with a Conditional Use Permit.

Noise levels measured and calculated in the referenced noise studies do not show obvious compliance with the Humboldt County General Plan. However, the General Plan notes that, "The perception of nuisance will vary based upon sound level, frequency, and fluctuation. It also depends upon the character of the sound, number of noise events, familiarity and predictability, and the attitude of the listener. CNEL and L_{max} are typically the basis for making nuisance determinations but other factors may be considered. For example, an annual high school parade may exceed residential noise levels but might not be deemed a nuisance."

For flat track racing events, the noise study resulted in a community noise equivalent level (CNEL) of 77.4 dB at the Arlington Avenue receptor and 75.7 dB at the Highway 211 receptor during peak racing conditions. The maximum noise level (L_{max}) was 85.6 dB at the Arlington Avenue receptor and 85.9 dB at the Highway 211 receptor. For concert events, the noise study resulted in a CNEL ranging from 90.8 - 100.7 dB and L_{max} values ranging from 98.0 – 101.0 dB.

Interior noise levels experienced will vary given the assortment of ages and construction types of homes in the vicinity of the project. Between 15-40 decibels of attenuation can be expected, depending on the design of the home (framing, fenestration, insulation) and materials utilized. Along Arlington Avenue, most homes are of a more recent vintage (only 2 homes appear in a photograph from 1948). On Main Street, 5th Street, and Van Ness one finds more of a mixture of older homes along with newer post-war development.

Request to increase Maximum Instantaneous Noise Limit in Mitigation Measures NOI-2, NOI-3

Since receiving approval of the Use Permit, HCFA have reached out or been contacted by a number of local and regional motorcycle racing event promoters and organizers. However, all lost interest after learning of the 90-decibel instantaneous noise limit applied under the conditions of the permit. HCFA have provided a letter of interest from promoter "Big Time Speedway", in which it is noted that they are accustomed to operating events at the Sonoma County Fairgrounds with a limit of 99 decibels. Given the difficulty experienced by HCFA in attracting promoters interested in holding events at the track, it is reasonable to conclude that the 90 dB instantaneous noise limit (included in mitigation measures NOI-2 and NOI-3) is infeasible. "Feasible" is defined in section 21061.1 of CEQA and "means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. To be feasible, a Mitigation Measure or Alternative must still preserve the possibility of satisfying most of the project objectives. The 90-decibel limit has had a chilling effect on interest amongst motorcycle racing promoters and operators. These outfits play a critical role in attracting the activity targeted under the permit. For these reasons, it is appropriate to consider raising the limit 99 dB as is being requested. This is consistent with limits applied in the American Motorcycle Association Rulebook, which includes a 98 dB/A post-race limit for 2-stroke engines and a 101 pre and post race limit for vintage classes.

Proposed Additional Mitigation Measures for Motorcycle Events

Consistent with the adaptive management provisions of the permit, HCFA have continued to investigate ways of attenuating noise from events and are offering to incorporate two additional mitigation measures designed to help reduce noise from motorcycle racing events. They include creation of two (2) sound barriers during racing events, fashioned by temporarily placing tractor trailers or strawbales (or some combination thereof) adjacent to motorcycle acceleration zones; as well as acoustic treatment of the internal wall of the grandstands using special materials designed to decrease reverberation. Though not exceeding an explicit local threshold of significance, the additional mitigation measures proposed present a practical means for helping soften event-related noise and help demonstrate a commitment to addressing community concerns. They are included as NOI-9 and NOI-10.

(a) – Less than significant with mitigation incorporated: Sensitive noise receptors in the vicinity of the Humboldt County Fairgrounds consist primarily of the neighboring residential areas. The Humboldt County General Plan lists the maximum interior noise level for residential homes as a CNEL of 45 dB. Noise exposure levels (CNEL values) below 55 dB are considered "clearly acceptable", 55dB-60 dB is considered "normally acceptable", 61-75 dB is considered "normally unacceptable", and levels above 75 dB are considered "clearly unacceptable". The short-term noise standard (L_{max}) for residentially zoned areas is 65 dB, however the Humboldt County General Plan also allows for waiver of short-term noise standards where temporary events are operated in conformance with an approved Conditional Use Permit.

For flat track racing, unmitigated CNEL values fall into the "clearly unacceptable" range for regularly occurring noise sources. Several potential mitigation measures are reviewed in the referenced noise study, including limiting the number of riders that participate in a race, adjusting the evening hour at which races stop, and requiring bikes to have new racing exhaust systems equipped. The largest reduction in resulting CNEL values can be accomplished by requiring all riders outfit their motorcycles with special exhaust system components designed to reduce sound. This typically involves use of resonators, fiberglass insulation, and baffles. This measure is being included as an operational restriction under the terms of the permit being requested and is reflected in Mitigation NOI-2. NOI-3 requires that all riders implement exhaust system treatments and submit to noise testing and verification before being allowed to compete in the races. By requiring all participating motorcycles incorporate exhaust system treatments and be tested to confirm compliance with a 99 decibel instantaneous noise limit, resulting CNEL values associated with these events are lowered considerably and brought into the bottom end of the range deemed "normally unacceptable" for regularly occurring noise sources. As already noted, the General Plan does not include an explicit threshold for infrequent noise sources tied to temporary events. For this reason, it is appropriate to view the change in noise impact (from raising the instantaneous noise limit from 90 to 99 decibels) as less than significant with mitigation incorporated. Given the limited number of events and particular venue characteristics that are needed to host events of this sort, the project is a good candidate for considering an exception to the general plan short term noise standards.

For the concert events, interior levels do not meet the general plan's maximum noise level, and the unmitigated CNEL values fall into the "clearly unacceptable" range. The mitigation measures reviewed for these events in the Noise Study Addendum Rev 2 consists of implementing a dense straw bale sound wall, ending the concerts at earlier times, and adjusting sound levels via a sound engineer. Through the implementation of the sound wall, it is possible to reduce sound impact by 21.6 dB. This very nearly brings the events into the "normally acceptable" range and into the lower end of the "normally unacceptable" range. Further mitigation measures recommended in this report include sound level monitoring and adjustment for each individual concert event. This is incorporated as NOI-4. By conducting routine sound level monitoring and adjustment during events, noise from amplified music can be kept from exceeding specific agreed upon limits. During live amplified performances, sound from instruments is ultimately run into the Public Address (PA) system which performs the principal means for amplification of the live sound after receiving signal from the mixing board. Using faders on the mixing board which control the volume of various instruments and microphones, it is possible to precisely control the overall sound levels which occur during a performance.

Other Motorsports events include Tractor Pulls, 4x4 Truck events, Go Carts, and Monster Trucks. A 2-day Monster Truck event held at the Fairgrounds in June of 2017 resulted in a number of noise complaints. A story in the local paper claimed that sound levels between 80-95 decibels were registered near the Ferndale high school gym located southwest of the racetrack. Since noise from monster trucks is essential to the spectator experience, limiting the number of events was the best feasible mitigation available to help control impacts. Conditions included in the permit and Mitigation Measure NOI-6 explicitly prohibit other motorsports events such as Tractor Pulls, 4x4 Trucks, Go Carts, and Monster Trucks

(b) – Less than significant impact: There would be minimal potential to generate excessive groundborne vibration or noise. Vibration substantially attenuates with distance such that impacts at sensitive receptors would be less than significant.

(c) – No impact: There are no public or private airports within two miles of the project site. The nearest airport to the site is Rohnerville Airport, located 6.7 miles south-east of HCF.

Mitigation Measures:

NOI-1: Concerts and Motorsports events shall end no later than 10pm. This limitation shall be made part of all event contracts. Compliance with this measure shall be documented as part of the Annual Report (NOI-8: Annual Reporting Requirement/Adaptive Monitoring).

NOI-2: During flat track racing events, racers may only use motorcycles which produce no more than **99** decibels of noise when measured 20 inches from the end of the exhaust pipe. To accomplish this, motorcycles shall be equipped with exhaust systems featuring sound reduction components, including resonators/mufflers, fiberglass insulation, and baffles.

NOI-3: During flat track racing events, noise from all participating motorcycles will be tested

and measured prior to allowing riders to use the track. Noise shall be measured using the current testing procedure found in the 2020 American Flat Track Association Rulebook (Appendix D). Noise from each motorcycle must be at or below **99** decibels. To best ensure all riders are able to comply with this requirement to compete, event promoters and participants shall be notified of the noise standard as early as possible in advance of the event.

NOI-4: During all concert events, a dense strawbale soundwall will be installed near the rear of the stage between the concert and Arlington Avenue. The soundwall will be of sufficient thickness and height to insure it provides at least 20 decibels of noise attenuation and will be verified by a registered engineer or other qualified person conducting noise testing in front of and behind the soundwall system.

NOI-5: A sound engineer will be used during all concert events. The engineer will work with event staff to ensure that amplified music does exceed CNEL values and associated maximum noise levels identified in Table 1 (see NOI-7).

NOI-6: A maximum of two (2) motorsports events will be held each year. Each "event" shall occur within the course of a single day. An additional day of racing can be allowed if all the racing on that day is by electrical motorcycles, but in no case shall the total of motorcycle racing exceed 4 days per year. Other types of motorsports events are prohibited, including (but not limited to): Tractor Pulls, 4x4 Trucks, Go Carts, and Monster Trucks.

NOI-7: The calculated CNEL noise value shall not exceed 63 decibels during flat track motorcycle racing events. During concerts, the calculated CNEL noise value shall not exceed 73 decibels. HCFA will monitor noise levels during concerts and racing events to ensure that event-related noise levels remain at or below the following limits. Noise will be measured from the locations used in the Noise Impact Study prepared by Whitchurch Engineering (shown below).

Table 1 CNEL Noise Limits

EVENT TYPE	TIME WHEN MEASUREMENT IS TAKEN	MAX. CNEL VALUE (DB)	MEASUREMENT LOCATION
Motorcycle Racing	during largest race group / heat of the day	63	Arlington Ave.
			FHS admin lot
Concerts	during main performance (headlining act)	73	Arlington Ave.
			FHS admin lot

Figure 4 Sound Measurement Locations

NOI-8: Annual Reporting Requirement/Adaptive Management Program.

By December 31st of each year, the Humboldt County Fair Association shall prepare and submit an annual report to the Director of the Planning & Building Department. The report shall detail all Concert and Motorsports events held during that year and include the following information:

- *Listing and summary of all concerts and motorsports events held.* Including the scheduled date of each event, beginning and ending times for each event, number of tickets sold and number of attendees/spectators, parking areas utilized, and event-specific noise measurements.
- *Noise measurements.* Noise levels shall be measured during all concerts and motorsports events, and readings shall be taken from the Arlington Avenue and "City of Ferndale" locations used in the Noise Impact Study prepared by Whitchurch Engineering. A noise meter similar to the type used in the Noise Study (PCE Instruments PCE-322A) shall be used. If measurements reveal noise levels exceeding the following thresholds, HCFA staff shall document the exceedance and coordinate with event staff to implement measures which consistently reduce event-related noise to levels at or below the limits in Table 2.

EVENT TYPE	TIME WHEN MEASUREMENT IS TAKEN	MAX. CNEL VALUE (DB)	MEASUREMENT LOCATION
Motorcycle Racing	during largest race group / heat of the day	63	Arlington Ave.
			FHS admin lot
Concerts	during main performance (headlining act)	73	Arlington Ave.
			FHS admin lot

Table 1 CNEL Noise Limits

- *Adaptive management.* The report shall document wherever refinement or addition of a mitigation measure or operational restriction was needed to ensure events are held in conformance with the established conditions of the permit and lease agreement. These changes shall be memorialized in standard operating procedures and thereby remain a requirement of the Conditional Use Permit.
- *Lighting.* Photographs shall be taken showing the stage and track configuration used during each event. Photographs shall be provided for events which occurred in the evening, documenting compliance with the restrictions on temporary stage lighting to prevent light spillage onto neighboring residential properties.

The report may also include correspondence from agencies affected by the events (i.e., Humboldt County Public Works, Division of Environmental Health, Sheriff's Office, California Highway Patrol, City of Ferndale Police Department, California Department of Transportation).

Note: HCFA shall submit documentation showing that events have been successfully operated in conformance with all mitigation measures, operational restrictions, and conditions of project approval for five (5) years:

The Director of Planning & Building Department may request further documentation where HCFA has not sufficiently demonstrated conformance with the terms of the permit and required mitigation measures. The Director may waive the need for submittal of future reports during subsequent years if review of the information submitted reveals strong compliance with the terms of the permit and mitigation measures.

NOI-9: Two (2) sound barriers will be created during all motorcycle racing events, fashioned by temporarily placing tractor trailers or strawbales (or some combination thereof) adjacent to motorcycle acceleration zones.

NOI-10: Acoustic treatment of the internal wall of the grandstands shall be performed using Acoustiblok viscoelastic polymer sound mitigation material or similar materials designed to decrease reverberation and noise.

Findings: With Mitigation, the project would have a **less than significant impact** on noise.

3.2.2. Discuss of Mitigation Measures, Monitoring, and Reporting Program

Mitigation Measures, Monitoring, and Reporting Program (MMRP)

All of the following mitigation measures are required to mitigate impacts from the proposed use of the County Fairgrounds for Motorsports and Concert events.

Mitigation Measure 1.

AES-1: All temporary nighttime event lighting shall be directed towards the ground and shielded to ensure no light spillage onto adjacent parcels. This restriction applies to both stage lighting used during concerts or track lighting used during motorcycle racing. To achieve compliance with this requirement, prior to installation of any temporary lighting, a lighting plan shall be reviewed and approved by the Planning & Building Department. Failure to receive approval of a lighting plan or adhere to the plan is a violation of this permit. HCFA shall notify all event promoters ahead of each event and HCFA shall Inspect all temporary lighting during setup as well as monitor compliance during operation of each event. During event season, HCFA shall document all lighting locations used and provide a report to the County Planning & Building Department detailing compliance with the lighting restrictions within 30 days of each event. The report shall include photographs of all lighting locations utilized and shall include any complaints received or feedback from neighboring property owners.

Timing for Implementation/Compliance: prior to each event

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building Department (HCP&BD)

Monitoring Frequency: To be confirmed during review of annual report submitted to Planning & Building Department.

Evidence of Compliance: Documentation, evidence, and discussion of Lighting will be included as part of the Monitoring Report required under Mitigation Measure 10.

Mitigation Measure 2.

AQ-1: Where a racing event occurs during a period with dry and windy conditions, the operator will periodically apply water or other dust suppressants to minimize the potential for dust to escape from the racetrack and fairgrounds properties.

Timing for Implementation/Compliance: On-going

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building Department (HCP&BD)

Monitoring Frequency: Each Motorsports event

Evidence of Compliance: Documentation, evidence, and discussion of compliance with event

cut off will be included as part of the Monitoring Report required under Mitigation Measure 10.

Mitigation Measure 3.

NOI-1: Concerts and Motorsports events shall end no later than 10pm.

Timing for Implementation/Compliance: On-going

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building Department (HCP&BD)

Monitoring Frequency: Each event

Evidence of Compliance: Documentation, evidence, and discussion of compliance with event cut off will be included as part of the Monitoring Report required under Mitigation Measure 10.

Mitigation Measure 4.

NOI-2: During flat track racing events, racers may only use motorcycles which produce no more than 90 decibels of noise when measured 20 inches from the end of the exhaust pipe. To accomplish this, motorcycles shall be equipped with exhaust systems featuring sound reduction components, including resonators/mufflers, fiberglass insulation, and baffles.

Timing for Implementation/Compliance: Prior to start of race/On-going

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building Department (HCP&BD)

Monitoring Frequency: Each event

Evidence of Compliance: Documentation, evidence, and discussion of compliance with exhaust system sound reduction will be included as part of the Monitoring Report required under Mitigation Measure 10.

Mitigation Measure 5.

NOI-3: During flat track racing events, noise from all participating motorcycles will be tested and measured prior to allowing riders to use the track. Noise shall be measured using the current testing procedure found in the 2020 American Flat Track Association Rulebook (Appendix D). Noise from each motorcycle must be at or below 90 decibels. To best insure all riders are able to comply with this requirement to compete, event promoters and participants shall be notified of the noise standard as early as possible in advance of the event.

Timing for Implementation/Compliance: prior to each event

Person/Agency Responsible for Monitoring: Applicant & all flat track event operators

Monitoring Frequency: To be confirmed during review of annual report submitted to Planning &

Building Department.

Evidence of Compliance: Documentation, evidence, and discussion will be included as part of the Monitoring Report required under Mitigation Measure 10.

Mitigation Measure 6.

NOI-4: During all concert events, a dense strawbale soundwall will be installed near the rear of the stage between the concert and Arlington Avenue. The soundwall shall be of sufficient thickness and height to insure it provides at least 20 decibels of noise attenuation.

Timing for Implementation/Compliance: prior to each event

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building Department (HCP&BD)

Monitoring Frequency: Each event

Evidence of Compliance: Documentation, evidence, and discussion will be included as part of the Monitoring Report required under Mitigation Measure 10.

Mitigation Measure 7.

NOI-5: A sound engineer will be used during all concert events. The engineer will work with event staff to ensure that amplified music does exceed CNEL values and associated maximum noise levels identified in Table 1.

Timing for Implementation/Compliance: prior to event/on-going

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building Department (HCP&BD)

Monitoring Frequency: Each event

Evidence of Compliance: Documentation, evidence, and discussion will be included as part of the Monitoring Report required under Mitigation Measure 10.

Mitigation Measure 8.

NOI-6: A maximum of two (2) motorsports events will be held each year. Each "event" shall occur within the course of a single day. An additional day of racing can be allowed if all the racing on that day is by electrical motorcycles, but in no case shall the total of motorcycle racing exceed 4 days per year. Other types of motorsports events are prohibited, including (but not limited to): Tractor Pulls, 4x4 Trucks, Go Carts, and Monster Trucks.

Timing for Implementation/Compliance: prior to event season/on-going

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building

Department (HCP&BD)

Monitoring Frequency: Annually

Evidence of Compliance: Documentation, evidence, and discussion will be included as part of the Monitoring Report required under Mitigation Measure 10.

Mitigation Measure 9.

NOI-7: The calculated CNEL noise value shall not exceed 63 decibels during flat track motorcycle racing events. During concerts, the calculated CNEL noise value shall not exceed 73 decibels. HCFA will monitor noise levels during concerts and racing events to ensure that event-related noise levels remain at or below the following limits. Noise will be measured from the locations used in the Noise Impact Study prepared by Whitchurch Engineering (shown below).

Table 1 CNEL Noise Limits

EVENT TYPE	TIME WHEN MEASUREMENT IS TAKEN	MAX. CNEL VALUE (DB)	MEASUREMENT LOCATION
Motorcycle Racing	during largest race group / heat of the day	63	Arlington Ave.
			FHS admin lot
Concerts	during main performance (headlining act)	73	Arlington Ave.
			FHS admin lot

Figure 5 Sound Measurement Locations

Timing for Implementation/Compliance: During event/on-going

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building Department (HCP&BD)

Monitoring Frequency: Each event

Evidence of Compliance: Documentation, evidence, and discussion of conformance with noise standards will be included as part of the Monitoring Report required under Mitigation Measure 10.

Mitigation Measure 10.

NOI-8: Annual Reporting Requirement/Adaptive Management Program. By December 31st of each year, the Humboldt County Fair Association shall prepare and submit an annual report to the Director of the Planning & Building Department. The report shall detail all Concert and Motorsports events held during that year and include the following information:

- *Listing and summary of all concerts and motorsports events held.* Including the scheduled date of each event, beginning and ending times for each event, number of tickets sold and number of attendees/spectators, parking areas utilized, and event-specific noise measurements.
- *Noise measurements.* Continuous Noise levels shall be measured during all concerts and motorsports events, and readings shall be taken from the Arlington Avenue and "City of Ferndale" locations used in the Noise Impact Study prepared by Whitchurch Engineering. A noise meter similar to the type used in the Noise Study (PCE Instruments PCE-322A) shall be used. If measurements reveal noise levels exceeding the following thresholds, HCFA staff shall document the exceedance and coordinate with event staff to implement measures which consistently reduce event-related noise to levels at or below these limits.

Table 1 CNEL Noise Limits

EVENT TYPE	TIME WHEN MEASUREMENT IS TAKEN	MAX. CNEL VALUE (DB)	MEASUREMENT LOCATION
Motorcycle Racing	during largest race group / heat of the day	63	Arlington Ave.
			FHS admin lot
Concerts	during main performance (headlining act)	73	Arlington Ave.
			FHS admin lot

- *Dust.* The report shall document whether measures were needed to prevent the escape of fugitive dust during Motorsports events. The report shall include a list and explanation of all measures taken and an analysis of their effectiveness.
- *Adaptive management.* The report shall document wherever refinement or addition of a mitigation measure or operational restriction was needed to ensure events are held in conformance with the established conditions of the permit and lease agreement. These changes shall be memorialized in standard operating procedures and thereby remain a requirement of the Conditional Use Permit.

- *Lighting.* Photographs shall be taken showing the stage and track configuration used during each event. Photographs shall be provided for events which occurred in the evening, documenting compliance with the restrictions on temporary stage lighting to prevent light spillage onto neighboring residential properties.

The report may also include correspondence from agencies affected by the events (i.e., Humboldt County Public Works, Division of Environmental Health, Sheriff's Office, California Highway Patrol, City of Ferndale Police Department, California Department of Transportation).

Note: HCFA shall submit documentation showing that events have been successfully operated in conformance with all mitigation measures, operational restrictions, and conditions of project approval for five (5) years:

The Director of Planning & Building Department may request further documentation where HCFA has not sufficiently demonstrated conformance with the terms of the permit and required mitigation measures. The Director may waive the need for submittal of future reports during subsequent years if review of the information submitted reveals strong compliance with the terms of the permit and mitigation measures.

Timing for Implementation/Compliance: Prior to December 31st of each year events are held.

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building Department (HCP&BD)

Monitoring Frequency: Annually for five years or less if waived by the Director following a finding of strong compliance with the permit terms.

To be confirmed during review of the report submitted to Planning & Building Department.

Evidence of Compliance: Documentation, evidence, and discussion of Lighting will be included as part of the Monitoring Report required under Mitigation Measure 1.

Mitigation Measure 11.

NOI-9: Two (2) sound barriers will be created during all motorcycle racing events, fashioned by temporarily placing tractor trailers or strawbales (or some combination thereof) adjacent to motorcycle acceleration zones.

Timing for Implementation/Compliance: prior to each event

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building Department (HCP&BD)

Monitoring Frequency: Each event

Evidence of Compliance: Documentation, evidence, and discussion will be included as part of the Monitoring Report required under Mitigation Measure 10.

Mitigation Measure 12.

NOI-10: Acoustic treatment of the internal wall of the grandstands shall be performed using Acoustiblok viscoelastic polymer sound mitigation material or similar materials designed to decrease reverberation and noise.

Timing for Implementation/Compliance: prior to holding the first motorcycle racing event

Person/Agency Responsible for Monitoring: Applicant / Humboldt County Planning & Building Department (HCP&BD)

Monitoring Frequency: Annually for first 5 years during review of Annual Report or during event inspections.

Evidence of Compliance: Documentation, evidence, and discussion will be included as part of the Monitoring Report required under Mitigation Measure 10.

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Big Time Speedway Presents LLC (February 2022) *Re: Humboldt County Fairgrounds – AMA District 36 Motorcycle Racing Event on September 17, 2022*

2. Appendices

2.1. Noise Impact Study – Flat Track Racing at Humboldt County Fairgrounds

2.2. Noise Study Addendum – Open Air Concerts (Rev. 2 – February 11, 2020)

2.3. Plan of Operations

2.4. Humboldt County General Plan – Chapter 13 – Noise Element

2.5. Noise Simulation Letter – Whitchurch Engineering (July 2021)

2.6. Letter of Interest – Big Time Speedway Presents, LLC (February 2022)

WHITCHURCH ENGINEERING

610 9th Street
Fortuna, CA 95540
Phone: (707) 725-6926

Noise Impact Study

Flat Track Racing at Humboldt County Fairgrounds

Prepared for:

Humboldt County Fairgrounds
1250 5th Street
Ferndale, CA 95536

Prepared by:

Whitchurch Engineering, Inc.

610 9th St.

Fortuna, CA 95540

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Acronyms and Abbreviations

APN	Assessor's Parcel Number
AMA	American Motorcycle Association
CNEL	Community Noise Equivalent Level
FTA	Federal Transport Administration
HCF	Humboldt County Fairgrounds
HCGP	Humboldt County General Plan
INC.	Incorporated

1 Overview

The Humboldt County Fairgrounds (HCF) are an open-air venue used for a variety of events including dog shows, art expositions, agricultural fairs, and county amusement fairs. The premises include a dirt flat track racing circuit used for including horse racing, and motorcycle racing events. HCF were built in 1896 and have been home to the annual Humboldt County Fair. The purpose of this analysis and report is to determine if normal flat track motorcycle racing operations generate excessive noise, which significantly impacts nearby residents as defined by the Humboldt County General Plan (HCGP).

Noise generated during racing has potential negative impacts on the surrounding area, which includes a residential area in close proximity to the south.

This report will determine existing ambient noise levels and evaluate if noise levels occurring during proposed flat track motorcycle racing exceed the standards set in the HCGP. If mitigations are determined to be necessary, recommendations of mitigation measures will be included in this report.

2 Project Description

Name and Location of Facility:

Humboldt County Fairgrounds
1250 5th Street
Ferndale, CA 95536

The objective of this project is to determine and report the potential noise levels produced during flat track motorcycle racing and propose mitigations if significant noise impacts are identified at HCF in Ferndale, CA. This report addresses the following objectives.

1. Conduct a noise analysis per HCGP.
2. Determine if mitigation efforts are needed for motorcycle racing.
3. Make recommendations for the implementation of said mitigation efforts.

2.1 Current Usage and Hours of Operation

HCF have conducted horse races, and other small racing events at the dirt flat track and are expanding the variety of races to include dirt flat track motorcycle racing.

Flat track motorcycle racing involves several riders (up to 18) racing on a dirt, oval flat track (approximately ¼ mile). Motorcycle engine displacement can range from 250cc-450cc in a single cylinder format (in the case of HCF events). In recent years, flat track racing has become more popular, and HCF would like to capitalize on the popularity of the sport to bring new business to HCF and the surrounding community.

Flat track motorcycle racing adheres to rules and requirements set by the American Motorcyclist Association (AMA). The requirements set in their rule book include sound limits and testing procedure to ensure all participant machines adhere to the sound limit (AMA, 2017).

The HCF hours and days of operation vary based on what events are scheduled. Flat Track racing will occur in the early afternoon into the evening (≈2:00pm-10:00pm). Late night racing until 10:00pm will be avoided if possible.

The HCGP determines the desirable noise level upper limits that any project must remain below during active hours to be an allowable activity. These limits are found in the following noise analysis (Section 3).

2.2 Setting

HCF is located on the northwest edge of Ferndale, CA which is situated on CA. Highway 211. HCF is made up of three other parcels to the north, northwest, and west with an approximate total area of 41 acres. The parcel which contains the racing track is listed as APN 030-081-006-000. The parcel is approximately 14 acres, and is classified as Public Land, Schools, and Non-Taxable Entities. The parcel is not in a Coastal Zone and is located within Township T2N R2W, and Section S2 T2N R2W.

HCF is bordered by agricultural land to the north and west. The south and east boundaries of the fairgrounds border residential areas. The southern residential area is approximately 0.05 miles from the flat track, situated on Arlington Avenue. The eastern parcel is approximately 0.2 miles from the track, this area includes Ferndale Highschool (APN 030-121-005-000). The connected parcel consists of primarily open field on the northern portion of Ferndale High School.

Figure 1:Ferndale Fairgrounds Area Map – Green boundary being the extent of the fairgrounds, and red boundary being the race track area.

3 Noise Analysis

HCGP requirements for a noise study are based on the U.S. Department of Housing and Urban Development Noise Guidebook, or its equivalent (Department of Housing and Urban Development, 2013). The noise study must address the following requirements.

- Measure Community Noise Equivalent Level (CNEL)
- Maximum Noise Level (L_{max}) at surrounding property lines
- If feasible, include nearby sensitive receptor locations

The AMA set a limit of 105 dB measured on the 'A' scale for all motorcycles participating in motorcycle flat track racing. This measurement is conducted in accordance with flat track sound testing procedure found in the American Flat Track Rulebook (Appendix D). The race administration will enforce these guidelines and perform testing on all participating vehicles.

Current ambient noise conditions within the vicinity of the track are due to traffic noise and standard residential noise sources (lawnmowers, power tools, etc.). Residential areas in Ferndale have a continuous noise limit set to approximately 60 dB, with a limit of 45 dB interior (City of Ferndale, 2016). Conditional noise limits are set at 70 dB by both the City of Ferndale and the HCGP (Humboldt County, 2018). The Noise Element of the Ferndale General Plan is currently in draft format, and therefore does not apply to this project. This report will be concerned with adherence to the HCGP and the noise limits set by Table 13-C (Humboldt County, 2016). This limit in question is 60 dB which is the upper limit of normally acceptable noise levels in residential areas. The normally unacceptable limit is 70 dB which may be permitted per a Conditional Use permit for temporary events.

Sensitive receptors are defined as land uses or users that are interrupted (rather than impacted) by relatively low levels of noise (City of Ferndale, 2016). Ferndale High School falls under this definition of sensitive receptor. Acceptable sound limits for Schools, Libraries, Churches, Hospitals, Nursing Homes are at max, 70 dB, with an interior limit of 45 dB per the HCF. Races are not anticipated to be scheduled during regular school hours.

3.1 Equipment Used

The noise meter used for this study is a PCE-322A. Specifications for this device are found in Appendix A attached to this document.

The PCE-322A comes calibrated from PCE Instruments to meet the standards for sound meter set by IEC 61672-1 for a Class II meter (International Electrotechnical Commission, 2013).

3.2 Community Noise Equivalent Level

CNEL is a noise measurement system calculated using experimental dBA readings as opposed to computer calculations as other measurement systems are. It is calculated as follows (Caltrans, 2013).

$$CNEL = 10 * Log_{10}\left[\left(\frac{1}{24}\right)\sum_{i=1}^{24} 10^{(L_{eq}(h)_i + W_i)/10}\right]$$

Where

CNEL = Community Noise Equivalent Level (dB)

$L_{eq}(h)_i$ = Equivalent Noise level at the *i*th hour(dB)

W_i = Time weighting factor

[= 0 (7am-7pm), = 4.77 (7pm-10pm), = 10 (10pm to 7am)]

The CNEL is used as a metric to evaluate the normally experienced noise level by receptors in a pre-determined location.

3.3 Total Sound Pressure Level

Sound pressure level (SPL) is a decibel (dB) measurement of the noise level in an area. In the case of this study, to simulate noise levels resulting from racing conditions, the noise level experienced from three motorcycles were taken, and assumed to be identical for multiple motorcycles. The following equation is used to calculate the noise level experienced for average race conditions.

$$SPL_{Total} = SPL_1 + 10\log_{10}(N)$$

Where

SPL_{Total} = Total noise level experiences (dB)

SPL_1 = Sound pressure level of one source (dB)

N = Number of identical sources

3.4 Field Analysis

A representative of Whitchurch Engineering, Inc. conducted a noise sampling survey between the flat track and the surrounding parcels to determine typical day-time noise levels on both 6/21/2018 during the hours of 2pm-4pm, and 6/22/2018 during the hours of 8am-10am. The locations of measurement on Arlington Avenue and Highway 211 are found in Figure 2.

Figure 2: Area map of Arlington Avenue and City of Ferndale noise testing sites

3.4.1 Procedure

Ambient sound testing was conducted in the morning (8:00-10:00am) to set a baseline, and during the same time period as racing would occur (2:00-4:00pm). Measurements were made on acoustically absorptive ground at a height of approximately 1.2 m (4 ft) with no nearby reflecting surfaces. Monitoring was conducted in accordance with Humboldt County General Plan for a duration of 15 minutes (Humboldt County, 2018).

Ambient noise level measurements were made at the Arlington Avenue location indicated on Figure 2.

Racing normally continues into the evening, up to 10:00pm at the latest per communication with the HCF director. Peak noise levels are assumed to remain consistent for the duration of racing events.

Exceedance testing to determine noise levels during racing conditions were conducted from the same location on Arlington Avenue. A secondary reading was taken between the race course and CA Highway 211 to estimate noise levels within the City of Ferndale (marked in Figure 2). The accumulative SPL equation from Section 3.3 was used to calculate a simulated total noise level

experienced during regular racing conditions with a maximum amount of motorcycles (18 vehicles). These adjusted values are reported in Section 4.

4 Results

4.1 Raw Ambient Monitoring Data

Ambient conditions were monitored in 2 second intervals for the time periods specified in Section 3.4.1. Table 1 below includes the pertinent noise analysis data taken between Arlington Avenue and the HCF. These results represent the maximum and minimum ambient noise levels during both the assumed low traffic time period and exceedance study period.

Table 1: Ambient Noise monitoring results Arlington Avenue

8:00am – 10:00am Study Period		
Parameter	**Level (dB)**	**Time (HH:MM)**
L_{min}	38.2	7:19
L_{max}	78.7	7:21
2:00pm – 4:00pm Study Period		
Parameter	**Level (dB)**	**Time (HH:MM)**
L_{min}	38.7	2:17
L_{max}	76.9	3:41

4.2 Noise Impact on the Surrounding Area

Noise impact on Arlington Avenue was calculated to determine base line conditions for the surrounding area.

4.2.1 Ambient Noise Impact

Ambient noise impact values are based on the study periods listed in Section 3.4.1. These values have been processed and calculated using the equations found in Section 3, to determine background community noise equivalent levels and sound pressure levels.

Table 2: Noise Impact measured and calculated results measured on the property line of Arlington Avenue.

8:00am – 10:00am Study Period	
Parameter	**Level (dB)**
L_{max}	78.7
L_{eq}	55.5
CNEL	62.2
2:00pm – 4:00pm Study Period	
Parameter	**Level (dB)**
L_{max}	76.9
L_{eq}	54.4
CNEL	61.0

The L_{eq} calculated during the 8:00am-10:00am period was used as a baseline for non-racing conditions, while the 2:00pm-4:00pm ambient noise conditions were used for further calculations occurring during racing conditions.

4.2.2 Exceedance Testing

Exceedance testing was conducted per section 3.4.1. Values included in Table 3 are derived from unprocessed field data.

Table 3: Noise levels observed during triple motorcycle racing conditions.

Exceedance Testing	
Arlington Avenue	
Parameter	**Level (dB)**
L_{min}	46.0
L_{max}	85.6
Highway 211	
Parameter	**Level (dB)**
L_{min}	44.7
L_{max}	85.9

The data was processed and then pertinent values are calculated per Section 3. These values were then adjusted per Section 3.4.1 to simulate conditions during peak racing conditions.

Table 4: Noise Impact measured and calculated results on the property line Arlington Avenue, and Highway 211. Adjusted values made for maximum racing conditions at the limit of active motorcycles possible.

Arlington Avenue	
Parameter	**Level (dB)**
L_{max}	85.6
$L_{max,\ adjusted}$	93.4
L_{eq}	69.6
CNEL	69.7
$CNEL_{adjusted}$	77.4
Highway 211	
Parameter	**Level (dB)**
L_{max}	85.9
$L_{max,\ adjusted}$	93.7
L_{eq}	67.9
CNEL	68.0
$CNEL_{adjusted}$	75.7

Based on assumed wall construction of an average single-family residence a noise level loss of 40 dB is expected (Gypsum Association, 2006). Based on the observed noise levels at the exterior of the building, the interior noise experiences are estimated to be between 14.4dB – 53.4dB during peak, intermittent events.

Exterior noise levels experienced during race conditions all fall within the interior 45dB limit for continuously experience noise based upon CNEL and $CNEL_{adjusted}$ (29.7dB - 37.4dB). L_{max} levels are instantaneous and not used for continual noise level adherence.

L_{max} is used in determining adherence to short-term noise standards. The limit set within the HCF is 65 dB from 6:00am – 10:00pm (Humboldt County, 2018). Both during exceedance testing, and simulated maximum racing conditions, this limit is exceeded. This limit can be disregarded with the acceptance of a Conditional Use Permit (Humboldt County, 2018).

5 Potential Attenuation Measures

Noise impacts on the residential community on Arlington Avenue and the town of Ferndale were determined to have some impact during flat track racing conditions. Possible mitigations and their associated costs are described below. Mitigation design is outside of the scope of this report.

5.1 Reduced Active Racers

Reducing the number or racers on the track per heat can reduce experienced noise levels both in terms of CNEL and L_{max} significantly. Table 5 outlines expected noise reduction along Arlington Avenue by limiting the number of riders per race.

Table 5: Noise attenuation values through reduction in active racers

Racers	L_{max} (dB)	CNEL (dB)
18	93.4	75.2
15	92.6	74.5
12	91.6	73.6
9	90.4	72.4
6	88.6	70.8

5.2 Earlier Racing

The nature of calculating CNEL utilizes sound adjustment values for evening hours. By shifting the time of racing to normal day time hours and ensuring racing does not proceed late into the evening hours, CNEL can be reduced. Table 6 outlines the possible reduction in CNEL based upon ceasing racing earlier in the evening.

Table 6: CNEL reduction based upon the cessation of racing earlier in the evening.

Hour of Racing cessation	CNEL (dB)
10pm	75.2
9pm	74.3
8pm	73.0
7pm	71.1
6pm	70.3

5.3 Racing Exhaust Measures

New racing exhaust systems (including full exhaust piping and mufflers) have been designed to consider both power and noise limits set on race courses. There are several measures that can be taken to reduce noise from the exhaust. These include, but are not limited to repacking the exhaust, fitting a baffle, increasing the length of the muffler, installing a new exhaust system utilizing sound reduction components (resonators, fiberglass insulation, baffles). The range of effectivity can vary from

approximately 2dB – 20dB reduction per motorcycle (NIET, 2017). These mitigations can vary in cost from approximately $9-$600 per motorcycle. Expected reduction in CNEL of the low end and high end of mitigations are found in Table 7.

Table 7: Effect of exhaust measure mitigations on CNEL experienced by Arlington Avenue residents.

Exhaust Measure	CNEL (dB)
Repacking	68.4
Full exhaust system	62.4

5.4 Combination of Mitigation

A combination of attenuation measures could potentially attain HCGP required levels of CNEL. Table 8 reports the reduction of noise both through the number of active racers and ceasing racing early in the evening.

Table 8: Combined noise attenuation mitigation on CNEL from reducing active racers, ceasing racing earlier in the evening, and the low end and high-end exhaust noise reduction measures (repacking exhaust/full exhaust system replacement).

	Hour of racing cessation	10pm	9pm	8pm	7pm	6pm
		$CNEL_{mitigated}$				
Racers	18	75.2	74.3	73.0	71.1	70.3
	15	74.5	73.5	72.2	70.5	69.6
	12	73.5	72.2	70.5	69.6	68.6
	9	72.4	71.5	70.3	68.6	67.9
	6	70.8	69.9	68.8	67.3	66.7
Repacking	**Hour of racing cessation**	**10pm**	**9pm**	**8pm**	**7pm**	**6pm**
		$CNEL_{mitigated}$				
Racers	18	73.4	72.4	71.2	69.4	68.7
	15	72.6	71.7	70.5	68.8	68.1
	12	71.7	70.8	69.6	68.0	67.4
	9	70.6	69.7	68.6	67.1	66.5
	6	69.1	68.3	67.3	66.0	65.4
Full Exhaust system	**Hour of racing cessation**	**10pm**	**9pm**	**8pm**	**7pm**	**6pm**
		$CNEL_{mitigated}$				
Racers	18	62.4	62.4	62.3	62.3	62.2
	15	62.3	62.3	62.2	62.2	62.2
	12	62.2	62.2	62.2	62.2	62.2
	9	62.0	62.1	62.1	62.1	62.1
	6	61.9	62.0	62.0	62.1	62.1

Due to the nature of assuming the L_{eq} during non-racing hours is based upon day time experimental data, L_{eq} assumed becomes higher than L_{eq} experimental. This results in lower CNEL for racing which proceeds later into the evening when the higher experimental L_{eq} is used for calculation over the lower calculated L_{eq} experienced from racing conditions.

Adjusting experimental data for exhaust measures cannot be adequately modelled with a direct reduction in experimental sound levels, these results are preliminary, and subject to change with more extensive testing.

5.5 Sound Wall

A sound wall is a common mitigation technique used to attenuate intrusive sound from high traffic areas. Sound walls can be made from a variety of materials and can reduce noise levels received up to 20 dBA for thin walls, and 23 dBA for berms (Caltrans, 2013). The Federal Transit Administration estimates that sound walls are approximately \$25-\$35 per ft^2 not accounting for design and costs (Federal Transit Administration, 2006). This alternative is most likely cost prohibitive.

6 Compliance with Humboldt General Plan

This report is compliant with the guidelines set by the Humboldt County General Plan. These include the values reported in Section 3, as well as guidelines founds within The Noise Guidebook (U.S. Department of Housing and Urban Development, 1991).

- L_{max} and CNEL
- Analysis of the characteristic of the project in relation to noise levels
- Feasible mitigation
- Projected noise impacts

7 Conclusion and Recommendations

After noise testing in accordance with the Humboldt County General Plan was conducted, it has been determined that noise impacts occurring from motorcycle flat track racing require mitigation. Noise levels are within acceptable standards for interior noise based on building wall noise attenuation data, but exterior noise is not within normally acceptable limit of 60 dB but not a conditionally approved noise limit of 70 dB. However, if a Conditional Use Permit is acquired, temporary exceedances can be disregarded. It is recommended that a combination of noise attenuation measures be implemented to limit harmful noise level exposure to the surrounding residences. Noise from the motorcycle flat track racing can be reduced to acceptable levels per the Humboldt County General Plan after implementation of the proper noise attenuation measure or utilizing a combination of mitigation measures.

8 References

1. American Motorcycle Association (2018). “American Flat Track Racing Rulebook”, AMA (June 16, 2018).
2. Caltrans (2013). “Technical Noise Supplement to the Traffic Noise Analysis Protocol”, Caltrans (June 20, 2018).
3. Caltrans (1995). “Traffic Noise Attenuation as a Function of Ground and Vegetation”, Caltrans (July 5, 2018).
4. City of Ferndale (2016). “City of Ferndale Draft General Plan – Noise & Air Quality Elements”, City of Ferndale (June 20, 2018).
5. Federal Transit Administration (2006). “Transit Noise and Vibration Impact Assessment”, United Sates of American Department of Transportation, (July 7, 2018).
6. Gypsum Association (2006). “Fire Resistance Design Manual and Sound Control: GA-600-2006”, (June, 28, 2018).
7. Humboldt County Planning Commission (2017). “Chapter 13. Noise Element, Humboldt County General Plan”, Humboldt County (June 24, 2018).
8. International Electrotechnical Commission (2013). “Electroacoustics – Sound Level Meters – Part 1: Specifications”. (June, 10 2018).
9. U.S. Department of Housing and Urban Development (1991). “The Noise Guidebook”, U.S. Department of Housing and Urban Development (June 29, 2018).

Appendix A: PCE-322A Noise Meter

Figure 3: PCE-322A noise meter used in study

Table 9: PCE-322A noise meter specifications

Specification	
Standard Applied	IEC61672-1 CLASS2
Accuracy	±1.4dB
Frequency Range	31.5Hz - 8KHz
Dynamic Range	50dB
Memory	32700
Level ranges	LO:30dB - 80dB
Med	50dB - 100dB
Hi	80dB - 130dB
Auto	30dB - 130dB
Fequency Weighting	A/C
Time Weighting	FAST (125ms), SLOW (1s)
Microphone	1/2 inch electret condenser microphone
Analog output	AC/DC outpus from earphone outlet
	AC = 1 Vrms, DC = 10mV/dB]

Appendix B: Noise Study Data and Calculations

Appendix C: Humboldt County General Plan Pertinent Code

Appendix D: Area Maps

Figure 4: Full page Ferndale Fairgrounds Area Map – Green boundary being the extent of the fairgrounds, and red boundary being the race track area.

Figure 5: Full Page area map of Arlington Avenue and City of Ferndale noise testing sites

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Noise Study Addendum

Open Air Concerts

Rev. 2 – February 11, 2020

Prepared for:

Humboldt County Fairgrounds
1250 5th Street
Ferndale, CA 95536

Prepared by:

Whitchurch Engineering, Inc.

610 9th St.

Fortuna, CA 95540

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Acronyms and Abbreviations

APN	Assessor's Parcel Number
HCF	Humboldt County Fairgrounds
HCGP	Humboldt County General Plan
INC.	Incorporated

1 Overview

This noise Addendum is in reference to the original noise study conducted for HCF in regards to flat track motorcycle racing. The Humboldt County Fairgrounds (HCF) are an open-air venue used for a variety of events, included by not limited to the Annual County Fair, auctions, personal events, motorsports, concerts, community events (Highland games, Rodeos), and a variety of expos. The purpose of this Addendum is to address the potential noise impact resulting from open air concerts conducted on the dirt flat track field. Mitigations for potential noise impact will be included.

2 Project Description

Name and Location of Facility:

Humboldt County Fairgrounds
1250 5th Street
Ferndale, CA 95536

HCF is used by the community for a variety of events throughout the year. The grounds are upkept on a regular basis, including maintenance on all enclosed buildings, open air structures, and the dirt race track.

The race track is surrounding by the grand stands and are associated with racing and open-air events located on the open field.

HCF will be adding the following events to their calendar.

1. Musical events (10/year)
    - Musical events at HCF occur on the dirt flat track. Seating expands to the surrounding area, including approximately 2500 in the stands, 1500 on the asphalt, and the surrounding grass area (≈5000).

This project will include the potential noise impact from musical events on the surrounding community to determine if mitigation is necessary.

2.1 Setting

HCF is located on the northwest edge of Ferndale, CA which is situated on CA Highway 211. HCF is made up of three other parcels to the north, northwest, and west with an approximate total area of 41 acres. The parcel which contains the racing track is listed as APN 030-081-006-000. The parcel is approximately 14 acres, and is classified as Public Land, Schools, and Non-Taxable Entities. The parcel is not in a Coastal Zone and is located within Township T2N R2W, and Section S2 T2N R2W.

HCF is bordered by agricultural land to the north and west. The south and east boundaries of the fairgrounds border residential areas. The southern residential area is approximately 0.05 miles from the flat track, situated on Arlington Avenue. The eastern parcel is approximately 0.2 miles from the track, this area includes Ferndale Highschool (APN 030-121-005-000). The connected parcel consists of primarily open field on the northern portion of Ferndale High School.

Figure 1: Ferndale Fairgrounds Area Map – Green boundary being the extent of the fairgrounds, and red boundary being the race track area.

3 Noise Analysis

Refer to Section 3 of the original HCF Noise Study for noise study variable requirements. These variables are based on the U.S. Department of Housing and Urban Development Noise Guidebook, or its equivalent (Department of Housing and Urban Development, 2013). Noise limits set by the Humboldt County General Plan (HCGP) are included for the surrounding area. Ambient noise conditions experienced along the perimeter of the HCF near the dirt flat track are also found in Section 3. These values will be used in calculations as a baseline to determine noise impacts experienced on the surrounding parcels.

Refer to Sections 3.2-3.3 for the equations used in calculations to determine noise impact.

3.1 Estimating Concert Noise Levels

It is not feasible to take field measurements of noise levels experienced during a concert as it would be time and cost prohibitive. In lieu of experimental data, noise levels observed in other studies will be used. Noise levels typically experience during concerts range from 95 – 110 dB (Health and Safety Authority, 2007).

To apply the methodology found in the Section 3 of the original Noise Study, the full range of probable noise levels were distributed across an hour time period. This hour-long period was assumed to apply to each hour of which the concerts would be running. Based on communication with HCF administration, concerts will begin from 6-7pm and continue until 10-10:30pm.

It is assumed that sound rebounding off of the grand stands will result in an increase in sound levels. This is due to rebounded sound adding to the sound level from the primary source (Caltrans, 2013). To model a conservative estimate of noise levels, it was assumed that noise levels would increase by 3 dB due to rebounding sound from the grand stands.

The concerts taking place at HCF will feature majorly instrumental bands. Modern studies of noise typically are based on large scale shows featuring popular musicians and DJs whose music is generated either digitally or through large scale amplification systems. While concerts at HCF will include some form of amplification, it has been assumed that it these systems will not be generating the same noise level as larger shows. Small instrumental bands concerts typically generate noise ranges between 90 – 98dB (Health and Safety Authority, 2007).

To include all of these assumptions, several cases were modelled, a base case, the base case with the addition of reflection, small concert, and a small concert with the addition of reflection.

Each case was analyzed using the procedure outlined in Section 3 of the original Noise Study.

4 Results

To conform to the format found in Section 4 of the initial noise study, required variables will be addressed which affect the community noise level.

Table 1: Noise Impact experienced during the considered noise generation cases.

Analysis Case	Base Case	Reflection addition	Small Concert	Small Concert Reflected
Parameter	**Level (dB)**	**Level (dB)**	**Level (dB)**	**Level (dB)**
L_{max}	110.0	113.0	98.0	101.0
L_{eq}	104.5	107.5	94.6	97.6
$L_{eq,\ background}$	55.5	55.5	55.5	55.5
CNEL	100.7	103.7	90.8	93.8

Based on assumed wall construction of an average single-family residence a noise level loss of 40 dB is expected (Gypsum Association, 2006). Based on the estimated noise levels at the exterior of the building, the interior noise experiences are estimated to be between 58dB – 73dB during peak, intermittent events.

Exterior noise levels experienced during performances will not result in interior noise levels below the **45dB** limit for continuously experience noise based upon CNEL (50.8dB – 60.7dB). L_{max} levels are instantaneous and not used for continual noise level adherence.

L_{max} is used in determining adherence to short-term exterior noise standards. The limit set within the HCGP is **65dB** from 6:00am – 10:00pm (Humboldt County, 2018). Based on estimated concert noise levels from studies, this limit is exceeded in all cases (98.0dB - 113.0dB). This limit can possibly be disregarded with the acceptance of a Conditional Use Permit (Humboldt County, 2018).

Noise levels are experienced on a logarithmic scale by the human ear. An increase in noise levels of 10 dB is perceived as being twice as loud (Caltrans, 2013). Experienced CNEL noise levels, in reference to the noise limit, range from readily perceptible increase (+5dB) to almost 3 times as loud (+15dB). This is an estimation, and it is entirely possible that an experienced sound engineer will be able to attenuate noise levels to an acceptable level.

5 Potential Attenuation Measures

Noise impacts on the residential community on Arlington Avenue and the town of Ferndale were determined to have impact during concert performances. Possible mitigations and their associated costs are described below. Mitigation design is outside of the scope of this report.

5.1 Earlier Concerts

The nature of calculating CNEL utilizes sound adjustment values for evening hours. By shifting performance times to day time hours and ensuring events do not proceed late into the evening hours, CNEL can be reduced. Table 2 outlines the possible reduction in CNEL based upon limiting the hours of concerts to the early evening.

Table 2: Attenuation of Noise levels based on cessation of musical events earlier in the evening.

	Hour of cessation	10pm	9pm	8pm	7pm
		$CNEL_{mitigated}$			
Scenario	Base Case	100.7	99.2	96.8	90.7
	Reflection Addition	103.7	102.2	99.8	93.7
	Small Concert	90.8	89.3	86.8	80.9
	Small Concert Reflection Addition	93.8	92.3	89.8	83.8

5.2 Sound Wall

A sound wall is a common mitigation technique used to attenuate intrusive sound from high traffic areas. Sound walls can be made from a variety of materials and can reduce noise levels received up to 20 dBA for thin walls, and 23 dBA for berms (Caltrans, 2013). The Federal Transit Administration estimates that sound walls are approximately \$25-\$35 per ft^2 not accounting for design and costs (Federal Transit Administration, 2006). This alternative is most likely cost prohibitive due to the potential height and length required by the site to shield the nearby residences.

A possible alternative to a permanent, hard material sound wall would be a temporary dense straw bale wall. Dense straw bales can provide effective noise attenuation, and are not cost prohibitive. Several options for varied placement of the sound wall were analyzed to determine noise attenuation with varied distance from the performance stage. Results of the calculations can be found in Table 3 below. The average noise reduction reported is a combination of all frequencies mitigated through the use of a sound wall (i.e. bass, midrange).

Table 3: Noise Attenuation Average with the installation of a Straw bale Sound Wall

Scenario	Average Noise Attentuation (dB)	Attenuated Noise CNEL (dB, small concert, reflected)
Near Concert	21.6	72.2
Within Racetrack	19.6	74.2
Farside of Track	17.9	75.9
Nearside of Stables	18.2	75.6
Fence Line	18.8	75.0

The implementation of the straw bale sound wall brings the level of noise into the "normally unacceptable" range.

5.3 Sound Level Monitoring and Adjustment

Through the use of a sound meter, the sound levels experienced in the surrounding area can be determined during a sound check. By determining these levels before the concert, adjustments can be made to reduce the sound level through a variety of means. A sound engineer can adjust the levels of amplification, as well as adjust the positioning of speakers to reduce the sound directed towards the surrounding area.

5.4 Combination of Mitigation

Through the combination of several mitigation options, the attenuation of noise can be increased to more desirable levels. Combining both the analysis of the earlier concerts and the straw bale wall results in higher mitigate, which the results can be found in Table 4 below.

Table 4: Noise Attenuation of Combination of mitigation including a sound wall and earlier concert cessation times.

	Hour of racing cessation	10pm	9pm	8pm	7pm
		$CNEL_{mitigated}$			
Scenario (Small concert reflection)	**Near Concert**	72.2	70.7	68.2	62.2
	Within Racetrack	74.2	72.7	70.2	64.2
	Farside of Track	75.9	74.4	71.9	65.9
	Nearside of Stables	75.6	74.1	71.6	65.6
	Fence Line	75.0	73.5	71.0	65.0

6 Conclusion and Recommendations

This addendum follows the same methodology used in the original noise study prepared for HCF in regards to flat track motorcycle racing. Based on referenced typical noise ranges experienced during musical concerts, there is a potentially significant noise impact on the surrounding residents on Arlington Avenue, and in the town of Ferndale. The mitigation measures reviewed for these events within this Noise Addendum consists of implementing a dense straw bale sound wall, ending the concerts at earlier times, and adjusting sound levels via a sound engineer. Through the implementation of the sound wall, it is possible to reduce sound impact by 21.6 dB. This very nearly brings the events into the "normally acceptable" range and into the lower end of the "normally unacceptable" range. Combining both the sound wall, and an earlier cessation of events time, it is possible to bring these events into the "normally acceptable" range of noise. Interior noise levels would be acceptable with the assumed noise attenuation resulting for standard building construction and exterior noise level mitigation. We recommend the implementation of a dense straw bale sound wall near the rear of the stage between the concert and Arlington Avenue. Additionally, concerts should be scheduled to end on or before 10 pm. Further attenuation may be possible with monitoring of preconcert noise levels with a calibrated noise meter, adjustment of the volume and positioning of the amplification system and speakers to reduce impacts to the nearby residents. A Conditional Use Permit should be also acquired, to allow for temporary "normally acceptable" exceedances for the potential 10 events a year. Through this combination of mitigations and permitting, sounds levels not considered a nuisance by the Humboldt County should be able to be obtained in all analysis cases.

7 References

1. Caltrans (2013). “Technical Noise Supplement to the Traffic Noise Analysis Protocol”, Caltrans (June 20, 2018).
2. Caltrans (1995). “Traffic Noise Attenuation as a Function of Ground and Vegetation”, Caltrans (July 5, 2018).
3. Federal Transit Administration (2006). “Transit Noise and Vibration Impact Assessment”, United States of American Department of Transportation, (July 7, 2018).
4. Gypsum Association (2006). “Fire Resistance Design Manual and Sound Control: GA-600-2006”, (June, 28, 2018).
5. Health and Safety Authority (2007) “The Noise of Music – Sound advice for music and entertainment sectors – Guidance on how to comply with the Safety, Health and Welfare at Work (General Application) Regulations 2007”. Health and Safety Authority, Dublin (November 7, 2018).
6. Humboldt County Planning Commission (2017). “Chapter 13. Noise Element, Humboldt County General Plan”, Humboldt County (June 24, 2018).
7. U.S. Department of Housing and Urban Development (1991). “The Noise Guidebook”, U.S. Department of Housing and Urban Development (June 29, 2018).

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Plan of Operations
For
Humboldt County Fairgrounds
Conditional Use Permit,
Motorsport Events and Concerts

1250 5th Street
Ferndale, California 95536

May 14, 2019 Rev 0

Prepared for: **Humboldt Bay Harbor Commission**
Prepared By: Eric Allen Date: May 14, 2019
Checked By: Jeff Laikam Date: May 14, 2019

Attn: Richard Conway, General Manager Humboldt County Fair Association

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References

Reference 1: Initial Study and Proposed Mitigated Negative Declaration

Reference 2: Noise Impact Study

Reference 3: Humboldt County Fairgrounds Expanded Parking Plan

Reference 4: Humboldt County Fairgrounds Hazardous Waste Business Plan

Abbreviations List

FFD Ferndale Fire Department

FPD Ferndale Police Department

WEI Whitchurch Engineering Incorporated

IS Initial Study

CFSA California Fair Service Authority

NIS Noise Impact Study

HCFG Humboldt County Fairgrounds

HCFA Humboldt County Fair Association

Definitions

Attendees: People who pay for tickets and enjoy the fair as general population.

Participant: People associated with acts, activities, rides, vendors or other professional fair engagements.

Project Description:

The purpose of this plan is to provide general operational details for the events that are held at Humboldt County Fairgrounds and specific details for motorsports and concert events. The Humboldt County Fairground (HCFG) events, activities, resources, procedures, and other logistics will be documented for reference throughout the year for all of the facilities. The focus will be on the operations plans for motor sports and concerts which will utilize the grandstands and oval track facilities.

Event Specific Information about Motorsports and Concerts Held at the Grandstands:

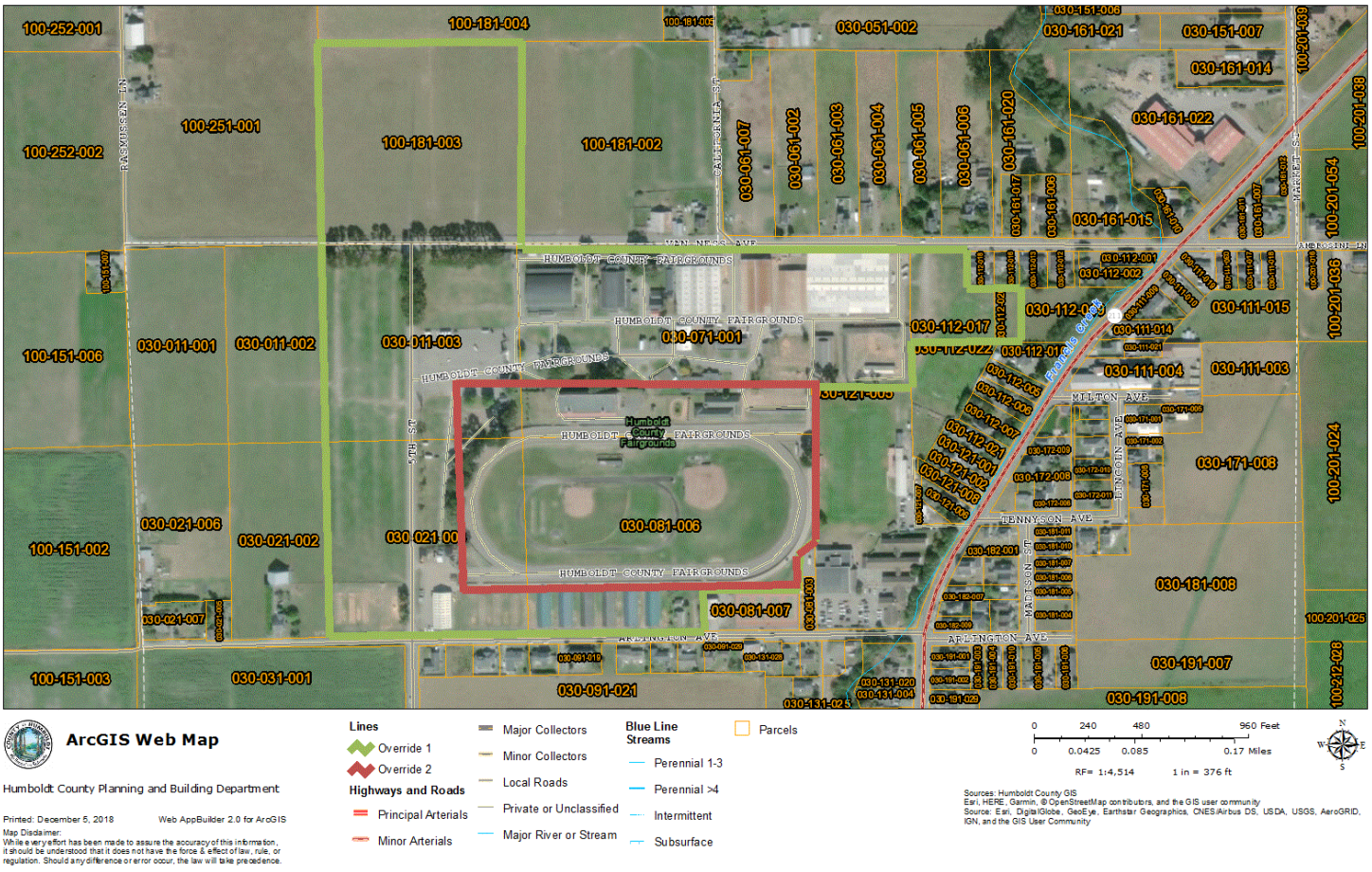


Figure 1: Ferndale Fairgrounds Area Map – The green boundary shows the extent of the fairgrounds and the red boundary shows the location of the flat track

General Concert and Motorsport Information:

Humboldt County Fairgrounds have hosted horse racing and other small racing events historically at the oval dirt flat track and are expanding to include motorsport events and concerts. Motorsports and concerts are held at the oval dirt track in front of the grandstands at the south side of the Humboldt County Fairgrounds. The venue expects a maximum of 4 motor sport events and 10 concert events per year. The motorsport events can include: Tractor Pulls, 4x4 Truck events, Go Carts, Monster Trucks, and Motorcycle Racing. Concert events may be amplified bands, DJs, acoustic shows, and other performances.

The motorsports and concert venue are located within APNs 030-081-006 and 030-021-003 seen in Figure 1. The site parking lot is within APN 030-011-003. The parcel APN 030-071-001 has a variety of event buildings, stables, and other ancillary buildings to the Fairgrounds. This parcel is also the primary location for foot traffic between parking and the flat racing track. The other three fairground parcels would not be in use during concerts and motorsports.

The property is currently owned by Humboldt County and leased to the Humboldt County Fair Association (HCFA), a California private nonprofit corporation. The HCFA manages the site and oversees the events and happenings of the fairgrounds.

Motorsports:

Attendance Limits:

Attendance for the events will be up to approximately 5,000 people which includes 2,500 seated in the grandstands and an additional 2,500 people seated in portable bleachers in front of the grandstands. The adjacent grassy areas may be used as a standing area in front of the grandstands instead of portable bleachers. It is also possible to open up the center of the oval track for occupation under the right Ferndale Fire Department approved circumstances.

Staff:

During events, two to five paid staff will be on site to assist the producing organization with basic logistics and to contact required personnel if needed. Fairground staff has extensive knowledge of the grounds and can coordinate and organize work events efficiently. Staff will be provided by the producing organization depending on the specific needs of each event. Production staff could be, but is not limited to, 5-20 people.

Parking Areas Utilized:

Parking for the attendees to the motorsport events will be accommodated with the paved parking lot at the grounds entrance which has 126 parking spaces; the adjacent field to the west (APN: 030-011-003) which holds 984 vehicles can be filled from north to south. If additional parking is required an additional

1,172 spaces are available in the next lot over to the west (APN: 030-011-002) bringing the total parking to 2,282 vehicles.

Participants in the motorsports may camp in the RV park which has 65 RV spaces available with hookups. Motor vehicles and hauling trailers can be staged in the RV park for smaller space needs or in other spaces in the fairground that do not cross pedestrian traffic. Using the track access road at the south and east of the oval track, motorsports participants can stage in the area adjacent to the stables or the horseman parking area (APN: 030-112-017).

Events Dates/Date Ranges:

The grandstands and oval track are available to hold motorsports events from March to October which does not include a window from the first of August to the middle of September for the Humboldt County Fair preparation and cleanup.

Event Hours:

The motorsport events may take place during the day during the window from 10:00 am to 10:00 pm depending on the type of event.

Areas of the Property Utilized:

The grandstands will be used to seat the attendees as well as portable bleachers that can be added directly in front of the grandstands. Using standing room in front of the grandstands is a possible configuration depending on the needs for a particular event. The aforementioned parking lots will be used to accommodate attendees as well as the RV park for lodging the participants. Additional staging areas can be used near the horse stables as well as the horseman parking area which are connected to the track area via the track access road.

Security Measures:

To determine the necessary security, the Fairground management will meet with the Ferndale police chief and presents the details of the event including estimated attendance, nature of event, activities, and areas to be utilized. The police department will make a recommendation for security, depending on the event, that the Fairgrounds will implement. Private security can be hired per recommendation from the police. The fairground is less than a 1-mile drive from police station which enables the police to respond quickly to the site. The police are notified in advance of the event which prepares the department and inform the officers of what to expect during the event.

Safety Measures:

Before motorsport events, the FFD inspects the venue and production setup prior to the opening. Any safety concerns will be addressed during the inspection and FFD will determine if a follow up visit or onsite presence is needed of fire personnel or EMT services. Inspections for events can be made the day of

events, or days prior depending on what the fire department suggests. FFD visits the site two months in advance for annual inspections of the grounds.

Annual safety inspections are done by the CFSA to identify and later certify the grounds to safely conduct the annual county fair. An initial inspection is held two months before the fair event. A list is generated to create a punch list of correction which are checked during the follow up inspection. FFD also performs inspections focusing on fire safety and other potential hazards. Both the CFSA and FFD inspect the grounds the day before the fair to ensure all required corrections have been completed.

Measures for Controlling or Limiting Noise:

Events conducted at the fairgrounds in Ferndale have historically generated noise that could be heard from adjacent locations. Large, cheering crowds, loudspeaker announcers, and a variety of other sounds have been emitted from the grounds during historic events. In 2019, the 123rd Humboldt County Fair will be held. There is no data collected on the noise effects of these historical events on the surrounding areas.

Based on the Noise Impact Study (NIS), prepared by Whitchurch Engineering Inc. (WEI) dated 8/6/2018, it was concluded that the noise levels are within acceptable standards for interior noise based on building wall noise attenuation data. However, the exterior levels at the studied locations are above the normally accepted 60 decibels. To be in compliance, even with feasible mitigation measures, a conditional use permit from Humboldt County would need to be granted to allow for temporary exceedances.

The noise levels present during motorsport events may be mitigated through noise controlling procedures as well as mechanical methods. The noise controlling measures are focused on flat track racing which is the activity of concern for surrounding locations and was a subject of the noise impact study performed by WEI in 2018 seen in Reference 2.

Noise Controlling Procedures:

To mitigate noise, flat track races can be held earlier during the day to be in less contrast with background noise and the event may reduce the number of racers on the track at once. Mechanical methods can be employed which would include governors placed on the engines to limit noise. In addition, upgraded or newly maintenance exhaust systems can be applied by the participants to further reduce excessive sound. Combining mitigation methods will compound the effectiveness to reduce noise. With mitigation measures in place sound levels and ground vibrations may be less than significant impact to exposed persons according the Initial Study prepared by WEI in Reference 1.

Byproducts and Methods of Disposal:

During motorsport events, byproducts consist of trash and wastewater which are collected and passed on to the appropriate service by the fairgrounds. Trash cans are set out for the events for spectators and participants to dispose of typical event trash. The collected trash is consolidated after the event and placed in the fairground dumpster to be hauled off by Recology Eel River waste disposal on a weekly basis. Waste water created during the events is generated by the facilities on site including bathrooms, kitchens, and

RV hookups at the fairgrounds. This waste water is sent (via sewer system) to the City of Ferndale for treatment.

For motorsports events, individual participants are responsible for the containment and disposal of their own hazardous waste which mostly consists of various lubricants. Hazardous waste generated by the fairground's maintenance include motor oil and other typical hazardous waste associated with grounds upkeep. Waste is managed in compliance with Recology's hazardous waste collection, storage, reporting, and disposal guidelines. Hazardous waste generation at the grounds is less than 50 gallons per year (see Reference 4).

Spill kits are available at the grounds for any onsite spill from staff maintenance operations as well as participants to us in the case of an accidental release. In addition, individual participants should have their own spill containment resources for typical situations that could be encountered with care of their own equipment.

Greenhouse gas generation will be reduced by encouraging motor vehicle operators to minimize engine idle time and unnecessary engine revs when not participating in races. Also, governors placed on the engines will lower the maximum amount of fuel that can be consumed by the engine under clean burning conditions.

Other Utilities and Public Facilities Used:

The roads used to access events at the Fairgrounds are Van Ness and 5th Street. When necessary, the county will post one-way signs to direct traffic west on Van Ness from California Street to 5th Street.

Potable water is provided by the City of Ferndale during all events. During the highest demand, there is not a significant impact on the city's delivery system.

Energy is provided to the grounds by PG&E within the designed capacity and projected usage of the fairgrounds.

Concerts:

The grandstands and track area are available to be booked for concerts during the year with the exception of the first of August to the middle of September for the Humboldt County Fair preparation and cleanup. The venue expects a maximum of 10 concerts per year. Producers may reserve the venue and set it up in a configuration that will best serve the needs of the performance to be held.

Attendance Limits:

Attendance capacity for concerts will be approximately 5,000 people which includes 2,500 seated in the grandstands and an additional 2,500 people seated in portable bleachers in front of the grandstands. The adjacent grassy areas can be used as well as standing area in front of the grandstands instead of portable bleachers. It is also possible to open up the center of the oval track for occupation if approved by FFD

Staffing:

Two to five paid staff will be on site to assist the producing organization with basic logistics and be able to contact necessary personnel if needed. They will also have knowledge of the grounds and be able to work in the best interest of all involved.

Parking Areas Utilized:

Parking for the attendees to the motor sports will be accommodated with the paved parking lot at the grounds entrance which has 126 parking spaces; the adjacent field to the west (APN: 030-011-003) which holds 984 vehicles can be filled from north to south. If additional parking is required an additional 1,172 spaces are available in the next lot over to the west (APN: 030-011-002), bringing the total parking to 2,282 vehicles.

Production crew and performers may camp in the RV park which has 65 RV spaces available with hookups. Transportation busses and equipment haulers can be staged in the RV park for smaller space needs or in other paved spaces in the fairground that do not conflict with pedestrian traffic. The area in the center of the flat track is also available for vehicles that house concert performers.

Events Dates/Date Ranges:

The grandstands and the adjacent oval track area are available to host concert events from March to October not including a window of time from the first of August to the middle of September to allow for the Humboldt County Fair preparation, setup, and teardown.

Event Hours:

Concert events may occur during the day during the window from 12:00 pm to 10:00 pm depending on the perforce and duration of event production. Concerts events will typically be between two to four hours per set. It is possible there could be multiple sets in which concert events could be as much as six or eight hours in total.

Areas of the Property Utilized:

The grandstands will be used to seat the attendees as well as portable bleachers that can be added directly in front of the grandstands. The area in front of the grandstands can be configured to accommodate standing room depending on the needs for the particular event. Fairground parking lots will be used to accommodate attendees as well as the RV park for lodging production crew and performers if needed. Additional staging areas can be used if necessary, including areas adjacent to the grandstand out of the way of pedestrian traffic.

Security Measures:

To determine the necessary security for each concert, the Fairground management will meet with the Ferndale police chief and presents the details of the event. The police department will make a recommendation for security, depending on the event, that the Fairgrounds will implement. Private security can be hired per recommendation from the police. Gene Bass with Pacific Coast Security is generally used for the fairground security detail. The fairground is less than a 1-mile drive from police station which enables a quick response to the site if the police need to be called. The police are notified in advance of the event which helps prepare the department and inform the officers of what to expect.

Safety Measures:

Before concert events the FFD inspects the venue and production setup prior to the opening. Any safety concerns will be addressed during the inspection and FFD will determine if a follow up visit or onsite presence is needed of fire personnel or EMT services. Inspections are made before each concert event as well as annual inspections of the grounds.

Measures for Controlling or Limiting Noise:

Events at the held at the fairgrounds in Ferndale have generated noise historically that could be heard from adjacent locations. Cheering crowds, loudspeaker announcers, and a variety of other sounds have been produced from this location during historic events. There is no engineering data collected on the noise effects of these historical events on the surrounding areas.

Courtesy Procedure:

Concert noise levels can be mitigated by decreasing the volume of amplified events to a compliant level. Audience cheering or acoustic music events are assumed to be within the noise threshold of acceptance. With mitigation incorporated sound levels and ground vibrations will have less than significant impact to exposed persons according to the IS prepared by WEI.

Byproducts and Methods of Disposal:

Typical concert waste will be collected in trash cans and consolidated at the end of each event and placed in fairground dumpsters to be collected by Recology on a weekly basis. No hazardous waste is expected to be generated during concerts. If any is discovered proper disposal measures will be taken according to the nature of the discovery. No greenhouse gasses will be produced from the site during the concerts.

Waste water created during the events is generated by the facilities on site including bathrooms, kitchens and RV hookups at the fairgrounds. This waste water is sent, via sewer system, to The City of Ferndale for treatment. Times of highest use are able to be accommodated by the city's waste treatment system.

Other Utilities and Public Facilities Used:

The roads used for events at the grounds are Van Ness and 5th street. When necessary, the county will post one-way signs to direct traffic west on Van Ness from California street to 5th street.

Potable water is provided by the City of Ferndale during all events. During the highest demand there is not a significant impact on the city's delivery system.

Energy is provided to the grounds by PG&E within the designed capacity and projected usage of the fairgrounds.

General Fairground Information:

The Humboldt County Fairgrounds are located in Ferndale, CA, 5 miles south-west of US-101 and 600 feet west of CA-211 seen in Figure 2. The Humboldt County Fairground is comprised of eight parcels (APN numbers 030-081-006, 030-071-001, 030-021-003, 030-011-003, 100-181-003, 030-112-017, 100-112-020). It is approximately 60.5 acres and consists of numerous indoor and open-air structures that are available throughout the year to rent for a variety of activities. No portion of the fairground is available during the time from the first of August to the middle of September for logistics related to the annual Humboldt County Fair.

Figure 2: Ferndale Fairgrounds Vicinity Map - The project location is approximately 5 miles south-west of US-101

The grounds contain rentable space, fairgrounds maintenance resources, animal housing, offices, storage, camping and more (*See Figure 3*). Areas such as Hindley hall and the Friendship square are used for vendors and have maps kept by HCFG that show specific vendor locations during the Humboldt County Fair. Other events may have alternative vendor configurations.

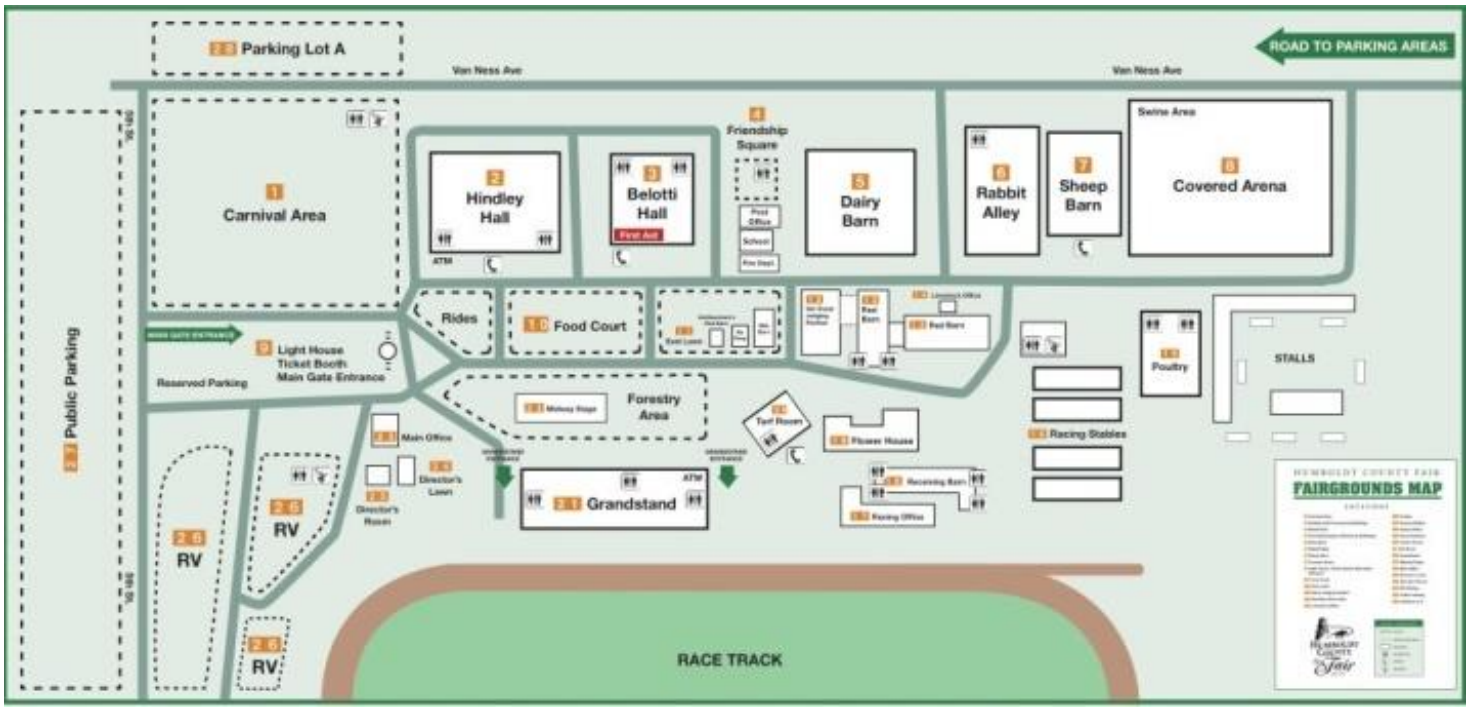


Figure 3: Humboldt County Fairgrounds event area approximate layout

The buildings and areas available to be reserved for events include:

- Belotti Hall
- Hindley Hall
- Friendship Square
- Turf Room
- Lath House
- Jockeys Quarters
- Art Barn
- Arena
- Judging Barn
- Grandstands

The buildings may be rented out by private organizations or used by the fairgrounds and staff to host events. Event activities vary from year to year depending on who reserves the spaces and for what purpose. Bathroom, kitchen, and shower facilities are available on site depending on the specific event needs.

The typical activities include but are not limited to:

- Annual County Fair
- Auctions
- RV Parking
- Personal Event Rentals
- School Events
- Fourth of July
- Fireworks Displays
- Horse Stall Rental
- Motorsports
- Concert/Dance Events
- Craft and Vendor Fairs
- Skating
- Logging Conference
- Highland Games
- Mud Run
- Cycling Events
- Rodeos
- Equestrian Event
- Expos
- Athletic Events
- Circus
- Carnival
- Funeral/Memorial Service
- Animal Symposiums
- Performances/Theatrical
- Religious Retreats
- Graduations
- Bingo Sporting Events
- Weddings
- Weekly Rotary Meetings
- Training/Conference

Some larger buildings are also used for covered storage during the fair off season and are available for rent by the public. Storage buildings available for rent during the fair off season are: Hindley Hall, Dairy Barn, Beef Barn, and Sheep Barn.

Events:

The facility operates year-round and hosts events that can range in duration from a few hours such as dinners and school events to multiple day events like the Humboldt County Fair, dog show and holiday craft events. Multiple areas and buildings are used for larger events in some cases. For instance, this could include the halls in combination with the friendship area or the flat dirt track in combination with the stalls and other necessary locations.

Staffing:

The number of staff members employed by HCFG can range from three to five for regular maintenance and office duties to as much as two hundred and fifty to work the county fair. All staff members on site for the annual county fair are paid staff. Staff responsibilities for smaller events include setting up tables and chairs, checking facilities to be utilized, and doing pre event walk throughs to make sure area is safe and efficiently operating.

Security:

Fairground management is in regular contact with the Ferndale Police Department (FPD) to coordinate the necessary security that should be present throughout the year during various activities.

A request is sent to the FPD by the fairgrounds and the police department will give return requirements. Prior to the Fair or other large events, a meeting will take place with the police chief to determine the amount of security personnel and other possible measures that need to be taken. Small events could require some or no security based on the recommendations by the FPD. During larger events, fairground officials will use gates, counters, radios, and personnel to maintain a secure environment. Designated security may be recommended by the police and hired to assist with the security detail. Participants of events will have a designated area for staging equipment away from public access. FDP is about one mile from the grounds and is available to respond if needed and prepared for the situation based on prior coordination

Safety:

The grounds are subject to inspections throughout the year to ensure the facilities are safe for public attendance.

Fire: The Ferndale Fire Department inspects annually for hazards and potentially unsafe conditions 2 months before the annual fair. They later return and signs off on the safety of the venue the night before the Fair if all requirements are met. For other large or medium events, the FFD is contacted and invited to come and inspect for safety hazards and make recommendations before each event is held. Before

small events, the HCFG inspects all areas that will be utilized and ensure no hazardous conditions are present. Also, individual events are able to design their activities to safeguard against unsafe conditions.

CFSA: Fairground inspections also are performed annually by California Fair Services Authority (CFSA) two months prior to the County fair and then again, the night before. The initial inspection identifies any hazards, egress requirements, setup concerns, and much more. The follow up inspection checks to make sure corrections were made if needed and the fair is ready to begin.

Parking:

Depending on the amount of people attending and the location of the event, the appropriate parking will be opened up for attendees and participants (*see Reference 3*). Small events may have parking on the grounds i.e. around Friendship Square or in front of barns. Medium and large events use the paved parking area first at the fairground entrance which holds 126 spaces. Additional parking is added to the field lots to the west and filled from north to south and east to west in APN: 030-011-003 (560 spaces), APN: 030-021-003 (424 Spaces), APN: 030-011-002 (704 spaces) and APN: 030-021-002 (468 spaces). There is also additional parking to the north in field lots which is filled south to north and east to west APN: 100-181-003 (1370 spaces). Parking can be accessed from two routes following both Van Ness or 5th Street.

Parking passes for participants distinguish their vehicles for horseman parking that allows them to park closer to their horses in the stables and the event.

Traffic and parking control are conducted by fairground staff using radios, gates, high visibility attire, and visual communication with drivers. A network of signs and flaggers will send cars to the appropriate lots in the order and magnitude that is needed. Radio communication are used in determining parking lot capacities in real time.

Waste:

Standard trash is collected using cans spread throughout the fairgrounds and buildings which is collected by staff and placed in fairground dumpsters. Recology Eel River collects the trash on a weekly basis and takes it to a Recology transfer station. Recycling bins are made available which are also collected weekly by Recology.

Hazardous waste generated from vehicle and ground maintenance is stored, labeled, and disposed of according to Recology's hazardous waste protocol. Reporting is done online for the annual hazardous waste totaling less than 50 gallons per year.

All animal waste including manure, bedding, hay, and other organic green waste material are given to local farmers who use it to create compost.

Public Utilities:

Water and sewer are provided by the City of Ferndale. The city's water and sewer system have capacity to accommodate the loads generated throughout the year by fairground events.

During the Humboldt County Fair 8-9 porta potties are rented for remote locations such as the field parking lots and other remote areas on the grounds for the comfort of the people attending the Fair.

The energy company that services the fairgrounds is PG&E which is able to accommodate the gas and electric loads associated with the fairground's activities throughout the year.

Roads to the fairgrounds are Van Ness and 5th Street. For large events, if traffic is foreseen to be an issue, Humboldt County is contacted and the county will place one-way traffic signs from California Street to 5th Street to direct vehicles from east to west for improved traffic flow. For events that the county does not see fit to control traffic, the staff will open up necessary parking and post signage directing attendees to the proper lots if needed.

Emissions:

Emission concentrations are minimized to maintain air quality by staggering fuel burning activities, encouraging clean air fuel and processes, as well as minimizing unnecessary running of emissive machinery when possible. Governors are included on vehicles to limit the amount of fuel emissions during clean burn conditions during motorsport events at the dirt flat track. For air quality dusty areas will be wetted down when possible.

Space Usage:

Several types of areas are used throughout the year. These spaces are indoor, outdoor, barn, grandstand, or a combination. The appropriate space for the event will be approved for the safety of occupants and the facility. Spaces to be used for each event are approved ahead of time by HCFG staff and appropriate public authorities.

Chapter 13. Noise Element

13.1 Purpose

This Element identifies the County's approach to managing noise levels to minimize the exposure of community residents to excessive noise. The analysis follows the guidelines adopted by the Office of Noise Control of the California Department of Health Services.

13.2 Relationship to Other Elements

Noise levels are considered in the Land Use Element to avoid direct conflicts between neighboring uses and to establish patterns of land uses that minimize noise exposure. Policies in the Circulation Element related to road location, design, and non-motorized transportation can affect traffic noise levels. Policies of the Housing Element and Open Space Element also reflect noise considerations.

13.3 Background

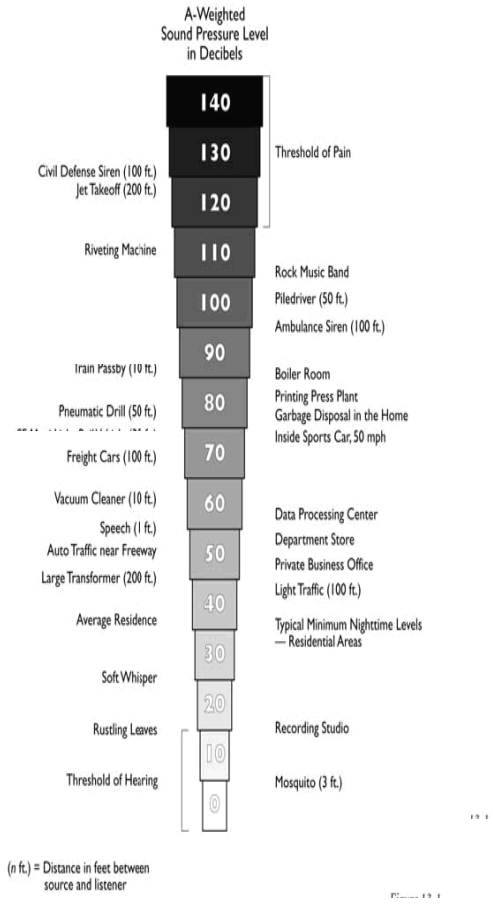
Measuring and Characterizing Noise

Assessing the community noise environment involves measuring three aspects of sound: level, frequency, and variation. Sound level is the magnitude or loudness of a sound, expressed in decibels (see Figure 13-1 and the glossary). Frequency is a measure of the pitch of the sound, and variation is the change in noise exposure over time. When sound is disagreeable or unwanted, it is considered noise.

Most community noise is produced by many distant sources, which rise and fall gradually throughout the day creating a relatively steady background sound having no identifiable source. The Community Noise Equivalent Level (CNEL) is a measure that describes average noise exposure over a period of time.

Because communities are more sensitive to impacts from nighttime noise, noise descriptors must specifically take this time period into account. Common measures include the CNEL and the Day-Night Average Level (Ldn). Both reflect noise exposure over an average day, with greater weight given to noise occurring during the evening and night. The two descriptors are roughly equivalent but CNEL is used in this Plan for regulating cumulative noise exposure over a 24-hour period.

Figure 13.1: Sound Level Comparison Chart



Noise levels of short duration, such as aircraft flyovers or concerts, are not well characterized by average noise level measurements yet are often the source of complaints. Maximum Noise Level (Lmax) is used in this Plan for the purposes of regulating short-term noise levels.

Principal Noise Sources

Table 13-A lists prominent noise sources within unincorporated areas of the county and Table 13-B provides the results of community noise surveys by ESA conducted in November 2016 for selected roadways in the incorporated, unincorporated, and rural areas of the County.

The Map Book Appendix contains noise level contours for state highways, selected county roads, county airports, and other prominent sources. Other noise sources not included in the inventory include noises from persons, pets and livestock, industrial equipment, and construction sites.

Table 13-A. Inventory of Prominent Sources of Noise within Communities of Humboldt County

	SOURCE OF NOISE			
COMMUNITY	**ROADS**	**AIRPORTS**	**RAILROAD***	**STATIONARY SOURCES**
ALTON	U.S. 101, State Highway 36	Rohnerville	Northwestern Pacific	NONE
ARCATA	U.S. 101, State Highways 299 & 255	NONE	Northwestern Pacific	NONE
BLOCKSBURG	NONE	NONE	NONE	Gravel operations
BLUE LAKE	State Highway 299	NONE	NONE	Gravel operations
BRIDGEVILLE	NONE	NONE	NONE	Gravel operations
CAPETOWN	NONE	NONE	NONE	Gravel operations
CARLOTTA	State Highway 36	NONE	NONE	Gravel operations
DINSMORE	State Highway 36	Dinsmore Airport	NONE	NONE
DYERVILLE	NONE	NONE	NONE	Gravel operations
EUREKA	U.S. 101, Myrtle Ave. Harris, Henderson & "H" St	Murray Field	Northwestern Pacific	Redwood Acres
FAIRHAVEN	New Navy Base Rd.	City of Eureka Airport	NONE	Racetrack
FERNDALE	State Highway 211	NONE	NONE	Fairgrounds, Gravel operations
FIELDBROOK	NONE	NONE	NONE	NONE

Table 13-A. Inventory of Prominent Sources of Noise within Communities of Humboldt County (Continued)

	SOURCE OF NOISE			
COMMUNITY	**ROADS**	**AIRPORTS**	**RAILROAD***	**STATIONARY SOURCES**
FIELDS LANDING	U.S. 101	NONE	Northwestern Pacific	Shipping operations
FORTUNA	U.S. 101, Main St.	Rohnerville Airport	Northwestern Pacific	Gravel operations
FRESHWATER	Freshwater Rd.	NONE	NONE	NONE
GARBERVILLE	U.S. 101	Airport	NONE	Gravel operations
HOOPA	State Highway 96	Former County Airport	NONE	Gravel operations
HYDESVILLE	State Highway 36, Rohnerville Rd.	Rohnerville	NONE	NONE
KNEELAND	NONE	Kneeland Airport	NONE	NONE
LOLETA	NONE	NONE	Northwestern Pacific	NONE
MANILA	State Highway 255 (New Navy Base Rd.)	NONE	NONE	NONE
MAPLE CREEK	NONE	NONE	NONE	Gravel operations
MARTIN'S FERRY/ WEITCHPEC	NONE	NONE	NONE	Gravel operations
McKINLEYVILLE	U.S. 101, Central Ave.	Eureka/Arcata Airport	NONE	Gun Club
MOONSTONE/ WESTHAVEN	U.S. 101	NONE	NONE	NONE
ORLEANS	NONE	NONE	NONE	Gravel operations
ORICK	U.S. 101	NONE	NONE	NONE
PETROLIA	NONE	NONE	NONE	Gravel operations
REDWAY	Redwood Dr.	NONE	NONE	NONE
RIO DELL	U.S. 101, Wildwood Ave.	NONE	Northwestern Pacific	NONE
ROHNERVILLE (See Fortuna)				
SAMOA	New Navy Base Rd.	NONE	NONE	Pulp mill, cogeneration plant, shipping operations

Table 13-A. Inventory of Prominent Sources of Noise within Communities of Humboldt County (Continued)

	SOURCE OF NOISE			
COMMUNITY	**ROADS**	**AIRPORTS**	**RAILROAD***	**STATIONARY SOURCES**
SCOTIA	U.S. 101	NONE	Northwestern Pacific	Mill, gravel operations
TRINIDAD	U.S. 101	NONE	NONE	NONE
SHELTER COVE	Shelter Cove Rd.	Shelter Cove	NONE	NONE
WEOTT	U.S. 101	NONE	NONE	NONE
WILLOW CREEK	State Highways 299 & 96	NONE	NONE	Gravel operations

* Note: The former Northwestern Pacific Railroad is now under the direction of the North Coast Railroad Authority. While local rail lines have not operated on a regular basis for several years, future rail usage should continue to be considered in land use planning decisions, unless the railroad right-of-ways are abandoned.

Traffic Noise

Traffic noise depends primarily on the speed of traffic and the percentage of truck traffic. The primary source of noise from automobiles is high-frequency tire noise, which increases with vehicle speed. In addition, trucks and older automobiles produce engine and exhaust noise, and trucks generate wind noise.

As illustrated in Table 13-B, Humboldt County is primarily subject to noise impacts from U.S. Highway 101, which creates noise in areas up to 500 feet away. Differences in elevation can amplify or dampen noise levels; for example, noise from a thoroughfare in a trough or valley between residential areas will be reflected upward and focused while noise from an elevated thoroughfare may dissipate. On flat ground, a buffer, such as a sound wall or dense vegetation, will greatly reduce noise escaping to surrounding areas. The California Department of Transportation (Caltrans) sometimes installs sound walls along state roads when new construction or widening is proposed. In Humboldt County, Caltrans has not pursued sound wall construction along existing highways.

Table 13-B. Traffic Noise Levels in Humboldt County, 2016						
Location	Route	Post Mile	Measured CNEL	Distance from Centerline (feet)	Distance to 65 CNEL (feet)	Distance to 60 CNEL (feet)
Benbow	US 101	9.1	73.4	86	312	673
North of Metropolitan Rd.	US 101	54.9	71.4	74	198	426
South of Loleta Dr.	US 101	65.6	75.1	56	264	569
North of Indianola Cutoff	US 101	82.8	75.6	112	570	1,228
North of Airport Rd.	US 101	94.2	69.6	106	215	463
South of Seawood Dr.	US 101	102.8	67.2	130	182	393
South of Bald Hills Rd.	US 101	122.0	68.0	58	92	198
South of Corbett Ranch Ln.	SR 36	7.7	68.1	27	43	94
East of Blue Lake Blvd.	SR 299	8.5	65.7	64	71	154
West of Will Rd.	SR 299	37.8	69.4	56	110	237
South of Orchard Park Ln.	SR 96	2.1	65.2	38	39	84
South of Owl Mine Rd.	SR 96	35.8	63.1	31	23	50
Source: ESA, 2016						

Noise surveys were conducted at various locations along US 101, State Route (SR) 299, SR 96 and SR 36 over a 24-hour period in November 14 through November 18, 2016. Monitoring sites included incorporated, unincorporated, and rural areas of the County. Distances to the 60 dBA CNEL contour ranged from 50 feet south of Owl Mine Road along SR 96 near Orleans to 1,228 feet north of Indianola Cutoff along Highway 101 near Brainard.

Airport Noise

Airport noise caused by aircraft depends on the type of aircraft and the frequency and direction of flights. Noise from aircraft warming up early in the morning can also be a significant source of noise from airports. Diagrams showing existing and projected noise levels associated with airport noise are contained in the County's Airport Land Use Compatibility Plans. The most current diagrams are shown in the Map Book Appendix.

Noise Compatibility

Evaluating new development projects for noise impacts should be based on a comparison of the noise compatibility standards in Table 13-C with noise contours and other available information. Fences, landscaping, and noise insulation can be used to mitigate the hazards of excessive noise levels.

A standard construction wood frame house reduces noise transmission by 15dBA. Since interior noise levels for residences are not to exceed 45dBA, the maximum exterior noise level for residences is 60dBA without requiring additional insulation. In areas where CNEL noise levels exceed 60dBA, the need for additional noise insulation will vary depending on the land use designation; adjacent uses; distance-to-noise source; and intervening topography, vegetation, and other buffers. The building code provides standards for meeting noise insulation requirements.

Appropriate standards for short-term noise levels measured by Lmax varies with the type of land use and time of day. Acceptable daytime levels in industrial and commercial areas are typically based on a combination of health and nuisance considerations and typically do not exceed 85 dBA. In residential areas, standards are typically set to avoid the perception of nuisance, such as noise levels that block normal conversation. Noise level above 66 dBA requires raised voices to be heard at a distance of three feet. Indoor noise levels between 50 and 60 dBA can disturb sleep.

The perception of nuisance will vary based upon sound level, frequency, and fluctuation. It also depends upon the character of the sound, number of noise events, familiarity and predictability, and the attitude of the listener. CNEL and Lmax are typically the basis for making nuisance determinations but other factors may be considered. For example, an annual high school parade may exceed residential noise levels but might not be deemed a nuisance.

Table 13-C Land Use / Noise Compatibility Standards

CLEARLY ACCEPTABLE | NORMALLY ACCEPTABLE | NORMALLY UNACCEPTABLE | CLEARLY UNACCEPTABLE

LAND USE INTERPRETATION FOR CNEL (or Ldn) VALUE

LAND USE CATEGORY	Maximum Interior Noise Levels*	50 – 60	61 - 70	71 - 80	81 - 90	91+
Residential Single Family, Duplex, Mobile Homes	45					
Residential Multiple Family, Dormitories, etc.	45					
Transient Lodging	45					
School Classrooms, Libraries, Churches	45					
Hospitals, Nursing Homes	45					
Auditoriums, Concert Halls, Music Shells	35					
Sports Arenas, Outdoor Spectator Sports						
Playgounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Rec., Cemeteries						

LAND USE CATEGORY	Maximum Interior Noise Levels*	50 – 60	61 - 70	71 - 80	81 - 90	91+
Office Buildings, Personal, Business & Professional	50					
Commercial: Retail, Movie Theaters, Restaurants	50					
Commercial: Wholesale, Some Retail, Ind., Mfg., Util.						
Manufacturing, Communications(Noise Sensitive)						
Livestock Farming, Animal Breeding						
Agriculture (except Livestock), Mining, Fishing						
Public Right-of-Way						
Extensive Natural Recreation Areas						

*Due to exterior sources

(Source: Bolt, Beranek, and Newman, Inc., 1974)

CLEARLY ACCEPTABLE: The noise exposure is such that the activities associated with the land use may be carried out with essentially no interference. (Residential areas: both indoor and outdoor noise environments are pleasant.)

NORMALLY ACCEPTABLE: The noise exposure is great enough to be of some concern, but common constructions will make the indoor environment acceptable, even for sleeping quarters. (Residential areas: the outdoor environment will be reasonably pleasant for recreation and play at the quiet end and will be tolerable at the noisy end.)

NORMALLY UNACCEPTABLE: The noise exposure is significantly more severe so that unusual and costly building constructions are necessary to ensure adequate performance of activities. (Residential areas: barriers must be erected between the site and prominent noise sources to make the outdoor environment tolerable.)

CLEARLY UNACCEPTABLE: The noise exposure at the site is so severe that construction costs to make the indoor environment acceptable for performance of activities would be prohibitive. (Residential areas: the outdoor environment would be intolerable for normal residential use.)

13.4 Goals and Policies

Goals

N-G1. **Excessive Noise.** A quiet and healthful environment with limited disagreeable noise.

N-G2. **Incompatible Land Uses.** Land uses arranged to reduce annoyance and complaints and minimize the exposure of community residents to excessive noise.

Policies

N-P1. **Minimize Noise from Stationary and Mobile Sources.** Minimize stationary noise sources and noise emanating from temporary activities by applying appropriate standards for average and short-term noise levels during permit review and subsequent monitoring.

N-P2. **Guide to Land Use Planning.** Evaluate current noise levels and mitigate projected noise levels when making community planning and zoning decisions to minimize the exposure of community residents to nuisance noise levels. Minimize vehicular and aircraft noise exposure by planning land uses compatible with transportation corridors and airports, and applying noise attenuation designs and construction standards. Avoid zoning patterns that permit people to "move to the nuisance" unless mitigated through project conditions or recorded notice.

N-P3. **Noise from U.S. Highway 101 (U.S. 101) and State Highway 299.** The County shall support efforts to reduce noise levels on U.S. 101 and State Highway 299 along sections in proximity to concentrated residential development through prioritized roadway surface maintenance, use of noise-reducing surface treatments, traffic-safe tree or shrub plantings, or, in cases of significant noise exposure, use of lower speed limits and construction of sound walls.

N-P4. **Protection from Excessive Noise.** Protect persons from existing or future excessive levels of noise which interfere with sleep, communication, relaxation, health or legally permitted use of property.

13.5 Standards

N-S1. **Land Use/Noise Compatibility Matrix.** The Land Use/Noise Compatibility Standards (Table 13-C) shall be used as a guide to ensure compatibility of land uses. Development may occur in areas identified as "normally unacceptable" if mitigation measures can reduce indoor noise levels to "Maximum Interior Noise Levels" and outdoor noise levels to the maximum "Normally Acceptable" value for the given Land Use Category.

N-S2. **Noise Impact Combining Zones.** The 20-year projected noise contours in the Map Book Appendix and the most current Airport Land Use Compatibility Plans shall be used to identify noise impact combining zone areas to indicate where special sound insulation measures may apply.

N-S3. **Environmental Review Process.** For noise sensitive locations where noise contours do not exist, the environmental review process required by the California Environmental Quality Act shall be utilized to generate the required analysis and determine the appropriate mitigation per Plan and state standards. Future noise levels shall be predicted for a period of at least 10 years from the time of building permit application.

N-S4. Noise Study Requirements. When a discretionary project has the potential to generate noise levels in excess of Plan standards, a noise study together with acceptable plans to assure compliance with the standards shall be required. The noise study shall measure or model as appropriate, Community Noise Equivalent Level (CNEL) and Maximum Noise Level (Lmax) levels at property lines and, if feasible, receptor locations. Noise studies shall be prepared by qualified individuals using calibrated equipment under currently accepted professional standards and include an analysis of the characteristics of the project in relation to noise levels, all feasible mitigations, and projected noise impacts. *The Noise Guidebook* published by the U.S. Department of Housing and Urban Development, or its equivalent, shall be used to guide analysis and mitigation recommendations.

N-S5. Noise Standards for Habitable Rooms. Noise reduction shall be required as necessary in new development to achieve a maximum of 45 CNEL (Community Noise Equivalent Level) interior noise levels in all habitable rooms per California building standards.

N-S6. Noise Reduction Requirements for Exterior Areas in Residential Zones. Newly created single family residential lots of 5,000 square feet or more, should contain a usable outdoor area at least 200 square feet in size per dwelling unit that meets the 60 CNEL (Community Noise Equivalent Level) standard.

N-S7. Short-term Noise Performance Standards (Lmax). The following noise standards, unless otherwise specifically indicated, shall apply to all property within their assigned noise zones and such standards shall constitute the maximum permissible noise level within the respective zones.

SHORT-TERM NOISE STANDARDS (Lmax)		
Zoning Classification	**Day (maximum) 6:00 a.m. to 10:00 p.m. dBA**	**Night (maximum) 10:00 p.m. to 6:00 a.m. dBA**
MG, MC, AE, TPZ,TC, AG, FP, FR, MH	80	70
CN, MB, ML, RRA, CG, CR	75	65
C-1, C-2. C-3, RM, R-3, R-4	65	60
RS, R-1, R-2, NR	65	60

Exceptions. The Short Term Noise levels shown in the above table shall not apply to uses such as, but not limited to:

1. Portable generator use in areas served by public electricity when electrical service is interrupted during emergencies as determined by the Planning Director.
2. Temporary events in conformance with an approved Conditional Use Permit.
3. Use of chainsaws for cutting firewood and power equipment used for landscape maintenance when accessory to permitted on-site uses.

4. Heavy equipment and power tools used during construction of permitted structures when conforming to the terms of the approved permit.
5. Emergency vehicles.

Protocol for measuring exceedances:

1. Calibrate and establish reference for sound meter:

   Decibel measurement made shall be based on a reference sound pressure of 0.0002 microbars as measured with a sound level meter using the "A" weighted network.

2. Determine ambient background noise levels:

   Ambient noise without the noise source in operation shall be observed at 15 second intervals for a period of 15 minutes, measured along the property line in a direct line between the noise source and the nearest receptor**.** The lowest reading is interpreted as the ambient noise level of that sampling point. If this reading is above the standard set for the noise zone, steps must be taken to determine the source or sources of the intruding high-level noise followed by appropriate control action before continuing the survey. If the reading is equal to or below the standard, the survey can proceed.

3. Measure for exceedences:

   With the noise source in operation, record the instantaneous response at 15 second intervals for a 15 minute period. Or, for a noise source of less than 15 minutes, record the instantaneous response at 15 second intervals for the time the noise source is in operation. The lowest response level recorded while the noise source is in operation is interpreted as the intruding noise level. Compare the intruding noise levels with the standard. If the noise level generated from the noise source exceeds the standard, the noise source is generating noise levels in excess of the allowable standards set for the noise zone.

13.6 Implementation Measures

N-IM1. **Noise Impact Combining Zone.** Utilize Noise Impact Combining Zone designations to identify areas where noise impact mitigations are required.

N-IM2. **Periodic Review of Combining Zones.** Periodically identify and evaluate potential noise problem areas for mitigation or as candidates for noise impact combining zones, particularly during Airport Land Use Compatibility Plan updates.

N-IM3. **Compliance Program.** The County shall investigate complaints of excessive noise and control noise sources consistent with the standards established by the Plan. Nuisance determinations shall be based on noise levels, duration, and number of noise events.

N-IM4. **Noise from U.S. Highway 101 (U.S. 101) and State Highway 299.** Working through its representation on Humboldt County Association of Governments (HCAOG), the County shall work with other affected jurisdictions and request California Department of Transportation (Caltrans) to consider implementing noise reduction measures on U.S. 101 and State Highway 299 along sections in proximity to concentrated residential development.

N-IM5. **Adoption of Performance Standards.** Adopt Industrial Performance Standards Countywide.

N-IM6. **Noise Control Ordinance.** Prepare and consider a noise control ordinance to regulate noise and vibration sources in order to protect persons from existing or future excessive levels of noise and/or vibration which interfere with sleep, communication, relaxation, health or legally permitted use of property. The ordinance shall define excessive levels of noise for construction activities to be incorporated as permit requirements and other noise sources and may exempt or modify noise requirements for agricultural uses, school functions, property maintenance, waste collection and other sources. The ordinance shall include responsibilities and procedures for enforcement, abatement and variances.

N-IM7. **Highways Noise Contours.** Request Caltrans to update current and projected noise contours for highways.

N-IM8. **Airport Noise Contours.** Incorporate into the Noise Impact Maps in Appendix F the new noise contour data for airports and surrounding areas from Airport Master Plans, and from new ALUPs within six months of adoption of a new ALUP.

N-IM9. **Garberville Airport Noise Impact Combining Zone.** Add a Noise Impact (N) Combining Zone to the areas surrounding the Garberville Airport that are subject to noise levels equal to or above 60 CNEL according to Figure 5B of the 2007 Garberville Airport Master Plan Report, or the most recent Garberville Airport Master Plan Report.

WHITCHURCH ENGINEERING

610 9th Street, Fortuna, CA 95540

716 Harris Street, Eureka, CA 95503

July 13th, 2021

Humboldt County Fairgrounds
1250 5th Street
Ferndale, CA 95536

RE: Tailpipe Noise Level Estimation for Race Testing
Humboldt County Fairgrounds Noise Study
1250 5th Street, Ferndale, CA
APN: 030-081-006

JN: HCF1801

To whom it may concern,

The purpose of this letter is to report the results of a calculation used to determine the tailpipe noise level experienced during motorcycle flat track racing conditions during a noise sample data set test obtained on March 7th, 2018. The calculation has been conducted as to provide an instantaneous noise level limit that must be met to meet the Humboldt County Conditional Use Permit Community Noise Equivalent Limit (CNEL). This noise level will be tested in accordance with American Motorcyclist Association (AMA) Pro Flat Track Racing noise level testing procedure found in Section 3.6 of the AMA Pro Flat Track Rulebook (AMA, 2017) before motorcycles are approved to compete.

The calculation was based on the 3-motorcycle testing conducted on March 7th of 2018. The noise level was mathematically reduced to simulate a single running motorcycle. A mathematical relationship to simulate a noise level taken 20-inches away from the exhaust of the motorcycle is used to simulate the testing conditions within the AMA Flat Track Rulebook.

The full results can be found in the attached Excel spreadsheet included with this letter. The noise level simulated is the maximum instantaneous noise level (L_{max}) and the minimum instantaneous noise level experienced (L_{min}) at the tailpipe of the competing motorcycles. This calculation was conducted both for the testing conditions and with the simulated attenuation conditions of a full exhaust system attachment.

Condition	L_{max} (dB) Simulated Single Moto.	$L_{min\ (dB)}$ Simulated Single Moto.
Testing Conditions	123.60	82.40
Full Race (18 Motos) Full Exhaust	103.60	62.40
Recommended Noise Limit	**100**	59

The Motorcycle Stationary Sound test procedure (SAE J1287) specifies that testing required a 3 dB tolerance, and must be tested at a table determined ½ Maximum RPM for each motorcycle. Based on these factors, I would recommend that this tolerance be subtracted from the estimated L_{max}. Thus, a limit of **100 dB** should be used to ensure that CNEL remains below the County limit set within the Conditional Use Permit.

Please do not hesitate to contact this office with any questions or concerns regarding the motorcycle tail pipe noise level extrapolation.

Sincerely,

Jeffrey Laikam
RCE# 68586

JTL/ntn

W_i (7am-7pm)	0
W_i (7pm-10pm)	4.77
W_i (10pm-7am)	10

Number of Motorcycles Max (x3)
6

Testing Conditions

SPL_{Total}	L_{max} (dB)	L_{min} (dB)	L_{ave} (dB)	L_{eq} (dB)	$L_{eq\ Assumed\ Day}$(dB)	$L_{eq\ Assumed\ Night}$(dB)	$CNEL_{total}$(dB)
5.51E+09	85.9	44.7	60.7	67.9	55.5	45.5	68.0

Back Calculation			
L_{max} (dB)-Single Bike	L_{min} (dB)-Single Bike	Max Tail Pipe (dB)-Single Bike	Min Tail Pipe (dB)-Single Bike
81.13	39.93	123.60	82.40

Multipling Motos

SPL_{Total}	L_{max} (dB)	L_{min} (dB)	L_{ave} (dB)	L_{eq} (dB)	$L_{eq\ Assumed\ Day}$(dB)	$L_{eq\ Assumed\ Night}$(dB)	$CNEL_{total}$(dB)
3.31E+10	93.7	52.5	68.5	75.7	55.5	45.5	75.7

L_{max} (dB)-Single Bike	L_{min} (dB)-Single Bike	Max Tail Pipe (dB)-Single Bike	Min Tail Pipe (dB)-Single Bike
81.13	39.93	123.60	82.40

Multipling Motos + low exhaust

SPL_{Total}	L_{max} (dB)	L_{min} (dB)	L_{ave} (dB)	L_{eq} (dB)	$L_{eq\ Assumed\ Day}$(dB)	$L_{eq\ Assumed\ Night}$(dB)	$CNEL_{total}$(dB)
2.09E+10	91.7	50.5	66.5	73.7	55.5	45.5	73.7

L_{max} (dB)-Single Bike	L_{min} (dB)-Single Bike	Max Tail Pipe (dB)-Single Bike	Min Tail Pipe (dB)-Single Bike
79.13	37.93	121.60	80.40

Multipling Motos + high exhaust

SPL_{Total}	L_{max} (dB)	L_{min} (dB)	L_{ave} (dB)	L_{eq} (dB)	$L_{eq\ Assumed\ Day}$(dB)	$L_{eq\ Assumed\ Night}$(dB)	$CNEL_{total}$(dB)
3.31E+08	73.7	32.5	48.5	55.7	55.5	45.5	57.7

L_{max} (dB)-Single Bike	L_{min} (dB)-Single Bike	Max Tail Pipe (dB)-Single Bike	Min Tail Pipe (dB)-Single Bike
61.13	19.93	103.60	62.40

	$CNEL_{base}$	$CNEL_{Moto\ adjusted}$	$CNEL_{moto + low\ exhaust}$	$CNEL_{moto + high\ exhaust}$
0:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
1:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
2:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
3:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
4:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
5:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
6:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
7:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
8:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
9:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
10:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
11:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
12:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
13:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
14:00	6.12E+06	3.67E+07	2.32E+07	3.67E+05
15:00	6.12E+06	3.67E+07	2.32E+07	3.67E+05
16:00	6.12E+06	3.67E+07	2.32E+07	3.67E+05
17:00	6.12E+06	3.67E+07	2.32E+07	3.67E+05
18:00	6.12E+06	3.67E+07	2.32E+07	3.67E+05
19:00	1.84E+07	1.10E+08	6.95E+07	1.10E+06
20:00	1.84E+07	1.10E+08	6.95E+07	1.10E+06
21:00	1.84E+07	1.10E+08	6.95E+07	1.10E+06
22:00	6.12E+07	3.67E+08	2.32E+08	3.67E+06
23:00	3.55E+05	3.55E+05	3.55E+05	3.55E+05
sum	1.52E+08	8.87E+08	5.61E+08	1.41E+07

$$L_{eq} = 10\log_{10}[(10^{SPL_1/10} + 10^{SPL_2/10} + \dots 10^{SPL_n/10})/N] \qquad \textbf{(2-19)}$$

Where:

SPL_1, SPL_2, SPL_n = first, second, and nth noise level

N = number of noise level samples

$$CNEL = 10\log_{10}\left[\left(\frac{1}{24}\right)\sum_{i=1}^{24} 10^{L_{eq}(h)_i + W_i/10}\right] \qquad \textbf{(2-24)}$$

Where:

$W_i = 0$ for day hours (7 a.m. to 7 p.m.)

$W_i = 10\log_{10}(3) = 4.77$ for evening hours (7 p.m. to 10 p.m.)

$W_i = 10$ for night hours (10 p.m. to 7 a.m.)

$L_{eq}(h)_i = L_{eq}$ for the ith hour

Caltrans (2013). "Technical Noise Supplement to the Traffic Noise Analysis Protocol", (June 20, 2018).

$$SPL_{Total} = SPL_1 + 10\log_{10}(N) \qquad \textbf{(2-20)}$$

Where:

SPL_1 = SPL of one source

N = number of identical noise levels to be added (in this case, number of occurrences of each noise level)

Caltrans (2013). "Technical Noise Supplement to the Traffic Noise Analysis Protocol", (June 20, 2018).

1. Used N=1/3 to simulate single motorcycle test from the 3-motorcycle testing conditions.

$$dBA_2 = dBA_1 + 10\log_{10}(D_1/D_2) \qquad \textbf{(2-14)}$$

Where:

dBA_1 = noise level at distance D_1 and conventionally the known noise level

dBA_2 = noise level at distance D_2 and conventionally the unknown noise level

Note

The expression $10\log_{10}(D_1/D_2)$ is negative when D_2 is more than D_1 and positive when D_1 is more than D_2. Therefore, the equation automatically accounts for the receiver being farther or closer with respect to the source—$\log_{10}$ of a number less than 1 gives a negative result, $\log_{10}$ of a number more than 1 is positive, and $\log_{10}(1) = 0$.

Caltrans (2013). "Technical Noise Supplement to the Traffic Noise Analysis Protocol", (June 20, 2018).

1. Distance to Arlington noise meter test d1=222'
2. Distance to single motorcyle sound test at tail pipe d2=1.67' (Per the 2017 American Flat-Track Racing Handbook)
3. Used the simulated single motorcyle noise level estimate from equation 2-20

BIG TIME SPEEDWAY PRESENTS, LLC

To: Rich Scillaci – HCFA Manager

From: Big Time Speedway Presents, LLC

CC: Johanna Rodoni

Date: February 11, 2022

Re: Humboldt County Fairgrounds – AMA District 36 Flat Track Motorcycle Racing Event on September 17, 2022

Hello Rich,

This letter is our response to the Approval of the Conditional Use Permit and the Sound Study which was performed by Whitchurch Engineering (JN: HCF1801).

Big Time Speedway has been promoting motorcycle race events since 2011. As an American Motorcycle Association Charter Member and AMA District 36 promoter we are very familiar with sound limits and testing procedure as set forth in the AMA Rulebook – Appendix 5.2 - (SAE J1287). These are the same standards we currently use for our Big Time Sonoma Events at Sonoma County Fairgrounds which is located in town in Santa Rosa, Ca. We are able to adhere to and not exceed there *SPL* of 99 decibels. All participating motorcycles will be tested prior to allowing the rider on the track.

With these standards being strictly enforced, strategically placing of strawbales (Both for Safety and Sound Attenuation), banners etc., we are confident that meeting the HCGP suggested CNEL of 63 decibels at locations used in Whitchurch Engineering noise impact study can be met.

In closing we should mention that we anticipate all R*acing* will be concluded before 6:00pm and any other activities by 8:00pm. We look forward to bringing a Top-Quality AMA Event to your town – **Big Time Humboldt 1**.

Should you have any other questions or concerns, please don't hesitate to contact us directly. www.bigtimespeedway@aol.com

See you at the *Races,*
Steve & Steve

Steve Elstins, Steve Stasiefski - Event Organizers / Promoters