

2<sup>nd</sup> REVISED

ENVIRONMENTAL  
INITIAL STUDY &  
MITIGATED NEGATIVE  
DECLARATION

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Zone Amendment 13-007  
(Jones)

March 2, 2023  
Revised April 7, 2023  
Revised October 17, 2023

ENVIRONMENTAL INITIAL STUDY &  
MITIGATED NEGATIVE DECLARATION  
WITH  
References and Documentation

Prepared by  
SHASTA COUNTY DEPARTMENT OF RESOURCE MANAGEMENT  
PLANNING DIVISION  
1855 Placer Street, Suite 103  
Redding, California 96001

**SHASTA COUNTY  
ENVIRONMENTAL CHECKLIST FORM  
INITIAL STUDY & MITIGATED NEGATIVE DECLARATION**

- 1. Project Title:**  
Zone Amendment 13-007 (Jones)
- 2. Lead agency name and address:**  
Shasta County Department of Resource Management, Planning Division  
1855 Placer Street, Suite 103  
Redding, CA 96001-1759
- 3. Contact Person and Phone Number:**  
David Schlegel, AICP, Senior Planner, (530) 225-5532
- 4. Project Location:**  
The 151.78-acre project site is located at the northeast end of Leopard Drive, approximately 0.5-miles north of the Dersch Road and Leopard Drive intersection, Anderson, CA 96007 (Assessor's Parcel Number 060-010-016).
- 5. Applicant Name and Address:**  
Patrick Jones  
1600 E. Cypress Ave. #2  
Redding, CA 96002
- 6. General Plan Designation:**  
Rural Residential B (RB)
- 7. Zoning:**  
Limited-Residential combined with Mobile Home and Building Site 40-Acre Minimum Lot Area (R-L-T-BA-40)
- 8. Description of Project:**  
The request is to change the zoning of the project site from the Limited-Residential combined with Mobile Home and Building Site 40-Acre Minimum Lot Area (R-L-T-BA-40) zone district to the Commercial Recreation (C-R) zone district and adopt a conceptual development plan for an outdoor gun range complex and gun club, including long-rifle firing lines and handgun bays with berms to serve as backstops, clay target trap and skeet shooting ranges, a 4,975-square-foot primary clubhouse with a 3,272-square-foot attached covered patio area and a 1,025-square-foot attached caretaker's residence, and a 699-square-foot law enforcement clubhouse with a 270-square-foot attached covered patio. Power for the facility would be provided primarily by roof-mounted solar arrays with diesel generators housed in generator buildings to augment energy needs. The two clubhouses and the caretaker's residence would be served with on-site wastewater treatment systems, and potable water and fire suppression water from an on-site well(s). The range would be open 5 days a week from 8:00 a.m. until dark but in no case later than 8:00 p.m. Large events would be held intermittently with the largest event attracting up to 500 people. Other shooting sports events would typically attract between 30 and 200 people. Large shooting sports events would be held intermittently and may include RV overnight dry camping in a designated parking area. Onsite activity would be managed for environmental quality and safety. Certain long-range rifle targets would only be in use for events and all ranges would be managed by a Range Officer for safety during operation. The site would also be managed to prevent the spread of wildfire based on weather conditions by closing during red flag warning days and maintaining fuels and vegetation in accordance with recommendations and requirements for defensible space. Debris, including bullet shells, fragment, and casings, clay targets, etc., would be regularly collected and properly disposed.

**9. Surrounding Land Uses and Setting:**

The project site is undeveloped and is currently being used for livestock winter pasture. The property slopes gently in a predominantly eastern direction with the slope increasing substantially along the bank of Bear Creek. The drainage features within the project site include ephemeral streams, vernal pools and vernal swales. These features direct runoff to the southeastern portion of the property before discharging to Bear Creek. Terrain in the vicinity is relatively flat with some gently rolling hills in the broader areas surrounding the project site. The property and neighboring vacant lands to the north and west have historically been used for cattle grazing. Residences and associated residential accessory buildings have been developed on adjacent large rural lots to the north, northwest, and south. Other residential uses in the vicinity include developed parcels to the southeast on Dersch Road and Hyrax Road. Vegetation on site and in the surrounding area is predominantly upland grasslands with the eastern areas adjacent to Bear Creek being surrounded by Blue Oak Woodlands, sometimes mixed with Foothill Pine Woodlands, and riparian vegetation along Bear Creek.

**10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.):**

Shasta County Department of Public Works  
Regional Water Quality Control Board  
United States Army Corps of Engineers  
California Department of Fish and Wildlife  
Shasta County Fire Department  
California Department of Housing and Community Development

**11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?**

No California Native American Tribe has notified the County of Shasta of a traditional and cultural affiliation with the project area and/or has requested consultation pursuant to Public Resources Code Section 21080.3.1.

**NOTE: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.**

**ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:**

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist on the following pages.

	Aesthetics		Agricultural Resources		Air Quality
	Biological Resources		Cultural Resources		Energy
	Geology / Soils		Greenhouse Gas Emissions		Hazards & Hazardous
	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

**DETERMINATION: (To be completed by the Lead Agency)**

On the basis of the 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 ENVIRONMENTAL 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.

Copies of the Initial Study and related materials and documentation may be obtained at the Planning Division of the Department of Resource Management, 1855 Placer Street, Suite 103, Redding, CA 96001. Contact David Schlegel, Senior Planner at (530) 225-5532.

## REVISIONS

Prior to the Planning Commission public hearing held on April 13, 2023, revisions were made to mitigation measure X.a.1. in Section X. Hydrology and Water Quality to require testing of soil pH annually rather than semi-annually as originally proposed. Pursuant to State CEQA Guidelines section 15074.1, Substitution of Mitigation Measures in a Proposed Mitigated Negative Declaration, recirculation of the Mitigated Negative Declaration is not required since the revised mitigation measure is equivalent or more effective in mitigating or avoiding potential significant effects and will not cause any potentially significant effect on the environment. The California Regional Water Quality Control Board has reviewed the revisions to mitigation measure X.a.1. and concurs with the determination that the revised mitigation measure is equivalent to the original mitigation measure in mitigating the project's potentially significant hydrology and water quality effect. The first revisions are denoted by ~~strikethrough~~ and underline.

Subsequent to the scheduled Board of Supervisors public hearing on May 16, 2023, which was not conducted, revisions to Section IV. Biological Resources were made pursuant to State CEQA Guidelines section 15073.5 to further address impacts from the project on nesting birds, gold eagles, bald eagles, gray wolves and wetlands. Pursuant to State CEQA Guidelines sections 15073.5 and 15074.1, recirculation of the Mitigated Negative Declaration is not required since the revisions are not substantial. The second revisions are denoted by ~~double-strikethrough~~ and double underline.

  
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David Schlegel, AICP  
Senior Planner

10/17/2023  
Date

  
\_\_\_\_\_  
Paul A. Hellman  
Director of Resource Management

10/17/23  
Date

## 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 parenthesis following each question. A “No Impact” answer is adequately supported if all 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 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.
- 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 XVIII, “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 cited 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 explanation of each issue should identify the following:
  - 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 less-than-significant.

I. <b>AESTHETICS:</b> Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?				✓
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?				✓
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?			✓	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			✓	

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a-b) The project would not substantially damage any scenic resource and would not have an adverse effect on any scenic vista. There is no view of the project site which includes a scenic vista. The project site is in the Millville Plains area at the northeast end of Leopard Drive, a private road, of which, the portion owned by the applicant would be dedicated to public use upon completion of improvements. Dersch Road, the nearest public road, is located approximately 0.5 miles south of the project site and at a significantly lower elevation. The next nearest public road is Millville Plains Road, located approximately 2 miles west from the project site. Due to the distance from these public vantage points and undulating topography in the form of low-lying hills, public views of the site and its surroundings are limited or substantially obstructed. The project site is not located on a designated scenic corridor nor is it near, or visible from, a State scenic highway.
- c) The project surroundings include large vacant lots to the west and east. The large lots to the north, south and southeast are developed with single-family residences, residential accessory buildings, and agricultural buildings. The proposed primary clubhouse with attached covered patio area and attached caretaker's residence, law enforcement clubhouse with attached covered patio, and generator buildings would be consistent with the existing visual character and quality of the site and its surroundings in terms of building size, number, and architecture. The proposed gravel and asphalt parking area, in the southeast corner of the property would be visible from neighboring properties. Landscaping and trees would be provided along the perimeter of this area which would serve as a visual buffer and aesthetic improvement. The project also proposes numerous bullet backstop berms to be constructed up to twenty feet in height with a 1.5:1 slope on one side and a 2:1 slope on the other. The project site is relatively flat. However, topography in the adjacent vicinity consists of varying elevations of hills and overall undulating topography. The bullet backstop berms would include native grass vegetation on all sides that are not intended for bullet trapping and would otherwise be relatively consistent with the views of the landscape in the area. Furthermore, the project site has been designed to minimize encroachment into existing ephemeral drainages and wetland features on site. Because the improvements proposed would primarily blend in with the natural environment and existing surrounding land uses and topography, the impacts on the existing visual character or quality of the site and its surroundings are not considered to be significant.
- d) The project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area. Glare would be eliminated by the use of non-reflective materials for construction of the project. The project lighting plan will be required to meet Shasta County Zoning Plan Section 17.84.040 which requires light to be designed and located so as to confine direct lighting to the premises and to not constitute a hazard to vehicular traffic. Exterior lighting fixtures shall not shine upon or illuminate directly on any surface other than the area required to be lighted. A lighting plan and cut sheets for the proposed lighting fixtures and bulbs shall be submitted with the building permit application(s) and approved by the Shasta County Planning Division prior to issuance of the building permit(s). Exterior lighting for dawn-to-dusk time periods would be affixed to exterior man-doors on the caretaker's residence and would be limited to the use of motion-sensing fixtures to illuminate exterior areas of the club houses. Based on the requirements for direct lighting, the exterior lighting proposed, and the limited time that exterior lighting would be operable impacts from new sources of lighting are considered to be less-than-significant.

**Mitigation/Monitoring:** None proposed.

<b>II. <u>AGRICULTURE AND FORESTRY RESOURCES:</u></b> In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				✓
b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?				✓
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				✓
d) Result in the loss of forest land or conversion of forest land to non-forest use?				✓
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The subject property is recognized as grazing land and is not identified as Prime Farmland, Unique Farmland, or Statewide Importance on the map titled Shasta County Important Farmland 2016.
- b) Agricultural uses are permitted on this property and the surrounding properties. While agricultural use is permissible on properties designated RB, the Shasta County General Plan does not recognize the project site and vicinity as agricultural lands capable of supporting full time grazing or crop operations or crop production by part-time or second income operators. The property is not in a Williamson Act Contract and neither are the adjacent properties. The closest properties in a Williamson Act Contract are approximately 1.4 miles to the southwest on the south side of Deschutes Road. Use of the project site for an outdoor gun range complex and gun club would not conflict with existing zoning for agricultural use or a Williamson Act Contract.
- c) The project would not conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)). The project site is not forest land, timberland or zone Timberland Production.
- d) The project would not result in the loss of forest land or conversion of forest land to non-forest use. The project site is not forest land.



- e) The project would not result in any conflicts with existing or adjacent agricultural operations. Seasonal grazing occurs throughout the project vicinity and would continue, at times, on the subject property. Seasonal grazing operations could continue in the project vicinity with little to no change. The project would not convert farmland as the site is not located in an area of significant agricultural soils.

**Mitigation/Monitoring:** None proposed.

III. <u>AIR QUALITY</u> : Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?			✓	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard?		✓		
c) Expose sensitive receptors to substantial pollutant concentrations?			✓	
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?			✓	

**Discussion:** Based on related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a-b) The project would not conflict with or obstruct implementation of the Northern Sacramento Valley Planning Area (NSVPA) 2018 Triennial Air Quality Attainment Plan for the Northern Sacramento Valley Air Basin as adopted by the Shasta County Air Quality Management District (SCAQMD), or any other applicable air quality plan. The NSVPA Air Quality Attainment Plan designates Shasta County as an attainment area for all federal standards, yet as a nonattainment area with respect to the ozone California ambient air quality standards. Ozone is a secondary pollutant, meaning it is not directly emitted. It is formed when volatile organic compounds (VOCs) or reactive organic gases (ROGs) and nitric oxides (NOx) undergo photochemical reactions that occur only in the presence of sunlight. NOx is emitted from combustion sources such as cars, trucks and buses, power plants, and off-road equipment. Construction equipment and activities associated with the development improvements would generate air contaminants, including oxides of nitrogen (NOx), reactive organic gases (ROG), carbon dioxide (CO2) and particulate matter (PM<sub>10</sub>), in the form of engine exhaust and fugitive dust.

The project would include two stationary sources of air contaminants in the form of diesel-powered generators. The generators are proposed to augment the primary source of power which would be provided by roof-mounted photovoltaic solar systems for the clubhouse, law enforcement clubhouse and caretaker's residence. Because the proposed photovoltaic solar arrays would be designed to account for the full amount of energy consumption for each building, the diesel-powered generators would only be used in times that energy consumption exceeds the projected need, for backup purposes or outside of daylight hours. Therefore, emissions from these sources would be minimized.

During construction the operation of gas- and diesel-powered off-road equipment would be the primary sources of air contaminants, including engine emissions and fugitive dust. The bulk of air contaminants from these sources would be emitted during the site preparation phase of the construction project from activities such as mass grading and excavation for utilities, parking areas and driveways, the on-site wastewater treatment system, stormwater drainages and culverts, bullet backstop mounds, and building footings.

Other potential sources of air contaminants during construction would include application of architectural coatings and the use of adhesives and sealants. The *Air Quality & GHG Emissions Impact Assessment*, Prepared by Ambient Air Quality & Noise Consulting, March 2016, concludes that, construction-generated emissions of NOx would reach a maximum daily level of 13.9 and PM<sub>10</sub> would reach a maximum daily level of 1.7. The SCQAMD's established air quality significance thresholds are 25 lbs/day for NOx, 80 lbs/day for PM<sub>10</sub>, and 25 lbs/day for ROG. While the maximum daily levels of NOx and PM<sub>10</sub> are below the adopted thresholds, the project would result in an increase of approximately 63.9 lbs/day of ROG during construction. Emissions of ROG would exceed 25lbs/day primarily due to evaporative emissions during the architectural coating application phase of construction.

The exceedance of thresholds of significance for ROG would be reduced to a level less-than-significant with the incorporation of mitigation measure III.b.1 which would require exterior and interior architectural paints used during the construction of the proposed clubhouse and associated structures to use interior and exterior architectural paints that would contain a limited amount of compounds that would contribute to this emission type.

Overall, the emissions emitted during construction would be limited and temporary. In addition, the Shasta County General Plan requires the application of Standard Mitigation Measures and Best Available Mitigation Measures to all discretionary land use applications, as recommended by the SCAQMD, to mitigate both direct and indirect emissions of non-attainment pollutants, and all activities at the site would be subject to applicable SCAQMD rules governing air quality. Application of this requirement, mitigation measure III.b.1 and compliance with SCAQMD rules in combination with the limited scope of improvements and limited operational hours will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard and would not conflict with or obstruct implementation of the NSVPA Air Quality Attainment Plan (2018) as adopted by Shasta County, or any other applicable air quality plan.

c-d) Residential uses exist in the vicinity of the project site, but not in great number. The closest residence is located approximately 600 feet south of the property and more than 1,800 feet from where the asphalt concrete parking area would be constructed. Implementation of the proposed project includes diesel generators which would be housed in buildings and emit odor from exhaust fumes. Such odor may be objectionable to some people. Construction of the project would involve a variety of gasoline or diesel-powered equipment that would emit exhaust fumes as well. In addition, pavement coatings used during project construction would also emit temporary odors. However, construction-generated emissions would occur intermittently throughout the workday and would dissipate rapidly within increasing distance from the source. Furthermore, the proposed diesel generators would not be considered to emit substantial pollution concentrations or odors because they would be used to augment the primary source of power for the facility as described above. Sensitive receptors in the project vicinity are few and are located a significant distance from the diesel generator buildings and where construction activities will occur. Therefore, the project is not expected to expose sensitive receptors to substantial pollution concentrations or result in objectionable odors that would adversely impact a substantial number of people. Therefore, such impacts would be considered less-than-significant.

**Mitigation/Monitoring:** With the mitigation measures being proposed, the impacts will be less-than-significant:

III.b.1: To mitigate emissions of Reactive Organic Gases (ROG) exceeding Shasta County maximum thresholds of significance, the applicant shall select exterior and interior architectural paints for use during construction of the proposed clubhouses and generator buildings that does not exceed a Volatile Organic Compounds (VOC) content of 50 grams per liter. To the extent available, the use of prefinished construction materials is recommended. The applicant shall provide proof of paint selection or pre-finished materials meeting this requirement to the Shasta County Planning Division prior to issuance of the building permit.

IV. <b><u>BIOLOGICAL RESOURCES:</u></b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Have a substantial effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		✓		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?			✓	
c) Have a substantial adverse effect on state or Federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			✓	
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of				✓

IV. <b>BIOLOGICAL RESOURCES:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
native wildlife nursery sites?				
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				✓
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community, Conservation Plan, or other approved local, regional, or State habitat conservation plan?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, and project-specific studies completed for the project, the following findings can be made:

- a) A review of the 2022 California Natural Diversity Database (CNDDDB) inventory found no species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service have been known to occur on the project site. *Paronychia Ahartii* (Ahart’s Paronychia) has been identified on property within roughly a mile of the project boundaries. A variety of wetlands including vernal pools, vernal pool complexes, vernal swales, and stream and riparian areas along with prairie grasslands exist in the project vicinity. Wetlands feature such as these may provide habitat for sensitive flora and fauna species, including such species as Ahart’s Paronychia. Because of the potential for the project to contain sensitive flora and fauna species, and because the project design originally proposed to significantly alter the drainage pattern, a biological assessment was requested to survey the project site for sensitive species and determine impacts, if any, on those species or their habitat. The *High Plains Shooting Center Project Biological Review* (Biological Review) was prepared by Wildland Resource Managers in January 2016 for the project. The Biological Review included multiple site surveys along with assessment of readily available, soils, biological and botanical information for the area.

According to the Biological Review there were no sensitive species resources present in the upland annual grassland features of the project. However, the vernal features and habitat present on the project site could support 20 species of either flora or fauna that are listed as either rare, threatened, endangered or a species of concern listed in the CNDDDB or California Native Plant Society list. The majority of these species occur in wetlands and vernal pools, including the Branchinecta Lynchi (vernal fairy shrimp), Linderiella Occidentalis (California linderella), Sagittaria Sanfordii (Sanford’s arrowhead) and the Spea Hammondii (Western spadefoot toad). Due to the discovery of significant habitat on the project site in the form of vernal swales, vernal pools, wetlands, ephemeral drainages and intermittent streams the project was revised and the bullet backstop footprints were significantly scaled back and re-oriented. As a result, the project is designed to protect and entirely avoid nearly all designated wetland features that could serve as habitat for listed species (see Section c for more discussion on wetlands).

An informal consultation letter along with the Biological Review and follow-up information was sent to the California Department of Fish and Wildlife (CDFW) prior to preparation of the initial study. CDFW commented on the project to express concern regarding potential impacts to the Western spadefoot toad which is listed in the CNDDDB as a species of special concern. However, because the project is designed to ensure that no wetland areas would be altered and to direct drainage from bullet backstop traps away from wetlands, and since operational hours would not overlap with times which the toads typically emerge from burrows, CDFW did not recommend surveys for the presence of Western spadefoot toad.

The overall impact to grassland habitat is 11.74 acres or 7 percent of the 151.78 acres and as grazing will continue in the winter months, only birds that nest in shorter grass could be impacted. These species include the western meadowlark (Sturnella neglecta), killdeer (Charadrius vociferus), burrowing owl (Athene cunicularia), horned lark (Eremophila alpestris) and grasshopper sparrow (Ammodramus savannarum). Of these species, only the burrowing owl is listed as a species of special concern and none are listed as a California or Federal endangered species. In addition, the July 2023 report further found that some species, habitat range does not include the project site, that some species are tolerant to human activity and that the overall loss of grassland habitat would not have a significant impact to the respective species’ population. To date, the biological surveys conducted on the site found no nests for any of these species and it should be noted that Mitigation Measure IV.a.1 requires that vegetation removal and ground disturbance be performed outside of the nesting season or, if performed during the nesting season, that appropriate buffers be established by a qualified biologist in consultation with CDFW if nesting birds and/or raptors are found to be present.

The gray wolf (*Canis lupus*) is listed as an endangered species in California. Public comment mentioned the presence of the gray wolf in and near the project site. Because the gray wolf is tracked extensively by CDFW, the presence of most wolves in the State are well-documented and maps are published on the CDFW website of the locations of known wolfpacks. Since the project was reviewed by Wildland Resource Managers in 2017 to the present, no wolfpack territories have been established in Shasta County. A senior biologist with CDFW, Kent Loudon, stated that there are no known denning areas near the project site and that while a transient wolf may have been spotted in 2013 or 2018, that even confirmed sightings would not be particularly relevant for assessing the presence of wolves at this time. Due to the project site's elevation, the activity of the gray wolf would be limited to the months of February and March for hunting of prey and would likely only include the Bear Creek ravine portion of the project area. Furthermore, if single or small number of wolves were dispersing through the project site, there is no substantial evidence to support that the impact to such wolves from the project would be significant.

Noise from the project can have an impact on biologically sensitive species. Of the species listed as possibly occurring on the project site, the western spadefoot toad and four species of bats could be impacted by noise from the project. In addition, public testimony indicates that a variety of raptor species are present in the project vicinity. The High Plains Shooting Center: Response to the Shasta County Planning Department's Request of May 11, 2017 for Additional Information (Response to Additional Information) prepared by Wildland Resource Managers in June of 2017 describes impacts to wildlife from noise and a follow-up response to public comments prepared by Wildland Resource Managers in July of 2023 provides further analysis of noise impacts from the project on raptors such as bald eagles and golden eagles. Noise impacts on wildlife is a very complicated issue which must take into account species behavior, types of noise, duration of sound, distance from source, frequency, time of day and weather. Generally, noise impacts on bat species can be linked to reduced foraging activity. However, the project will not be in operation during foraging hours with noise sources during that time being limited to those produced by a single-caretaker's residence and intermittent overnight RV camping on the far west side of the property. These noise sources are proposed to be located roughly a half-mile away from the nearest roosting site and adjacent foraging areas. Any bat species which may occur on site would forage during the evening when the gun range complex is not operational. According to most information related to impacts from noise on Western spadefoot toad, low-frequency and ground vibration noise sources (typically from nearby roads/vehicular traffic), cause the toads to come out of their burrows – which can be very detrimental to their lifecycle. However, road and vehicular access to the site is limited and would not be located in a majority of the habitat that Western spadefoot toad could occupy. Vehicular access would be provided via crossings over four ephemeral drainages in the southeast portion of the property and along the western property boundary. No other vehicular access would directly impact wetland features which could serve as habitat for Western spadefoot toad.

No known nesting locations of any type of raptor were referenced or identified in field observations. For gun ranges and similar activities, buffers of up to ½-mile from active bald eagle nesting sites are recommended (the farthest buffer requirement of any raptor) but lesser buffers may be suitable if the bald eagle in question displays greater tolerance of noise. Further, such buffers would only be necessary if nesting sites are present. While the Bear Creek ravine includes suitable nesting habitat, no nests were identified or located within this area. The topography of and vegetation within the Bear Creek ravine serve as a buffer to sound should nesting birds or raptors seek to nest in the ravine after construction has started or during future operations. In general, whether nesting birds will seek to take advantage of nesting opportunities in the vicinity in the future and/or their level of tolerance to noise from gun range operations, and therefore a suitable buffer, is speculative.

Based on the project design, operational hours as well as conclusions in the Response to Additional Information and the Response to the May 16, 2023 letter to the Shasta County Board of Supervisors from Law Office of Donald Mooney, which both found that the existing topography, proposed earthen berms and incorporation of noise barriers as part of Mitigation Measure XIII.a.1 would significantly reduce noise from gun firing, and that no nesting locations were present on the project site or within the project vicinity, impacts to wildlife from noise are considered to be less-than-significant.

Similar to noise, light pollution can have an impact on wildlife behavior and habitat. However, the only exterior lighting proposed for the project would be for security purposes around the direct vicinity of the clubhouses, caretaker's residence and generator shed buildings. The primary clubhouse with the attached caretaker's residence and nearby generator shed are all located over 600-feet away from vernal swales or pools which would serve as Western spadefoot toad habitat and all of the existing trees where roosting of bats or nesting of birds can take place are on the far east side of the property from these buildings. The law-enforcement clubhouse and associated generator shed is located roughly 200-feet away from a vernal swale and is located centrally-a significant distance from roosting and nesting trees. The shooting sports center would not operate after sundown and does not require additional lighting around the project area. In addition, lighting on exterior of the buildings would be motion-sensor-based and directed downward. Based on the limited lighting sources, the limited time lighting would be activated, their orientation downward and their distance from sensitive species habitat, impacts from new lighting sources on species is considered to be less-than-significant.

The project includes removal of 7 oak trees to accommodate the construction of 500-, 600-, and 1,000-yard bullet backstop berms and line-of-sight for rifle firing on the eastern side of the project. The removal of oaks could potentially have a significant impact on roosting bats or nesting migratory birds due to the presence of cavities, and defoliating bark on many of the trees in this area. If

the trees are removed during the nesting and roosting season or when nesting and roosting has been initiated the impact would be significant on raptors and migratory birds as well as bat species which were identified in the Biological Report. Mitigation Measures IV.a.1 and IV.a.2 are recommended to ensure that vegetation removal and ground disturbance occurs outside of the nesting and roosting seasons, or, if not, that surveys are conducted prior to vegetation removal or disturbance. With these mitigation measures incorporated into the project, impacts to raptors or migratory birds and bat species would be less-than-significant.

- b) Riparian areas exist on the project site adjacent to Bear Creek. These riparian areas intermix with upland blue oak woodlands and foothill pines to cover roughly 21-acres along the eastern side of the 151.78-acre property. Approximately, 17-acres is comprised of blue oak woodland or blue oak and foothill pine woodland areas along the plateau and nearest the banks of Bear Creek. The project does not propose development in or near the riparian habitat area but would remove roughly 7 oak trees in the blue oak woodland/grassland areas near the western bank of Bear Creek to accommodate 500-, 600- and 1,000-yard bullet backstop berms. The removal of oaks could potentially have a significant impact on roosting bats or nesting migratory birds due to the presence of cavities, and defoliating bark on many of the trees in this area (see Section IV(a) for discussion related to bird and bat species). However, the removal of 7 trees at the outer edge/grassland area of a 17-acre oak woodland and foothill pine area would amount to roughly 2% of tree canopy loss in that area and would be considered a less-than-significant impact on the blue oak woodland habitat and riparian habitat.
- c) Based on the *High Plains Shooting Center Wetlands Delineation*, prepared by Wildland Resource Managers in January of 2017 and a *Preliminary Jurisdictional Determination* issued by the United States Army Corps of Engineers (USACE), the 151.78-acre project site contains approximately 11.75-acres of vernal swales, 0.428 acres of vernal pools, and 2.221 acres of intermittent and ephemeral streams. In addition, Bear Creek runs through the project area. It, along with the adjacent riparian and woodland area, covers roughly 21 acres along the eastern portion of the property (see discussion on riparian habitat in Section IV(b)). The riparian area and the banks of Bear Creek will not be altered. In addition, the project footprint has been designed to avoid alteration of every identified wetland area. No dredge, fill, or replacement of these wetland areas is proposed. Bottomless arched culverts and pedestrian bridges which would not impede the hydrologic function of the property are proposed for vehicle and pedestrian crossings. In addition, bullet backstop berms would be designed to ensure runoff is directed away from wetlands, other areas with temporarily disturbed by construction of the project would be reseeded utilizing 2-4 inches of topsoil preserved from areas on site which would be permanently improved. An existing road crosses through vernal complexes identified on the site. However, the project applicant does not intend to increase the use of this road in any fashion. In addition, the property is currently used for cattle grazing operations. Vernal swales and other vernal features can be impacted by cattle through trampling and over-grazing. The project would propose to graze cattle only on an as-needed basis to keep for wildland fuel as well as evasive plant management. Firing positions for the 300-, 500- and 600- would be located within a vernal swale on the southeast portion of the project site. These firing positions would cause some disturbance to the vernal swale. The *Environmental Management Plan*, prepared by the applicant for ongoing management of the site includes recurring contaminant recovery from shooting areas. This would include both bullet fragments and spent shells and casings in firing locations. With the incorporation of best management practices into the project and considering the change in baseline conditions from cattle grazing to pedestrian disturbance in a minimal area relative to the overall habitat on site, impacts to wetlands from the project are considered to be less-than significant.
- d) The project is not expected to interfere with any wildlife species, nor impede the use of native wildlife nursery sites. There are no wildlife nurseries present in the vicinity of the project area and no observed wildlife migratory pattern which would span the project site or surrounding area. Bear Creek is listed as a significant creek corridor for salmon spawning habitat and spans the eastern edge of the project site. However, the site's hydrologic function is designed to remain relatively unchanged, and with regular maintenance of bullet trapping areas and water sampling and monitoring as described in recommended Mitigation Measure X.a.1, the project is not expected to have a significant impact on native or migratory fish in Bear Creek.
- e) The project would not conflict with any ordinances or policies which protect biological resources. There is no ordinance which addresses impacts to biological resources or oak woodlands, and the project is designed in a way which does not involve construction or significant alteration of existing riparian habitat areas adjacent to Bear Creek. The Shasta County Board of Supervisors' Resolution No. 95-157 provides guidance regarding use and protection of oak trees on a voluntary basis. In addition, grading permits will be required for earthen berm construction and erosion control measures will be enforced.
- f) There are no adopted Habitat Conservation Plan, Natural Community, Conservation Plan, or other approved local, regional, or State habitat conservation plans for the project site or project area. There would not be any conflict with local policies or ordinances protecting biological resources, nor with any habitat conservation plans.

**Mitigation/Monitoring:** With the mitigation measures being proposed, the impacts will be less-than-significant:

*Nesting Birds and/or Raptors*

IV.a.1: In order to avoid impacts to nesting migratory birds and/or raptors protected under federal Migratory Bird Treaty Act and California Fish and Game Code Section 3503 and Section 3503.5, including their nests and eggs, one of the following shall be implemented:

- a. Vegetation removal and other ground-disturbance activities associated with construction shall occur between September 1 and January 31 when birds are not nesting; or
- b. If vegetation removal or ground disturbance activities occur during the nesting season (February 1 through August 31), a pre-construction nesting survey shall be conducted by a qualified biologist within 14 days of vegetation removal or construction activities. If an active nest is located during the preconstruction surveys, a non-disturbance buffer shall be established around the nest by a qualified biologist in consultation with the Department of Fish and Wildlife (CDFW). No vegetation removal or construction activities shall occur within this non-disturbance buffer until the young have fledged, as determined through additional monitoring by the qualified biologist. The results of the pre-construction surveys shall be sent electronically to CDFW at [RICEQARedding@wildlife.ca.gov](mailto:RICEQARedding@wildlife.ca.gov).

**Bats**

IV.a.2: In order to avoid impacts to bats, the following shall be implemented:

- a. Conduct removal and disturbance of trees outside of the bat maternity season and bat hibernacula (September 1 to October 31).
- b. If removal or disturbance of trees will occur during the bat maternity season, when young are non-volant (March 1 - August 31), or during the bat hibernacula (November 1 - March 1), large trees (those greater than 6 inches in diameter) shall be thoroughly surveyed for cavities, crevices, and/or exfoliated bark that may have high potential to be used by bats within 14 days of tree removal or disturbance. The survey shall be conducted by a qualified biologist or arborist familiar with these features to determine if tree features and habitat elements are present. Trees with features potentially suitable for bat roosting should be clearly marked prior to removal and humane evictions must be conducted by or under the supervision of a biologist with specific experience conducting exclusions. Humane exclusions could consist of a two-day tree removal process whereby the non-habitat trees and brush are removed along with certain tree limbs on the first day and the remainder of the tree on the second day.

<b><u>V. CULTURAL RESOURCES:</u></b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?				✓
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?				✓
c) Disturb any human remains, including those interred outside of formal cemeteries?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The project would not cause a substantial adverse change in the significance of a historical resource.
- b) The project would not cause a substantial adverse change in the significance of an archaeological resource.
- c) The project site is not on or adjacent to any known cemetery or burial area. Therefore, there is no evidence to suggest that the project would disturb any human remains.

Information about the project was sent to the Northeast Information Center of the California Historical Resources Information System, which reviewed the project and commented that the project area is considered to be highly sensitive for cultural resources.

The project site was surveyed in 2015 for archeological and cultural resources by Trudy Vaughn of Coyote & Fox Enterprises who produced the *Archaeological Reconnaissance for the High Plains Shooting Sports Center* in May of 2015. In addition to a review of archaeological records in and around the project area, a pedestrian survey was conducted over the entire project area. The report identified five isolated artifacts: One core of cryptocrystalline silicate material, one obsidian flake with cortex, one basalt flake with cortex, a piece of heavy-gauge sheet metal with threaded holes considered likely to be historic and one basalt flake. The isolated artifact or feature locations were noted in the survey and occurred within the project site. These cultural resources show evidence of human activity, but they were limited in quantity at each location they were found and thus lacked the criteria under CEQA to be formally recorded as archaeological sites. It was concluded that these isolated artifacts were not considered to be significant cultural resources. Therefore, a clearance was recommended by the cultural resource specialist.

Although there is no evidence to suggest that the project would result in any significant effect to archaeological, historical, or paleontological resources, there is always the possibility that such resources could be encountered. Therefore, a condition of project approval will require that if, in the course of development, any archaeological, historical, or paleontological resources are uncovered, discovered or otherwise detected or observed, development activities within 100 feet of the affected area shall cease and a qualified archaeologist shall be contacted to review the site and advise the County of the site's significance. If the findings are deemed significant by the Environmental Review Officer, appropriate mitigation shall be required.

**Mitigation/Monitoring:** None proposed.

<b><u>VI. ENERGY:</u></b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?			✓	
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. During construction there would be a temporary consumption of energy resources required for the movement of equipment and materials. Compliance with local, State, and Federal regulations (e.g., limit engine idling times, requirement for the recycling of construction debris, etc.) would reduce and/or minimize short-term energy demand during construction to the extent feasible, and construction would not result in a wasteful or inefficient use of energy. Operational hours for the project would be limited to daylight hours up to 5 days a week. This reduces the amount of energy needed to support interior lighting of commercial buildings on site. Exterior lighting would also be motion-sensing in most places surrounding the proposed buildings. Furthermore, through compliance with applicable requirements and/or regulations of the 2016 California Code of Regulations, Title 24, Part 6 – California Energy Code, individual project elements (e.g., building design, HVAC equipment, etc.) would be consistent with State reduction policies and strategies, and would not consume energy resources in a wasteful or inefficient manner.
- b) The project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. State and local agencies regulate the use and consumption of energy through various methods and programs. As a result of the passage of Assembly Bill 32 (AB 32) (the California Global Warming Solutions Act of 2006) which seeks to reduce the effects of Greenhouse Gas (GHG) Emissions, a majority of the state regulations are intended to reduce energy use and GHG emissions. These include, among others, California Code of Regulations, Title 24, Part 6 – California Energy Code, and the California Code of Regulations, Title 24, Part 11– California Green Building Standards Code (CALGreen). At the local level, the County’s Building Division enforces the applicable requirements of the Energy Efficiency Standards and Green Building Standards in Title 24. In addition, the project proposes to use renewable solar as its primary source of electricity. The solar power components of the project would be designed to meet the power needs of the project and diesel generators would be used only to augment that primary source of power.

**Mitigation/Monitoring:** None proposed.

<b><u>VII. GEOLOGY AND SOILS:</u></b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				✓

<b><u>VII. GEOLOGY AND SOILS:</u></b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
i) Rupture of a known earthquake, fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publications 42.				
ii) Strong seismic ground shaking?				
iii) Seismic-related ground failure, including liquefaction?				
iv) Landslides?				
b) Result in substantial soil erosion or the loss of topsoil?		✓		
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?				✓
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?				✓
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?				✓
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

a) The project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault;

According to the Alquist-Priolo Earthquake Fault Zoning Maps for Shasta County, there is no known earthquake fault on the project site.

ii) Strong seismic ground shaking;

According to the Shasta County General Plan Section 5.1, Shasta County has a low level of historic seismic activity. The entire County is in Seismic Design Category D. According to the Seismic Hazards Assessment for the City of Redding, California, prepared by Woodward Clyde, dated July 6, 1995, the most significant earthquake at the project site may be a background (random) North American crustal event up to 6.5 on the Richter scale at distances of 10 to 20 km.

All structures shall be constructed according to the seismic requirements of the currently adopted Building Code.

iii) Seismic-related ground failure, including liquefaction;

The project is not in an area which is prone to liquefaction or seismic-related ground failure. Soils at the project site are not of the type where liquefaction typically occurs and is not near any known fault lines.

iv) Landslides.

The project is not proposing development near any sloped area that would be prone to landslides.



- b) The Soil Survey of Shasta County, completed by the United States Department of Agriculture, Soil Conservation Service and Forest Service in August, 1974, identified soils in the project site as being well-drained with hazards of erosion ranging from slight to high. Igo Gravelly Loam, 0 to 8 percent slope soil is present within the northwest and eastern extents of the property. This soil type has a run-off class of moderate to high. Keefers Gravelly Loam, 3 to 8 percent slope soil is present within the roughly western 1/3<sup>rd</sup> of the property and it has a runoff class of moderate to high. Keefer Gravelly Loam, 0 to 3 percent slope is present within the center 1/3<sup>rd</sup> of the project site. This soil type has a runoff class of slight to moderate. The eastern 1/3<sup>rd</sup> of the project area consists of Toomes Very Rocky Loam, 0 to 50 percent slopes and rockland and it has a runoff class that is moderate to high.

Soils within the project site are prone to transferring sediment and erosion if not properly managed. In addition, construction of earthen berms, clubhouses, and the caretaker’s residence could result in loss of topsoils considered to be significant. The Igo gravelly loam, Keefers Gravelly Loam have relatively shallow soils depth to the hardpan and the Toomes Very Rocky Loam has relatively shallow soils above lithic bedrock. Construction could cause loss of topsoil that are critical in absorbing runoff on the project site and limiting erosion. A grading permit is required prior to any grading activities. The grading permit includes requirements for erosion and sediment control, including retention of topsoil. In addition, in order to reduce impacts from loss of topsoil to a level that is less-than-significant, Mitigation Measure VII.b.1 is incorporated into the project. This mitigation measure would require careful removal and retention of at least 2 to 4 inches of topsoil to be used on the backside slopes of the bullet backstop berms where reseeding could be successful.

- c) The project would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. The topography of the site is predominantly level, with small undulations. The threat of landslides, lateral spreading, subsidence, liquefaction, or collapse is insignificant as the geology of the area demonstrates great stability. The site also includes a rocky ridge adjacent to Bear Creek, and it is unlikely that there would be any seismic related ground failure, particularly liquefaction in this area. Furthermore, no improvements are proposed in this area of the project.
- d) The project would not be located on expansive soil creating substantial direct or indirect risks to life or property. The currently adopted Building Code requires preparation and review of a site-specific soils report as part of the building design and approval process. The site soils are listed as low to moderate expansive soils in the “Soil Survey of Shasta County.”
- e) The project site may have soils or other physiographic features such as shallow depth to groundwater that render areas within the site incapable of feasibly supporting the use of conventional on-site wastewater treatment systems or alternative on-site wastewater treatment systems. However, the project proposal was reviewed by the Environmental Health Division and it was determined that regardless of the results of required soils testing, there would still be adequate area and suitable locations for mounded onsite wastewater systems which utilize imported soils and would meet the requirements for wastewater treatment.
- f) The project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. A review of the Minerals Element of the General Plan and observations of the project site has resulted in no unique paleontological resource or site or unique geologic features being identified on the project site.

**Mitigation/Monitoring:** With the mitigation measures being proposed, the impacts will be less-than-significant:

VII.b.1: In order to avoid significant erosion impacts and substantial loss of topsoil the applicant shall carefully remove 2 to 4 inches of topsoil where buildings and earthen berms are proposed, retain the topsoil, and utilize it in areas that require reseeding for erosion control, including, but not limited to, the backside of all bullet backstop berms. The areas from where topsoil will be carefully removed and then stockpiled shall be shown on approved grading plans prior to issuance of a grading permit and its use for erosion control shall be described, in concept, in the erosion control plan. Prior to final inspection of the grading permit an as-built plan detailing where and how the topsoil was applied for reseeding in accordance with erosion control plan shall be provided to the Shasta County Planning Division for field confirmation prior to final inspection of the grading permit.

<b>VIII. GREENHOUSE GAS EMISSIONS:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✓	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			✓	

**Discussion:** Based on these comments, the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

a-b) In 2005, the Governor of California signed Executive Order S-3-05, establishing that it is the State of California's goal to reduce statewide greenhouse gas (GHG) emission levels. Subsequently, in 2006, the California State Legislature adopted Assembly Bill AB 32, the California Global Warming Solutions Act. In part, AB 32 requires the California Air Resources Board to develop and adopt regulations to achieve a reduction in the State's GHG emissions to year 1990 levels by year 2020.

California Senate Bill 97 established that an individual project's effect on GHG emission levels and global warming must be assessed under CEQA. SB 97 further directed that the State Office of Planning and Research (QPR) develop guidelines for the assessment of a project's GHG emissions. Those guidelines for GHG emissions were subsequently included as amendments to the CEQA Guidelines. The guidelines did not establish thresholds of significance and there are currently no state, regional, county, or city guidelines or thresholds with which to direct project-level CEQA review. As a result, Shasta County reserves the right to use a qualitative and/or quantitative threshold of significance until a specific quantitative threshold is adopted by the state or regional air district.

The City of Redding currently utilizes a quantitative non-zero project-specific threshold based on a methodology recommended by the California Air Pollution Officers Association (CAPCOA) and accepted by the California Air Resources Board. According to CAPCOA's Threshold 2.3, CARB Reporting Threshold, 10,000 metric tons of carbon-dioxide equivalents per year (mtCO<sub>2</sub>eq/yr) is recommended as a quantitative non-zero threshold. This threshold would be the operational equivalent of 550 dwelling units, 400,000 square feet of office use, 120,000 square feet of retail, or 70,000 square feet of supermarket use. This approach is estimated to capture over half the future residential and commercial development projects in the State of California and is designed to support the goals of AB 32 and not hinder it. The use of this quantitative non-zero project-specific threshold by Shasta County, as lead agency, would be consistent with certain practices of other lead agencies in the County and throughout the State of California.

The United States Environmental Protection Agency (EPA) identifies four primary constituents that are most representative of the GHG emissions. They are:

- Carbon Dioxide (CO<sub>2</sub>): Emitted primarily through the burning of fossil fuels. Other sources include the burning of solid waste and wood and/or wood products and cement manufacturing.
- Methane (CH<sub>4</sub>): Emissions occur during the production and transport of fuels, such as coal and natural gas. Additional emissions are generated by livestock and agricultural land uses, as well as the decomposition of solid waste.
- Nitrous Oxide (N<sub>2</sub>O): The principal emitters include agricultural and industrial land uses and fossil fuel and waste combustion.
- Fluorinated Gases: These can be emitted during some industrial activities. Also, many of these gases are substitutes for ozone-depleting substances, such as CFC's, which have been used historically as refrigerants. Collectively, these gases are often referred to as "high global-warming potential" gases.

The primary generators of GHG emissions in the United States are electricity generation and transportation. The EPA estimates that nearly 85 percent of the nation's GHG emissions are comprised of carbon dioxide (CO<sub>2</sub>). The majority of CO<sub>2</sub> is generated by petroleum consumption associated with transportation and coal consumption associated with electricity generation. The remaining emissions are predominately the result of natural-gas consumption associated with a variety of uses.

The project would establish a Commercial-Recreation zone district for an outdoor gun range complex and gun club with a 4,975-square-foot primary clubhouse with a 3,272-square-foot attached covered patio area and a 1,025-square-foot attached caretaker's residence as well as a 699-square-foot law enforcement clubhouse with a 270-square-foot attached covered patio. Leopard Drive would be improved to the Minor Local (rural) Shasta County road standard. A portion of the on-site parking area would be surfaced with asphalt concrete paving with the remainder being surfaced with gravel. The facility would host patrons and law enforcement officers five days a week and would include special events throughout the year which would typically attract between 30 and 200 people with the largest event being limited to 500 people. The *Air Quality & GHG Impact Assessment for High Plains Shooting Sports Center*, prepared by Ambient Air Quality & Noise Consulting in March of 2016, summarized the projected GHG emissions for both long-term operation and short-term construction of the project. The Impact Assessment concluded that the majority of GHG emissions associated with construction would be attributable to CO<sub>2</sub> generated from mobile sources (vehicles and equipment). Other GHG pollutants, such as CH<sub>4</sub> and N<sub>2</sub>O would be generated during construction but to a lesser extent. GHG emissions modeling estimates that construction of the project would generate a maximum of approximately 87 MTCO<sub>2</sub>e/year. Construction-generated GHG emissions would not exceed the 10,000 MTCO<sub>2</sub>e discussed above nor would it exceed the more stringent 1,100 MTCO<sub>2</sub>e threshold recommended by the Sacramento Metropolitan Air Quality Management District.

According to the *Air Quality & GHG Impact Assessment for High Plains Shooting Sports Center*, increases of GHG emissions for long-term operation of the project would also consist primarily of CO<sub>2</sub> and to a lesser extent CH<sub>4</sub> and N<sub>2</sub>O. The sources of these GHG emissions would include energy use, motor vehicles, waste generation, water use & conveyance and changes in on-site sequestration from the loss of existing grassland. The impact assessment concludes that operational emissions could reach as high as 360.7 MTCO<sub>2</sub>e if proposed trees are not factored into sequestration offset. This would not exceed significance thresholds of 10,000 MTCO<sub>2</sub>e discussed above nor the more stringent 1,100 MTCO<sub>2</sub>e threshold recommended by the Sacramento Metropolitan Air Quality Management District.

The incorporation of Shasta County AQMD Standard Mitigation Measures which, are included as conditions of approval in accordance with the Shasta County General Plan, reduce GHG emissions associated with long-term operation and with construction activities. The project proposes 12 shade trees around the asphalt parking area which serves to offset carbon sequestration loss from development elsewhere on the site. With Standard Mitigation Measures and based on the project proposal, impacts from long-term GHG emissions as well as construction-related emissions of GHGs would not exceed any thresholds of significance and would not conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Therefore, GHG emissions from the project are not substantial and are considered less-than-significant.

**Mitigation/Monitoring:** None proposed.

<b>IX. HAZARDS AND HAZARDOUS MATERIALS:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			✓	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			✓	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				✓
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				✓
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?				✓
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				✓
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?			✓	

**Discussion:** Based on these comments, the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a-b) The project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. The project would include the temporary transport of hazardous materials, including solvents during the construction phase of the project. After construction, the project would include the routine transport of small quantities ammunition to the site to be sold in the clubhouse for use by customers. The Environmental Management Plan provided by the applicant includes the routine collection of bullet fragment recovery and spent ammunition and casings would be disposed of properly. The Environmental Management Plan, range safety program and the standard requirement for a Hazardous Materials Business Plan (HMBP) are all designed to ensure that the project would not cause a significant impact related to upset or accident conditions involving the release of hazardous materials. Construction related hazardous materials and ammunition would be secured, stored and handled properly. Therefore, impacts from the routine use, transport or disposal of hazardous materials is considered to be less-than-significant.
- c) The project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. The project site is not located within a quarter mile of an existing or proposed school.
- d) The project is not located on a site which is included on a list of hazardous materials sites and would not create a significant hazard to the public or the environment. The project site is not included on the list of hazardous materials sites compiled by the California Department of Toxic Substances Control. Furthermore, there is no historical evidence of any commercial activity on the site that would have used hazardous materials.
- e) The project is not located within an airport land use plan or within two miles of a public airport or public use airport.
- f) The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. A review of the project and the Shasta County and City of Anderson Multi-Jurisdictional Hazard Mitigation Plan indicates that the proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- g) The project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. The Shasta County Fire Department has indicated that the project is in an area which is designated a “HIGH” fire

hazard severity zone. All roadways, driveways and buildings for the proposed project would be constructed in accordance with the Shasta County Fire Safety Standards. These standards also require the clearing of combustible vegetation around all structures for a distance of not less than 30 on each side or to the property line. The California Public Resources Code Section 4291 includes a “Defensible Space” requirement of clearing 100 feet around all buildings or to the property line, whichever is less. In addition, a *Fuels & Vegetation Management Plan* has been prepared by Butler Engineering in May of 2020 which ensures that fuels on site are managed in a way which reduces the risk of loss, injury, or death involving wildfires to a level that is less-than significant.

**Mitigation/Monitoring:** None proposed.

<b>X. <u>HYDROLOGY AND WATER QUALITY:</u></b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?		✓		
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.			✓	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (iv) impede or redirect flows?			✓	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				✓
e) Conflict with or obstruct implementation of a water quality control plan or sustainable management plan?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The project is located in a highly sensitive environment with respect to water quality due to the presence of various aquatic resources which are recognized as protected “waters of the United States” and regulated under Section 404 of the Clean Water Act. The State of California Porter-Cologne Water Quality Control Act similarly regulates potential water quality impacts from point and nonpoint pollution sources on surface, ground and saline waters of the State. The *Wetlands Delineation – High Plains Shooting Sports Center*, prepared for the project by Wildland Resource Managers in January, 2017 was submitted for a preliminary jurisdictional review the United States Army Corps of Engineers (USACE) which confirmed the findings of Wildland Resource Managers that there were jurisdictional “waters of the United States” present on site in the form of vernal swales, vernal pools, ephemeral streams and intermittent streams. In addition, comments from the State of California Regional Water Quality Control Board (RWQCB) indicate that discharge of materials or fill into geographically isolated waters would also be regulated by their agency. All in all, the total acreage of palustrine or emergent wetlands on the 151.78-acre project site recognized by the USACE equals a total of 12.153 acres with an additional 2.22 acres of non-wetland waters. The topography of the site and observed drainage patterns indicate that wetland features and overall site drainage tends to flow from west, northwest to south, southeast to a drainage point on the southeast portion of the property where it flows into Bear Creek which subsequently flows into the Sacramento River.

The project proposes construction of buildings, on-site wastewater facilities and bullet backstops in a way which avoids the identified wetlands. Standard conditions for the project and comments from USACE and RWQCB would require further permitting and waste discharge requirements, where applicable, depending on review and determination of those agencies with regulatory authority. Based on the strict avoidance of construction within the wetlands, significance of impacts from the project are significantly reduced.

However, the project also proposes sporting clay target (skeet and trap) shooting which would cause target debris and ammunition shotfall to land in areas with wetlands or hydrologic soils connected to the identified wetlands. In addition, bullet backstop mounds,

designed to retain bullets and bullet fragments within the mounds and at the base of the mounds and targets, would result in a concentration of metals which would be subject to surface runoff. Bullets can consist of a variety of metals including lead, brass, copper, zinc, steel, plastics, rubber and nylon coating. Soluble heavy metals could enter runoff. If such metals were to be highly concentrated in runoff and that polluted runoff was to be discharged directly to surface or ground water it could result in substantially degraded surface and/or groundwater quality. Lead is the metal material of greatest concern if it were to be deposited in any shotfall zone or bullet backstop throughout the project site. The propensity for lead to cause significant environmental impacts, to wildlife, humans and water quality in general, is well documented. Lead (Pb) does not breakdown overtime. Lead does, however, oxidize when exposed to air and dissolves when exposed to acidic water or soil. Lead bullets, particles or dissolved lead can be moved by stormwater runoff and migrate overland to surface waters and/or through soils into groundwater. The *Best Management Practices for Lead at Outdoor Shooting Ranges*, published by the United States Environmental Protection Agency (EPA) in June of 2005 indicates that places with higher precipitation rates, clay-based soils and other hydric soils and wetlands are the most prone to greater risk of environmental impacts and human health risks are greater at these ranges. The project soil types are described further in Section VII. Shasta County receives an annual precipitation rate of roughly 44 inches/year. Due to the highly sensitive water resources on the project site, the use of lead ammunition at the facility would cause potentially significant and unavoidable impacts to water quality, biological resources, and human health. With this understanding, the project applicant will be prohibiting the use of lead ammunition anywhere on the project site. This factor, incorporated into the project by the applicant and as a condition of approval would ensure that water resources are not impacted by lead from development of the project.

Alternative ammunition types, including those approved for Olympic competition shooting, such as steel will be offered for purchase at the main clubhouse. This includes other types which can consist of metals such as copper, which, like lead, also does not breakdown overtime. In order to ensure that impacts to water quality from concentrations of metals and other materials is reduced to a level that is less-than-significant, mitigation measure X.a.1 is incorporated into the project. This mitigation measure would ensure that water quality and levels of contamination in hydrologic soils, would be regularly maintained and tested. The outcome of the mitigation measure would ensure that impacts to water quality due to the long-term operation of the outdoor gun range complex would be reduced to less-than-significant levels. Regular water sample testing at entry points to Bear Creek would be taken and submitted to the Department of Resource Management. In addition, the applicant proposes regular maintenance of soil pH and routine removal of bullet particles from impact areas and bullet backstops.

The project proposes only to use non-toxic, biodegradable clay targets throughout all applicable areas of the project. These non-toxic targets have been demonstrated to have little to no observable impact on water quality. In addition, the project proposes that targets would be biodegradable and additional maintenance of the shotfall areas, as outlined in the *Environmental Management Plan – High Plains Shooting Sports Center*, prepared by Patrick Jones in February of 2019, is proposed to ensure fragments are cleaned up.

Grading will be needed for this project. A grading permit will be required. The provisions of the permit will address erosion and siltation containment on- and off-site.

- b) The project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. Drainage on the site will remain relatively the same post-construction due to the design of the project. Water service for the project is to be provided by an onsite public well with water storage tanks proposed to store the excess capacity necessary for fire suppression water. The public well would be regulated through the State of California as a small or transient public water system. The fire suppression water to be stored in above-ground tanks would be used only in emergency situations. Well log data in the area demonstrates adequate groundwater capacity to serve the caretaker's residence and clubhouse uses. These improvements are not considered to be substantial to the extent that the project would impede groundwater recharge nor sustainable groundwater management of the basin,
- c) The project would not substantially alter the existing drainage pattern of the site or area, or add impervious surfaces, in a manner which would (i) result in substantial erosion or siltation on- or off-site; (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; and or (iv) impede or redirect flows. The drainage pattern consists of surface run-off, existing vernal swales, ephemeral streams, vernal pools and intermittent streams. These areas primarily drain eastward into Bear Creek. See section X(a) for more discussion of the project site's hydrologic resources. Impervious surfaces in the form of proposed clubhouses, generator sheds, water storage tanks and asphalt parking area would avoid nearly all the existing drainage conveyances. Drainage will be dispersed to either the unimproved areas or landscape areas adjacent to the building and the parking areas. Other site runoff will sheet flow into the existing drainage channels on the site. This will preserve the existing drainage pattern and not require alteration of the natural drainage courses. The additional runoff from impervious surfaces is not expected to cause excess runoff capacity, flooding on- or off-site nor result in substantial erosion or siltation on- or off-site and is considered to be less-than-significant.
- d-e) The project would not risk release of pollutants in flood hazard, tsunami, or seiche zones due to project inundation. The project area is not located in any designated floodplain as all improvements would be located on the plateau and higher ground above the Bear Creek canyon. A flooding event is not anticipated outside of the confines of the canyon which Bear Creek flows through. The project would not conflict with or obstruct implementation of a water quality control plan or sustainable management plan.

**Mitigation/Monitoring:** With the mitigation measures being proposed, the impacts will be less-than-significant:

X.a.1: In order to ensure that water quality is not significantly impacted by concentrations of metals and materials from bullets  
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and other debris, the applicant shall prepare and submit a Water Quality Control Plan as described in the Environmental Manager Plan prepared for the project. The Water Quality Control Plan shall provide for and minimize impacts on water quality and shall include the following, in addition to what may be provided by the qualified professional preparer of the plan.

- a. Identification of points of discharge from project to Bear Creek or other surface waters.
- b. Proposed sampling locations.
- c. Proposed water sampling protocols, including identification of proposed sampling methods, sampling technicians or firms, chain of custody for sampling, pollutant to be tested for and testing lab.
- d. Test soil pH on a ~~semi-~~ annual basis at the base of earthen backstops and filter beds where surface water runoff is designed to be captured; and
- e. Test water for rises in acidic concentration on an annual basis at points of discharge as may be identified in the plan, including nearest where the intermittent stream identified as IS-1 in the Wetlands Delineation Map provided by Wildland Resource Managers, enters into Bear Creek from the project site.

Records of samples shall be submitted to the Department of Resource Management on an annual basis and may be provided to the State of California Regional Water Quality Control Board for review and determination of whether test results indicate that discharge from the project may be subject to regulation under the Clean Water Act or California regulations governing water quality. If it is determined that discharge from the project is subject to such regulation, the applicant shall meet the applicable requirements. Original measurements will be used as a baseline to track and monitor water quality and soil pH and would inform the need for management actions over the life of the project. If, as determined by the Director of Resource Management, annual assessments indicate pH conditions are present or persist at levels which could result in adverse conditions, additional testing, as frequently as quarterly, shall be required to determine potential sources of water quality degradation and to show that onsite corrective actions or mitigation efforts outlined in the Environmental Management Plan or other necessary methods are effective at reducing pH levels at and from the project. If it is determined by the Director of Resource Management that additional testing should take place to, additional testing and submittal of annual testing results shall be required.

<b>XI. LAND USE AND PLANNING:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Physically divide an established community?				✓
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The project would not physically divide an established community. The project proposes a perimeter fence around the project area which includes the existing eastern boundary which is divided from adjacent lands by Bear Creek. However, the property is located in and around, mostly undeveloped, limited-rural residential land and is not located in any established community.
- b) The project would not conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. The purpose of the Commercial Recreation (C-R) zone district is to provide opportunities for the development of privately owned land for commercial recreational activities which need or utilize, and provide for the enjoyment of, the natural environment. This district is consistent with all general plan designations if the proposed use blends harmoniously with the natural features of the surrounding area. The proposed outdoor gun range complex and gun club utilizes and relies upon the natural environment and does not conflict with any land use plan, policy or adopted regulation. A gun club is listed as a permitted use in the C-R zone district.

**Mitigation/Monitoring:** None proposed.

<b>XII. MINERAL RESOURCES:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?				✓
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local General Plan, specific plan or other land use plan?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State. A review of the Minerals Element of the Shasta County General Plan resulted in no known mineral resources of regional value located on or near the project site.
- b) The project would not result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. The project site is not identified in the General Plan Minerals Element as containing a locally-important mineral resource. There is no other land use plan which addresses minerals.

**Mitigation/Monitoring:** None proposed.

<b>XIII. NOISE:</b> 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:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The County has no noise ordinance and no other agency standards would appear to be applicable to the project. However, the project would generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the Shasta County General Plan.

The project would include pistol and rifle ranges, clay sports shooting areas, and a law enforcement range. All areas where shooting would take place would be outdoors. The nearest sensitive receptors to noise produced from the project consist of five existing residences on large lots ranging from 1,400 to 2,500 feet away from the project boundary. The General Plan Noise Standard for noise impacts from new projects, including non-transportation sources, on existing sensitive receptors is 55 hourly  $L_{eq}$  daytime, and 50 hourly  $L_{eq}$  nighttime. These thresholds reflect an equivalent A-weighted hourly decibel (dB) level. Table N-IV of the Shasta County General Plan specifies that noise source that are impulsive shall reduce the above  $L_{eq}$  dBA thresholds by five. This would result in a limit for the 1-hour average maximum dBA of 50 dBA for daytime and 45  $L_{eq}$  dBA for nighttime.

The *Noise Technical Report* used an attenuation rate of 7.5 dBA per doubling of distance from the source due to the fact that softer ground is more likely to increase the ground absorption rate than hard sites would. The project site and its vicinity include soft dirt, grass and scattered bushes and trees which would cause stationary noise sources, such as gunfire, to attenuate at the higher rate of 7.5 dBA per doubling of distance. For example, a piece of equipment produces 100 decibels at 25 feet away from the equipment,

the noise level will be 92.5 decibels at 50 feet from the equipment.

The impacts of noise as a result of the project were assessed in the *Noise Technical Report – High Plains Shooting Sports Center*, by RCH Group in March of 2017. Noise testing was conducted using sound level meters at various locations along the project site boundaries and using a variety of guns that would be fired at the outdoor gun range complex and gun club. This included a .22 rifle, a 12-gauge shotgun, 9 mm handgun and 4570 rifle fired from areas that are consistent with the proposed project site plan. These measurements were used to inform estimated sound levels from ongoing operation of the project in order to determine whether daily operation of the outdoor gun range complex and gun club would result in a significant impact on existing residences in the vicinity of the project site.

The *Noise Technical Report* factored in the noise measurements and attenuation described above to project a 1-hour average noise level of shielded and unshielded peak noise at the nearest sensitive receptors – five single-family residences in the project vicinity. The analysis showed that the existing residences observed on parcels to the north and northwest would not see noise levels exceeding 50  $L_{eq}$  dBA for any of the firing locations (rifle range, law enforcement range and clay sports shooting area). This is due to the fact that line of sight to these residences is obstructed by existing topography as well as a berm proposed surrounding the firing location at the law enforcement range. Existing residences on the lots to the south and southeast would not experience noise levels exceeding 50  $L_{eq}$  dBA from noise generated from the law enforcement range either. However, shotguns and rifles fired at the clay sports shooting area and rifle range would each produce noise that would exceed the 50  $L_{eq}$  dBA at 100 feet from the existing residences to the south and southeast of the project site if averaged based on shooting frequency of 120 – 480 rounds per hour. Since it was determined that Shasta County General Plan noise thresholds would be exceeded, mitigation measures are being incorporated into the project to reduce the noise level by 6 dBA and thus, to a level that is less-than-significant. Mitigation measure XIII.a.1 would require that sound attenuation noise barriers be installed as close as possible to the firing locations for the clay sports shooting area to obstruct line of sight from those firing locations to the residences to the north and northwest. And would require the same as close as possible to the rifle range to obstruct line of sight from those firing locations to the residences to the south and southeast.

The *Noise Technical Report* analyzed impacts from construction-related noise sources over the projected duration of four to five months of construction taking place during daytime hours (7 a.m. to 7 p.m.). Excavating machinery road building equipment and vehicles hauling materials would all cause the ambient noise levels in the vicinity to be increased. The noise levels caused by such equipment would vary greatly based on the type of machinery. The *Noise Technical Report* projected that maximum construction-related noise levels would be approximately 85 dBA at 50 feet. This would result in an outdoor construction daytime noise level of as high as 57 dBA at the residence south of the project site and an interior noise level of 32 dBA when windows of the residence are closed and mitigating noise levels by 25 dBA. Because these noise levels are not reaching levels that are highly objectionable upon reaching the sensitive noise receptors and the noise would occur for a minimal amount of time at this location, the impacts from noise related to construction are considered to be less-than-significant.

The *Noise Technical Report* also analyzed noise increases related to traffic. In order to understand the increase in vehicle trips, the traffic study for the project was relied upon. The analysis assumed up to 200 vehicle trips to the project site per day via Dersch Road and Leopard Drive. The noise level was projected to result in an increase of about 0.5 dBA at the nearest residence to Dersch Road going from 49.3 to 49.8 dBA. The total dBA levels at all other nearby residences would not exceed 40 dBA. These changes to the environment related to transportation noise sources are considered to be less-than-significant.

Diesel generator power would be provided to augment energy produced by solar energy. The generator would be constructed within generator buildings which would reduce noise from any generator to a level that is less-than-significant. The requirement to reduce noise levels to below thresholds is verified through standard building permit plan review.

- b) The project would not result in generation of excessive groundborne vibration or groundborne noise levels. Excessive groundborne vibration or groundborne noise levels are only an impact during major construction within 25 feet of a building or 100 feet of a historic building. The nearest residence is 685 feet from proposed construction. Furthermore, the project does not include potential sources of excessive groundborne noise or vibration sources such as blasting or pile driving during construction. Tractor semi-trailers moving a slow speed within the project site would not be a significant source of groundborne vibration and neither would any other use of equipment or general operational activity at the site.
- c) The project is not located within the vicinity of a private airstrip or an airport land use plan, or within two miles of a public airport or public use airport.

**Mitigation/Monitoring:** With the mitigation measures being proposed, the impacts will be less-than-significant:

- XIII.a.1: To mitigate noise levels by 6 dBA at the nearest sensitive receptors to specified firing locations, the applicant shall:
  - a. Install a sound attenuation noise barrier as close as possible to the northern two firing locations for the clay sports shooting area to obstruct line of sight from those firing locations to the residences to the north and northwest; and
  - b. Install a sound attenuation noise barrier as close as possible to all rifle firing locations along the southern property boundary to obstruct line of sight from those firing locations to the residences to the south and southeast.

Each sound attenuation barrier shall be constructed at a height slightly higher than the minimum height to block the direct line of sight to the nearest residence(s). Final construction drawings shall indicate the location and construction method of the required sound attenuation barriers prior to issuance of building permits. Prior to final inspection of a building permit, an acoustical analysis



ensuring the effectiveness of the proposed mitigation measure will be required pursuant to Table N-V of the Shasta County General Plan Noise Element.

<b>XIV. POPULATION AND HOUSING:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			✓	
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The project would not induce substantial unplanned population growth in an area, either directly or indirectly. The population growth resulting from the one new caretaker’s residence and an established recreational use in the context of a total County population of approximately 182,155 (California Department of Finance 2020) is not substantial. The project would employ four persons for the operation of the facility. Therefore, it is not expected to induce substantial growth in the area.
- b) The project would not displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere. The project does not include destruction of any existing housing.

**Mitigation/Monitoring:** None proposed.

<b>XV. PUBLIC SERVICES:</b> Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Fire Protection?				✓
Police Protection?			✓	
Schools?				✓
Parks?				✓
Other public facilities?			✓	

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

The project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for:

**Fire Protection:**

The project is located in a “HIGH” fire hazard severity zone. However, the project incorporates a fuels management plan, on-site fire protection and management of the operational activity based on red flag fire condition warnings. No significant additional level of fire protection is necessary. Required on-site fire suppression will be installed according to the County Fire Safety Standards.

**Police Protection:**

The County employs a total of 165 sworn and 69 non-sworn County peace officers (Sheriff’s deputies) to serve a population of 66,858 persons that reside in the unincorporated area of the County (United States Census Bureau April 1, 2020). This level of staffing equates to a ratio of approximately one officer per 286 persons. The project was reviewed by the Shasta County Sheriff’s Office and it was not

determined that the project would increase the need of police protection and the project would not warrant any additional Sheriff's deputies.

Schools:

The resultant development from the project will be required to pay the amount allowable per square foot of construction to mitigate school impacts.

Parks:

The project is located within the unincorporated area of the County which does not have a neighborhood parks system normally found in incorporated cities.

Other public facilities:

The County maintains Dersch Road and would see an increased volume of traffic on Dersch Road, primarily heading from west to east, as a result of the project. However, the number of vehicle trips expected to increase on Dersch Road would not be considered to be significant in terms of the impact to County maintenance service. See Section XVII. Transportation for more discussion. There are no other potential impacts to general government services, public health, the library system, animal control, and the roadway system.

**Mitigation/Monitoring:** None proposed.

<b>XVI. RECREATION:</b>	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				✓
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. The County does not have a neighborhood or regional parks system or other recreational facilities and there are no regional recreational facilities in the project vicinity. No aspect of the project would increase the use of existing parks or other recreation facilities in the area.
- b) The project would develop a recreational outdoor gun range complex and gun club. Adverse environmental impacts from the development of the facility are addressed throughout this document and mitigation measures for potentially significant impacts are incorporated into the Mitigation Monitoring Program. The project would not require the construction or expansion of other recreational facilities which might have an adverse physical effect on the environment.

**Mitigation/Monitoring:** None proposed.

<b>XVII. TRANSPORTATION:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?				✓
b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3 subdivision (b)?			✓	
c) Substantially increase hazards due to a geometric design		✓		

<b>XVII. TRANSPORTATION:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				
d) Result in inadequate emergency access?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The project would not conflict with a program, ordinance or policy establishing measures of effectiveness for the performance of addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Leopard Road is not identified as being within any existing or proposed bikeway. The project is consistent with the Shasta County General Plan Circulation Element policies for transit and pedestrian bicycle modes, the GoShasta Active Transportation Plan, the 2010 Shasta County Bikeway Plan, and with the Regional Transportation Plan.

Traffic and Transportation Impacts were assessed in the *Technical Memorandum: Traffic Analysis for Proposed High Plains Shooting Sports Center*, prepared by Omni Means Engineering Solutions in May of 2015. The *Technical Memorandum* evaluated the project’s potential impact on Level of Service (LOS), which is a measure of effectiveness for transportation performance in the Shasta County General Plan Circulation Element. The *Technical Memorandum* concluded that, even with cumulative 2035 forecast conditions, the project would not impact the existing LOS classification of A. The project would not generate enough traffic to significantly reduce the volume-to-capacity ratio of adjacent roadways to a reduced level of service. The cumulative LOS A both pre-and post-project would be well above the Shasta County General Plan Standard of LOS C for rural arterials and collectors which provide access to the project.

- b) CEQA Guidelines Section 15064.3 subdivision (b) requires that lead agencies consider whether a project would increase vehicle miles traveled (VMT) to the extent that impacts on the environment, primarily from vehicle emissions, would result. Based on the Office of Planning and Research’s (OPR) technical advisory regarding VMT analysis, only vehicle trips for light-duty vehicles shall be considered in VMT analysis. Based on the Technical Memorandum prepared for the project, approximately 30 light duty vehicle trips per weekday and approximately 60 light duty vehicle trips per weekend day. The California Governor’s Office of Planning and Research (OPR) provides a *Technical Advisory on Evaluating Impacts in CEQA* which establishes thresholds of significance for added vehicle trips by a project. OPR advises a screening threshold for small projects of 110 trips per day. Because the project is expected to generate well below 110 vehicle trips per day, it is considered a small project and it is assumed to cause a less-than significant impact on VMT.

- c) The proposed public access to the project would be provided via an improved, paved Leopard Drive which would include an improved encroachment to Dersch Road. According to the *Technical Memorandum: Traffic Analysis for Proposed High Plains Shooting Sports Center*, prepared by Omni Means Engineering Solutions, traffic generated by the project would increase vehicle queuing at the intersection of Dersch Road and Leopard Drive which serves as the access to the project. The number of 0-1 vehicles queuing under no-project 2035 forecast conditions would increase to 1-2 vehicles queuing during peak hours for the project. This is considered to be acceptable. The intersection volumes were compared to peak hour signalization warrants to determine if the intersection would require a traffic signal. The volumes under existing and future forecast conditions with or without the project would be below qualifying volumes for signalization. In addition, the intersection was evaluated for installation of separate turn lanes based on CalTrans design guidelines. Existing and forecast year 2035 volumes would remain below qualifying volume thresholds for the requirement of separate turn lanes.

Lastly, existing intersection sight distances (ISD) were evaluated in both directions from Leopard Drive along Dersch Road. Due to existing vegetation and earthen banks, the ISD at Leopard Drive do not meet the American Association of State Highway and Transportation Officials (AASHTO) recommended distances. Without mitigation, the project could substantially increase hazards due to a geometric design feature. Mitigation Measure XVII.c.1 is incorporated into the project to ensure that improvements at the intersection of Dersch Road and Leopard Drive would meet recommended ISD and would include advance signage to drivers for the intersection. The inclusion of this mitigation measure would correct the sight distance issue and provide notice to drivers of the upcoming intersection and reduce the impact to a less-than-significant level.

There is no railroad in the project vicinity. Therefore, the project would not substantially increase a traffic hazard due to incompatibility with railroad operations.

- d) The project would not result in inadequate emergency access. The project has been reviewed by the Shasta County Fire Department which has determined that based on conditions of approval, which include improvements of Leopard Drive to Shasta County Fire Safety Standards, there would be adequate emergency access.

**Mitigation/Monitoring:** With the mitigation measures being proposed, the impacts will be less-than-significant:

XVII.c.1: To mitigate a safety hazard impact due to inadequate intersection sight distances and approach warning signage at the Leopard Drive and Dersch Road intersection, the applicant shall:

- a. Modify the earthen banks by grading/excavation and control vegetation along the Leopard Drive and Dersch Road returns consistent with recommended AASHTO distances and ACCESS ROAD & SITE FEATURES – Exhibit B; and
- b. Install asphalt pavement and shoulder backing improvements to Leopard Drive at its connection to Dersch Road; and
- c. Grade additional area and clear sight distances; and
- d. Install advance signing for Leopard Drive via the following signs:
  - i. W2-2: T-Intersection Symbol
  - ii. W16-8P: Supplemental Street Name Plaque

<b>XVIII. TRIBAL CULTURAL RESOURCES:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
<p>a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:</p> <p>i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or</p> <p>ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.</p>				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The project would not cause a substantial adverse change in the significance of a tribal cultural resource as there is no evidence of historical resources at the site that are listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources; or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1.

No California Native American Tribe has notified the County of Shasta of a traditional and cultural affiliation with the project area and/or has requested consultation pursuant to Public Resources Code Section 21080.3.1. An archaeological survey conducted on the project site by archaeologist Trudy Vaughn which concluded that there are no archaeological sites nor cultural features located on the project site. In the event that tribal resources are discovered during construction of the project, Section V of this initial study outlines the proper steps to mitigate any impacts.

**Mitigation/Monitoring:** None proposed.

<b>XIX. UTILITIES AND SERVICE SYSTEMS:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water				✓

<b>XIX. UTILITIES AND SERVICE SYSTEMS:</b> Would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
drainage, electric power, natural gas or telecommunications facilities, the construction or relocations of which could cause significant environmental effects?				
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?				✓
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				✓
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?				✓
e) Comply with Federal, State, and local management and reduction statutes and regulations related to solid waste?				✓

**Discussion:** Based on the related documents listed in the Sources of Documentation for Initial Study Checklist, staff review of the project, observations on the project site and in the vicinity, the following findings can be made:

- a) The project would not require or result in the relocation or construction of new or expanded water or, wastewater treatment facilities or expansion of existing storm water drainage, electric power, natural gas or telecommunications facilities, the construction or relocations of which could cause significant environmental effects. The project will utilize energy from proposed photovoltaic solar arrays and diesel generators. It will be served by individual wells on-site with a small or transient public water system to serve the public/patrons of the outdoor gun range complex and gun club. Well log data from the vicinity indicates that there is sufficient groundwater to serve the project. The project will be served by on-site wastewater treatment systems for both the clubhouse and attached caretaker's residence, as well as the law enforcement clubhouse. No new construction or expansion of existing water or wastewater treatment facilities will be needed.
- b) The project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years. The project will be served by individual wells. Well log data from the vicinity indicates that there is sufficient groundwater to serve the project.
- c) On-site septic systems will be used. The clubhouse and caretaker's residence and the law enforcement clubhouse each have an identified site for sewage disposal. Off-site soils may be utilized for the purposes of meeting health and safety standards for on-site wastewater treatment depending upon specific soil percolation. No other wastewater treatment system would be affected by the project.
- d) The project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. The project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. The West Central Landfill has sufficient capacity to accommodate the additional caretaker's residence and waste from the site as a part of regular operational use. The West Central Landfill is in compliance with Federal, State, and local statutes and regulations related to solid waste.
- e) The project would generate solid waste that is common with household waste as well as outdoor recreational attractions. The project would comply with Federal, State, and local management and reduction statutes and regulations related to solid waste. Recycling facilities are available in the major shopping areas available to the project site.

**Mitigation/Monitoring:** None proposed.

XX. WILDFIRE: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				✓
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?			✓	
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?			✓	
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?				✓

**Discussion:**

- a) The project would not substantially impair an adopted emergency response plan or emergency evacuation plan. The project includes a required improved road access along Leopard Drive from Dersch Road to the project site. This improved road would provide adequate ingress and egress for the project and Dersch Road would accommodate any increased levels of traffic during emergency evacuation situations. Furthermore, a review of the project and the Shasta County and City of Anderson Multi-Jurisdictional Hazard Mitigation Plan indicates that the proposed project would not impair an emergency response plan or emergency evacuation plan.
- b) Areas where improvements and outdoor shooting is proposed are not near slopes. The project site is located in the HIGH Wildland Fire Severity Hazard Zone. Introducing new construction as well as outdoor shooting activity over grasslands could expose project occupants to the uncontrolled spread of wildfire if an ignition were to occur. However, the *Wildland Fuels & Vegetation Management Plan* (Management Plan), prepared by Butler Engineering in May of 2020, was reviewed and approved by the Shasta County Fire Marshal. The Management Plan ensures that adequate defensible space and ongoing maintenance would protect structures and occupants from the uncontrolled spread of wildfire. In addition, the Management Plan proposed would implement best practices and prohibit all shooting on Red Flag warning days. Implementation of these proposed measures would result in a project that would not substantially exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
- c) The project would require the installation or maintenance of associated infrastructure including widening and paving of Leopard Drive, emergency fire suppression water sources to serve the proposed clubhouse buildings, as well as fuel management and fire breaks. These features would be incorporated into the project as a means to reduce fire risk and would not result in significant temporary or ongoing impacts to the environment.
- d) The project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. The project does not propose development on heavily sloped terrain nor any drainage changes or introduction of new fuels which would expose people or structures to significant risks.

**Mitigation/Monitoring:** None proposed.

<b>XXI. <u>MANDATORY FINDINGS OF SIGNIFICANCE:</u></b>	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below the self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		✓		
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection the effects of past projects, the effects of other current projects, and the effects of probable future projects)?				✓
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?		✓		

**Discussion:**

- a) Based on the discussion and findings in Section IV. Biological Resources, there is no evidence to support a finding that the project would have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below the self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of a rare or endangered plant or animal. With the incorporation of mitigation measures into the project (see the Mitigation Monitoring Program), adverse effects the quality of the environment and fish and wildlife would be reduced to a less-than-significant level.

Based on the discussion and findings in Section V. Cultural Resources, there is no evidence to support a finding that the project would have the potential to eliminate important examples of the major periods of California history or prehistory.

- b) Based on the discussion and findings in all Sections above, there is no evidence to suggest that the project would have impacts that are cumulatively considerable. There are past projects, current projects or probable future projects that would be cumulatively considerable in the project vicinity or as a result of the project.
- c) Based on the discussion and findings in all Sections above, there is no evidence to support a finding that the project would have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly. With the incorporation of mitigation measures into the project (see the Mitigation Monitoring Program), adverse effects on human beings either directly or indirectly are considered to be less-than-significant.

**Mitigation/Monitoring:** None proposed.

## INITIAL STUDY COMMENTS

### PROJECT NUMBER Zone Amendment 13-007 – Jones

#### GENERAL COMMENTS:

**Special Studies:** The following project-specific studies have been completed for the proposal and will be considered as part of the record of decision for the Negative Declaration. These studies are available for review through the Shasta County Planning Division.

1. Biological Review – High Plains Shooting Center Project, Wildland Resource Managers, January 2016.
2. Noise Technical Report – High Plains Shooting Sports Center, RCH Group, March 2017.
3. Wetlands Delineation – High Plains Shooting Center Project, Wildland Resource Managers, January 2017.
4. Traffic Technical Memorandum – High Plains Shooting Sports Center, Omni-Means, May 2015.
5. Archaeological Reconnaissance – High Plains Shooting Sports Center, Trudy Vaughn, Coyote & Fox Enterprises, May 2015.
6. Air Quality & Greenhouse Gas Emissions Impact Assessment – High Plains Shooting Sports Center Project, Ambient Air Quality and Noise Consulting, March 2016.
7. Fuels & Vegetation Management Plan – High Plains Shooting Sports Center, Butler Engineering Group, INC., May 2020.
8. High Plains Shooting Center: Response to the Shasta County Planning Department’s Request of May 11, 2017 for Additional Information, Wildland Resource Managers, June 15, 2017.
9. Preliminary Jurisdictional Determination, United States Army Corps of Engineers, June 16, 2017.
10. Wildland Resource Managers’ response to the May 16, 2023 letter to the Shasta County Board of Supervisors from Law Office of Donald Mooney, July, 2023.
11. RE: Response to Dwight DeMers Letter Dated May 12, 2023. Noise Report for Environmental Initial Study & Mitigated Negative Declaration – Zone Amendment 13-007 (Jones) & Raw Data Tables, RCH Group.
12. Memorandum RE: Response to Winford Sample Letter Dated August 2023. - Noise Report for Environmental Initial Study & Mitigated Negative Declaration – Zone Amendment 13-007 (Jones).

**Agency Referrals:** Prior to an environmental recommendation, referrals for this project were sent to agencies thought to have responsible agency or reviewing agency authority. The responses to those referrals (attached), where appropriate, have been incorporated into this document and will be considered as part of the record of decision for the Negative Declaration. Copies of all referral comments may be reviewed through the Shasta County Planning Division. To date, referral comments have been received from the following State agencies or any other agencies which have identified CEQA concerns:

1. California Department of Fish and Wildlife
2. United States Army Corps of Engineers
3. California Regional Water Quality Control Board

**Conclusion/Summary:** Based on a field review by the Planning Division and other agency staff, early consultation review comments from other agencies, information provided by the applicant, and existing information available to the Planning Division, the project, as revised and mitigated, is not anticipated to result in any significant environmental impacts.



## SOURCES OF DOCUMENTATION FOR INITIAL STUDY CHECKLIST

All headings of this source document correspond to the headings of the initial study checklist. In addition to the resources listed below, initial study analysis may also be based on field observations by the staff person responsible for completing the initial study. Most resource materials are on file in the office of the Shasta County Department of Resource Management, Planning Division, 1855 Placer Street, Suite 103, Redding, CA 96001, Phone: (530) 225-5532.

### GENERAL PLAN AND ZONING

1. Shasta County General Plan and land use designation maps.
2. Applicable community plans, airport plans and specific plans.
3. Shasta County Zoning Ordinance (Shasta County Code Title 17) and zone district maps.

### ENVIRONMENTAL IMPACTS

#### I. AESTHETICS

1. Shasta County General Plan, Section 6.8 Scenic Highways, and Section 7.6 Design Review.
2. Zoning Standards per Shasta County Code, Title 17.

#### II. AGRICULTURAL AND FORESTRY RESOURCES

1. Shasta County General Plan, Section 6.1 Agricultural Lands.
2. Shasta County Important Farmland 2016 Map, California Department of Conservation.
3. Shasta County General Plan, Section 6.2 Timber Lands.
4. Soil Survey of Shasta County Area, California, published by U.S. Department of Agriculture, Soil Conservation Service and Forest Service, August 1974.

#### III. AIR QUALITY

1. Shasta County General Plan Section, 6.5 Air Quality.
2. Northern Sacramento Valley Air Basin, 2018 Air Quality Attainment Plan.
3. Records of, or consultation with, the Shasta County Department of Resource Management, Air Quality Management District.

#### IV. BIOLOGICAL RESOURCES

1. Shasta County General Plan, Section 6.2 Timberlands, and Section 6.7 Fish and Wildlife Habitat.
2. Designated Endangered, Threatened, or Rare Plants and Candidates with Official Listing Dates, published by the California Department of Fish and Wildlife.
3. Natural Diversity Data Base Records of the California Department of Fish and Wildlife.
4. Federal Listing of Rare and Endangered Species.
5. Shasta County General Plan, Section 6.7 Fish and Wildlife Habitat.
6. State and Federal List of Endangered and Threatened Animals of California, published by the California Department of Fish and Wildlife.
7. Natural Diversity Data Base Records of the California Department of Fish and Wildlife.

#### V. CULTURAL RESOURCES

1. Shasta County General Plan, Section 6.10 Heritage Resources.
2. Records of, or consultation with, the following:
  - a. The Northeast Information Center of the California Historical Resources Information System, Department of Anthropology, California State University, Chico.
  - b. State Office of Historic Preservation.
  - c. Local Native American representatives.
  - d. Shasta Historical Society.

#### VI. ENERGY

1. California Global Warming Solutions Act of 2006 (AB 32)
2. California Code of Regulations Title 24, Part 6 – California Energy Code
3. California Code of Regulations Title 24, Part 11 – California Green Building Standards Code (CALGreen)

#### VII. GEOLOGY AND SOILS

1. Shasta County General Plan, Section 5.1 Seismic and Geologic Hazards, Section 6.1 Agricultural Lands, and Section 6.3 Minerals.
2. County of Shasta, Erosion and Sediment Control Standards, Design Manual
3. Soil Survey of Shasta County Area, California, published by U.S. Department of Agriculture, Soil Conservation Service and Forest Service, August 1974.
4. Alquist - Priolo, Earthquake Fault Zoning Maps.

#### VIII. GREENHOUSE GAS EMISSIONS

1. Shasta Regional Climate Action Plan
2. California Air Pollution Control Officers Association (White Paper) CEQA & Climate Change, Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act

## **IX. HAZARDS AND HAZARDOUS MATERIALS**

1. Shasta County General Plan, Section 5.4 Fire Safety and Sheriff Protection, and Section 5.6 Hazardous Materials.
2. County of Shasta Multi-Hazard Functional Plan
3. Records of, or consultation with, the following:
  - a. Shasta County Department of Resource Management, Environmental Health Division.
  - b. Shasta County Fire Prevention Officer.
  - c. Shasta County Sheriff's Department, Office of Emergency Services.
  - d. Shasta County Department of Public Works.
  - e. California Environmental Protection Agency, California Regional Water Quality Control Board, Central Valley Region.

## **X. HYDROLOGY AND WATER QUALITY**

1. Shasta County General Plan, Section 5.2 Flood Protection, Section 5.3 Dam Failure Inundation, and Section 6.6 Water Resources and Water Quality.
2. Flood Boundary and Floodway Maps and Flood Insurance Rate Maps for Shasta County prepared by the Federal Emergency Management Agency, as revised to date.
3. Records of, or consultation with, the Shasta County Department of Public Works acting as the Flood Control Agency and Community Water Systems manager.

## **XI. LAND USE AND PLANNING**

1. Shasta County General Plan land use designation maps and zone district maps.
2. Shasta County Assessor's Office land use data.

## **XII. MINERAL RESOURCES**

1. Shasta County General Plan Section 6.3 Minerals.

## **XIII. NOISE**

1. Shasta County General Plan, Section 5.5 Noise and Technical Appendix B.

## **XIV. POPULATION AND HOUSING**

1. Shasta County General Plan, Section 7.1 Community Organization and Development Patterns.
2. Census data from U.S. Department of Commerce, Bureau of the Census.
3. Census data from the California Department of Finance.
4. Shasta County General Plan, Section 7.3 Housing Element.
5. Shasta County Department of Housing and Community Action Programs.

## **XV. PUBLIC SERVICES**

1. Shasta County General Plan, Section 7.5 Public Facilities.
2. Records of, or consultation with, the following:
  - a. Shasta County Fire Prevention Officer.
  - b. Shasta County Sheriff's Department.
  - c. Shasta County Office of Education.
  - d. Shasta County Department of Public Works.

## **XVI. RECREATION**

1. Shasta County General Plan, Section 6.9 Open Space and Recreation.

## **XVII. TRANSPORTATION/TRAFFIC**

1. Shasta County General Plan, Section 7.4 Circulation.
2. Records of, or consultation with, the following:
  - a. Shasta County Department of Public Works.
  - b. Shasta County Regional Transportation Planning Agency.
  - c. Shasta County Congestion Management Plan/Transit Development Plan.
3. Institute of Transportation Engineers, Trip Generation Rates.

## **XVIII. TRIBAL CULTURAL RESOURCES**

1. Tribal Consultation in accordance with Public Resources Code section 21080.3.1

## **XIX. UTILITIES AND SERVICE SYSTEMS**

1. Records of, or consultation with, the following:
  - a. Pacific Gas and Electric Company.
  - b. Pacific Power and Light Company.
  - c. Pacific Bell Telephone Company.
  - d. Citizens Utilities Company.
  - e. T.C.I.
  - f. Marks Cablevision.
  - g. Shasta County Department of Resource Management, Environmental Health Division.
  - h. Shasta County Department of Public Works.

**XX. WILDFIRE**

1. Office of the State Fire Marshall-CALFIRE Fire Hazard Severity Zone Maps

**XXI. MANDATORY FINDINGS OF SIGNIFICANCE**

None

**MITIGATION MONITORING PROGRAM (MMP)  
FOR ZONE AMENDMENT 13-007 (JONES)**

Mitigation Measure/Condition	Timing/Implementation	Enforcement/Monitoring	Verification (Date & Initials)
<p><b>Section III. Air Quality</b></p> <p>III.b.1: To mitigate emissions of Reactive Organic Gases (ROG) exceeding Shasta County maximum thresholds of significance, the applicant shall select exterior and interior architectural paints for use during construction of the proposed clubhouses and generator buildings that does not exceed a Volatile Organic Compounds (VOC) content of 50 grams per liter. To the extent available, the use of prefinished construction materials is recommended. The applicant shall provide proof of paint selection or pre-finished materials meeting this requirement to the Shasta County Planning Division prior to issuance of the building permit.</p>	<p>Prior to Issuance of a Building Permit/During Project Construction</p>	<p>Resource Management, Planning Division / Building Division</p>	
<p><b>Section IV. Biological</b></p> <p><u>Nesting Birds and/or Raptors</u></p> <p>IV.a.1: In order to avoid impacts to nesting migratory birds and/or raptors protected under federal Migratory Bird Treaty Act and California Fish and Game Code Section 3503 and Section 3503.5, including their nests and eggs, one of the following shall be implemented:</p> <ul style="list-style-type: none"> <li>a. Vegetation removal and other ground-disturbance activities associated with construction shall occur between September 1 and January 31 when birds are not nesting; or</li> <li>b. If vegetation removal or ground disturbance activities occur during the nesting season (February 1 through August 31), a pre-construction nesting survey shall be conducted by a qualified biologist within 14 days of vegetation removal or construction activities. If an active nest is located during the preconstruction surveys, a</li> </ul>	<p>Prior to Issuance of a Building Permit/During Project Construction</p>	<p>Resource Management, Planning Division / Building Division</p>	

Mitigation Measure/Condition	Timing/Implementation	Enforcement/Monitoring	Verification (Date & Initials)
<p>non-disturbance buffer shall be established around the nest by a qualified biologist in consultation with the Department of Fish and Wildlife (CDFW). No vegetation removal or construction activities shall occur within this non-disturbance buffer until the young have fledged, as determined through additional monitoring by the qualified biologist. The results of the pre-construction surveys shall be sent electronically to CDFW at R1CEQARedding@wildlife.ca.gov.</p> <p><u>Bats</u></p> <p>IV.a.2: In order to avoid impacts to bats, the following shall be implemented:</p> <ol style="list-style-type: none"> <li>a. Conduct removal and disturbance of trees outside of the bat maternity season and bat hibernacula (September 1 to October 31).</li> <li>b. If removal or disturbance of trees will occur during the bat maternity season, when young are non-volant (March 1 - August 31), or during the bat hibernacula (November 1 - March 1), large trees (those greater than 6 inches in diameter) shall be thoroughly surveyed for cavities, crevices, and/or exfoliated bark that may have high potential to be used by bats within 14 days of tree removal or disturbance. The survey shall be conducted by a qualified biologist or arborist familiar with these features to determine if tree features and habitat elements are present. Trees with features potentially suitable for bat roosting should be clearly marked prior to removal and humane evictions must be conducted by or under the supervision of a biologist with specific experience conducting exclusions. Humane exclusions could consist of a two-day tree removal process whereby the non-habitat trees and brush are removed along</li> </ol>			

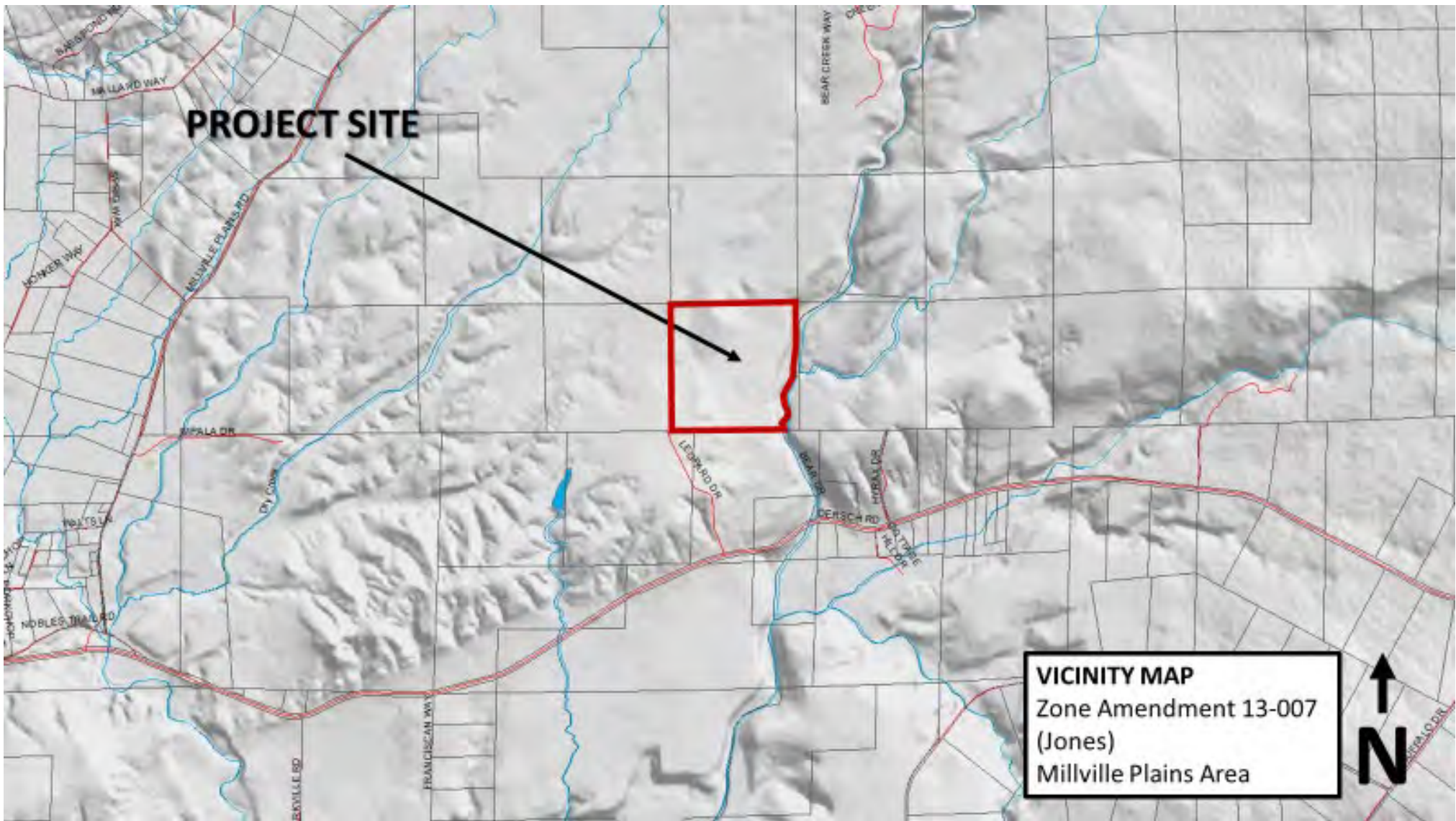
Mitigation Measure/Condition	Timing/Implementation	Enforcement/Monitoring	Verification (Date & Initials)
with certain tree limbs on the first day and the remainder of the tree on the second day.			
<p><b>Section VII. Geology and Soils</b></p> <p>VII.b.1: In order to avoid significant erosion impacts and substantial loss of topsoil the applicant shall carefully remove 2 to 4 inches of topsoil where buildings and earthen berms are proposed, retain the topsoil, and utilize it in areas that require reseeded for erosion control, including, but not limited to, the backside of all bullet backstop berms. The areas from where topsoil will be carefully removed and then stockpiled shall be shown on approved grading plans prior to issuance of a grading permit and its use for erosion control shall be described, in concept, in the erosion control plan. Prior to final inspection of the grading permit an as-built plan detailing where and how the topsoil was applied for reseeded in accordance with erosion control plan shall be provided to the Shasta County Planning Division for field confirmation prior to final inspection of the grading permit.</p>	Prior to Issuance of a Grading Permit and Prior to Final Inspection of a Grading Permit	Resource Management, Planning Division / Building Division	
<p><b>Section X. Hydrology and Water Quality</b></p> <p>X.a.1: In order to ensure that water quality is not significantly impacted by concentrations of metals and materials from bullets and other debris, the applicant shall prepare and submit a Water Quality Control Plan as described in the Environmental Manager Plan prepared for the project. The Water Quality Control Plan shall provide for and minimize impacts on water quality and shall include the following, in addition to what may be provided by the qualified professional preparer of the plan.</p> <p>a. Identification of points of discharge from project to Bear Creek or other surface waters.</p>	Prior to Issuance of a Grading Permit and Annually Thereafter	Resource Management, Planning Division / Building Division	

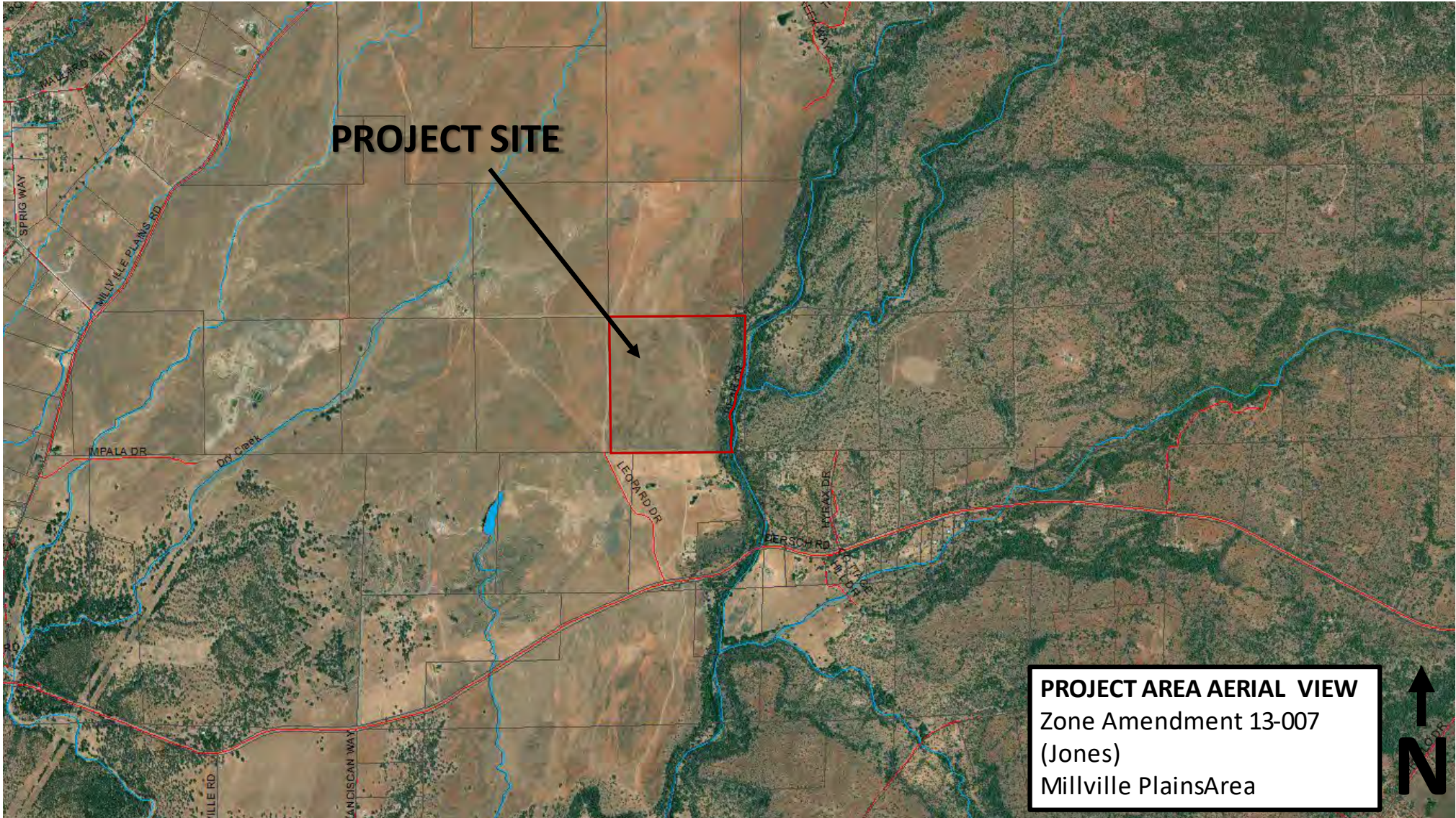
Mitigation Measure/Condition	Timing/Implementation	Enforcement/Monitoring	Verification (Date & Initials)
<p>b. Proposed sampling locations.</p> <p>c. Proposed water sampling protocols, including identification of proposed sampling methods, sampling technicians or firms, chain of custody for sampling, pollutant to be tested for and testing lab.</p> <p>d. Test soil pH on <del>a semi-</del> <u>an</u> annual basis at the base of earthen backstops and filter beds where surface water runoff is designed to be captured; and</p> <p>e. Test water for rises in acidic concentration on an annual basis at points of discharge as may be identified in the plan, including nearest where the intermittent stream identified as IS-1 in the Wetlands Delineation Map provided by Wildland Resource Managers, enters into Bear Creek from the project site.</p> <p>Records of samples shall be submitted to the Department of Resource Management on an annual basis and may be provided to the State of California Regional Water Quality Control Board for review and determination of whether test results indicate that discharge from the project may be subject to regulation under the Clean Water Act or California regulations governing water quality. If it is determined that discharge from the project is subject to such regulation, the applicant shall meet the applicable requirements. Original measurements will be used as a baseline to track and monitor water quality and soil pH and would inform the need for management actions over the life of the project. <u>If, as determined by the Director of Resource Management, annual assessments indicate pH conditions are present or persist at levels which could result in adverse conditions, additional testing, as frequently as quarterly, shall be required to determine potential sources of water quality degradation and to show that onsite corrective actions or mitigation efforts outlined in the Environmental Management Plan or other necessary methods are effective at reducing pH levels at and from the project. If it is determined by the Director of Resource</u></p>			

Mitigation Measure/Condition	Timing/Implementation	Enforcement/Monitoring	Verification (Date & Initials)
<p><del>Management that additional testing should take place to, additional testing and submittal of annual testing results shall be required.</del></p>			
<p><b>Section XIII. Noise</b></p> <p>XIII.a.1: To mitigate noise levels by 6 dBA at the nearest sensitive receptors to specified firing locations, the applicant shall:</p> <ol style="list-style-type: none"> <li>a. Install a sound attenuation noise barrier as close as possible to the northern two firing locations for the clay sports shooting area to obstruct line of sight from those firing locations to the residences to the north and northwest; and</li> <li>b. Install a sound attenuation noise barrier as close as possible to all rifle firing locations along the southern property boundary to obstruct line of sight from those firing locations to the residences to the south and southeast.</li> </ol> <p>Each sound attenuation barrier shall be constructed at a height slightly higher than the minimum height to block the direct line of sight to the nearest residence(s). Final construction drawings shall indicate the location and construction method of the required sound attenuation barriers prior to issuance of building permits. Sound attenuation barriers shall not impede the hydrologic Prior to final inspection of a building permit, an acoustical analysis ensuring the effectiveness of the proposed mitigation measure will be required pursuant to Table N-V of the Shasta County General Plan Noise Element.</p>	<p>Prior to Issuance of a Building Permit/During Project Construction/Prior to Final Inspection of a Building Permit</p>	<p>Resource Management, Planning Division / Building Division</p>	



Mitigation Measure/Condition	Timing/Implementation	Enforcement/Monitoring	Verification (Date & Initials)
<p><b>Section XVII. Transportation/Traffic</b></p> <p>XVII.c.1: To mitigate a safety hazard impact due to inadequate intersection sight distances and approach warning signage at the Leopard Drive and Dersch Road intersection, the applicant shall:</p> <ul style="list-style-type: none"> <li>a. Modify the earthen banks by grading/excavation and control vegetation along the Leopard Drive and Dersch Road returns consistent with recommended AASHTO distances and ACCESS ROAD &amp; SITE FEATURES – Exhibit B; and</li> <li>b. Install asphalt pavement and shoulder backing improvements to Leopard Drive at its connection to Dersch Road; and</li> <li>c. Grade additional area and clear sight distances; and</li> <li>d. Install advance signing for Leopard Drive via the following signs: <ul style="list-style-type: none"> <li>i. W2-2: T-Intersection Symbol</li> <li>ii. W16-8P: Supplemental Street Name Plaque</li> </ul> </li> </ul>	<p>Prior to Issuance of a Grading Permit/Encroachment Permit Approval/Ongoing Project Maintenance</p>	<p>Resource Management, Planning Division / Building Division / Department of Public Works</p>	



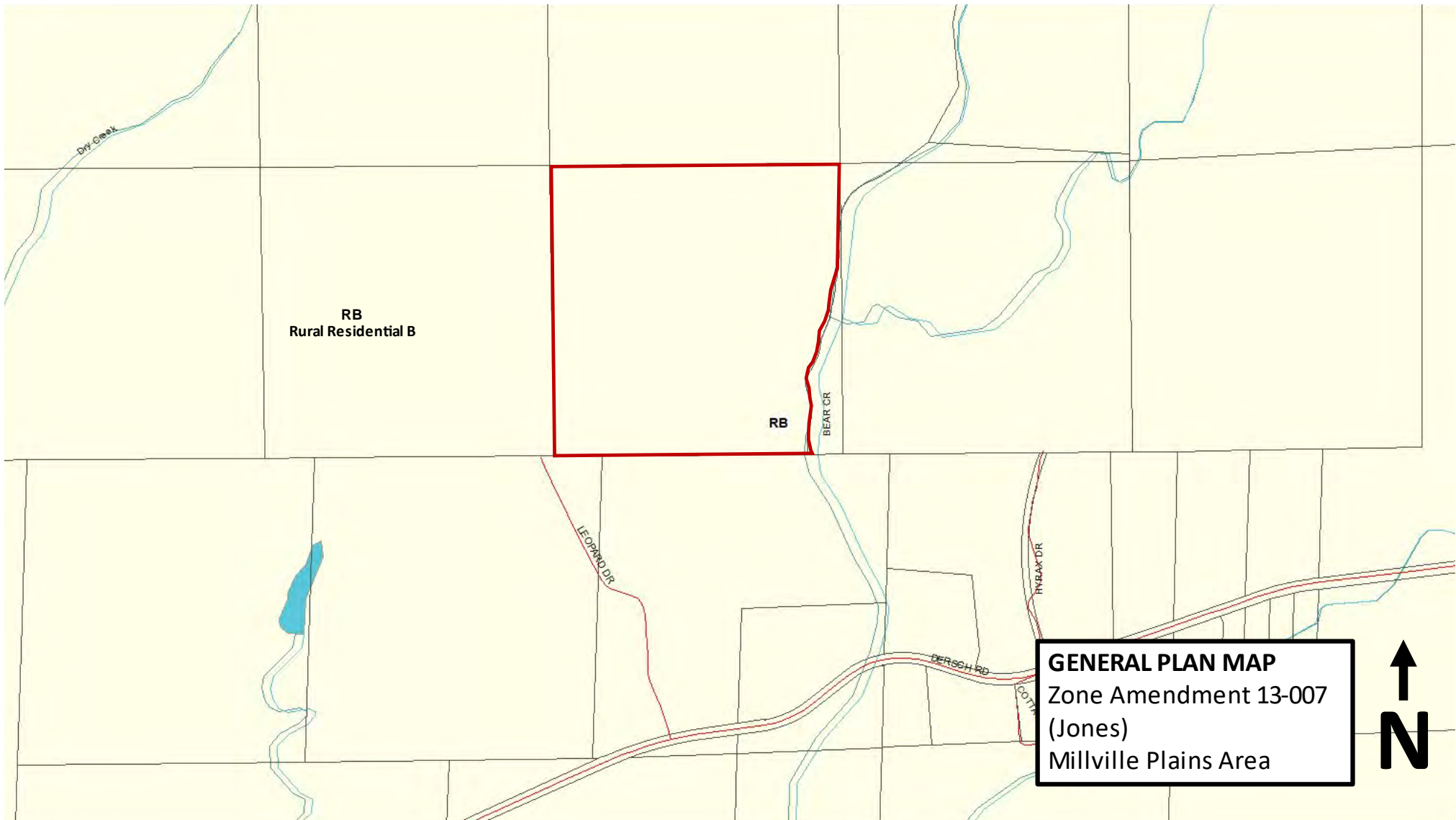


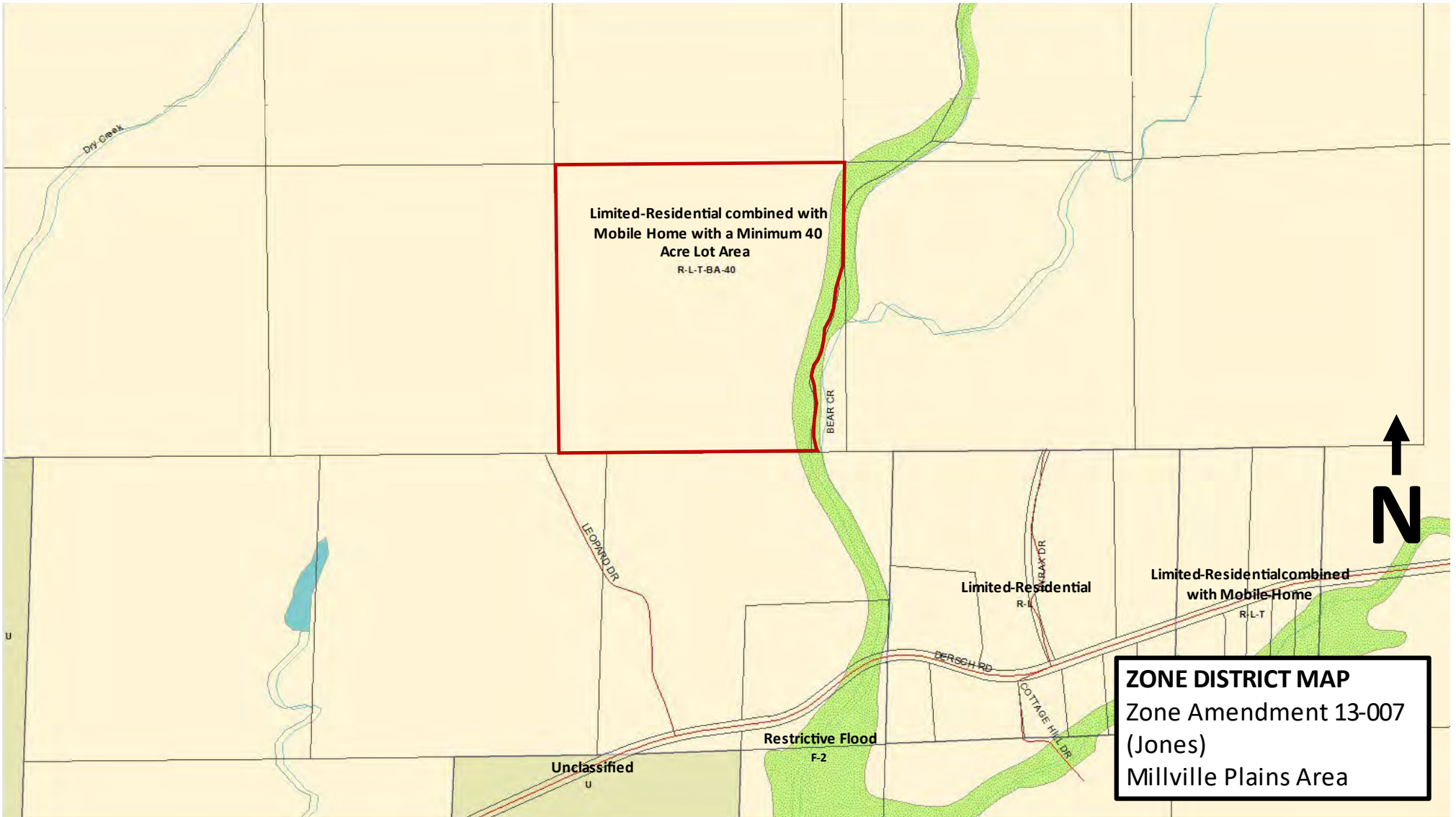
**PROJECT SITE**

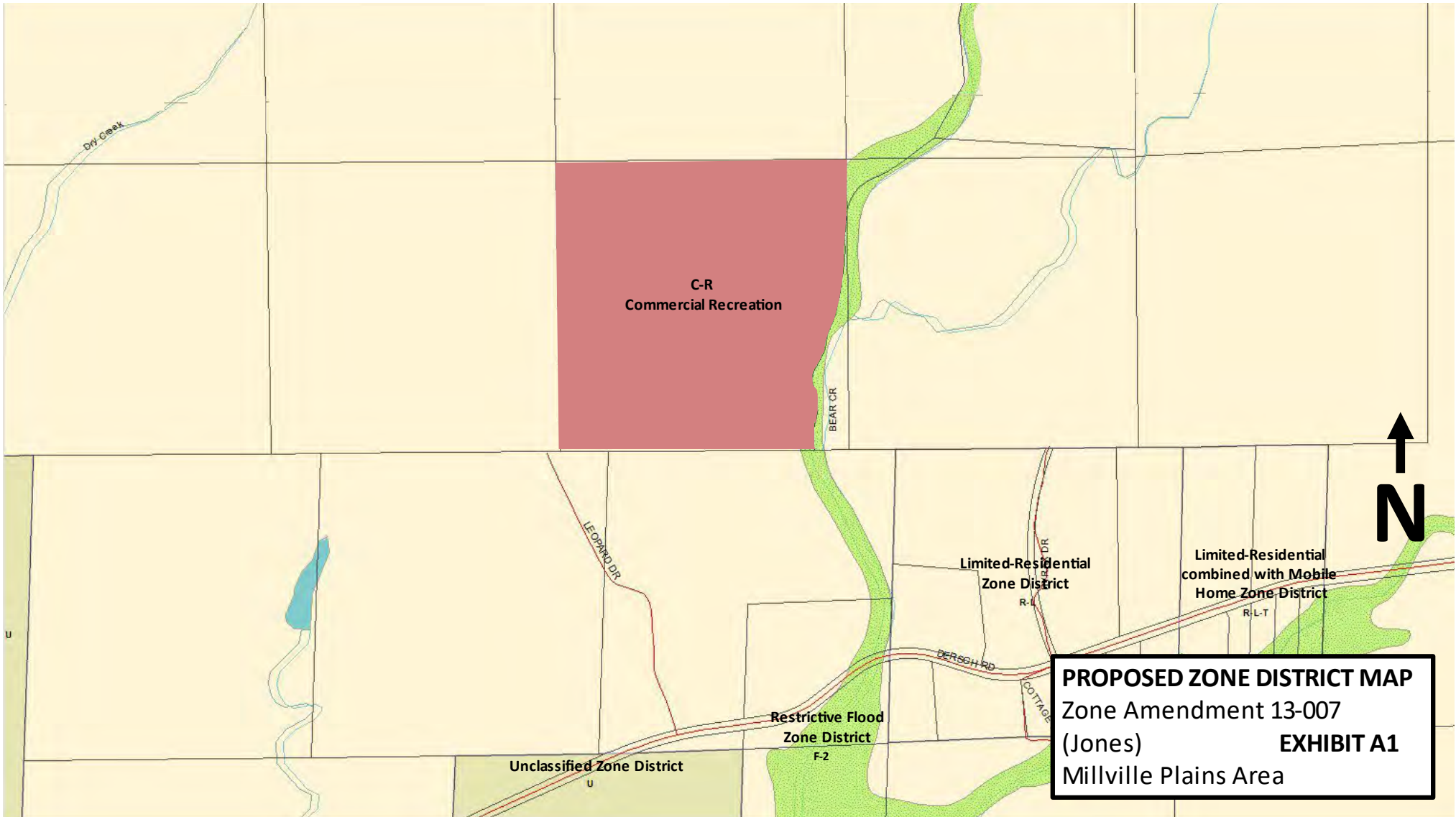
**PROJECT AREA AERIAL VIEW**  
Zone Amendment 13-007  
(Jones)  
Millville Plains Area

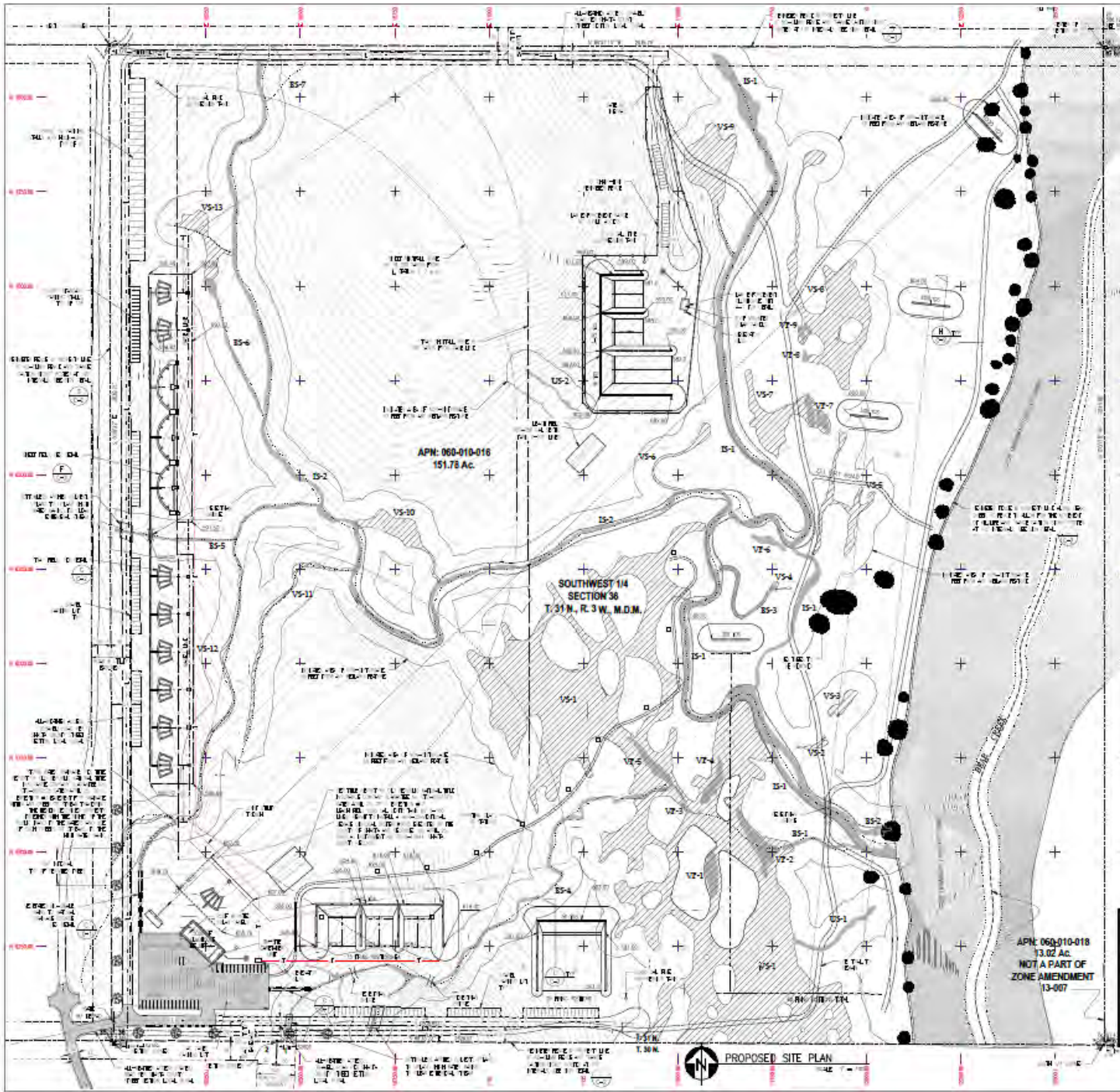












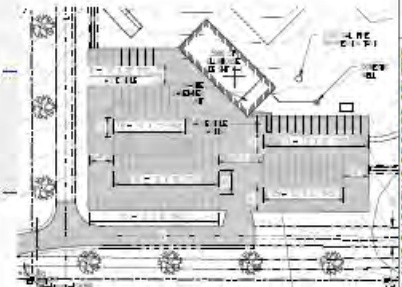
ZA 13-007



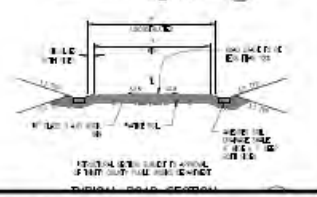
BENCHMARK	LEGEND
<p>1. BENCH MARKS SHALL BE SET BY THE SURVEYOR AND SHALL BE IDENTIFIED BY THE SURVEYOR'S NAME AND THE DATE OF SETTING.</p> <p>2. BENCH MARKS SHALL BE SET AT THE CORNERS OF THE PROPERTY AND AT OTHER STRATEGIC LOCATIONS.</p> <p>3. BENCH MARKS SHALL BE SET AT THE CORNERS OF THE PROPERTY AND AT OTHER STRATEGIC LOCATIONS.</p> <p>4. BENCH MARKS SHALL BE SET AT THE CORNERS OF THE PROPERTY AND AT OTHER STRATEGIC LOCATIONS.</p>	<p>VS-4 - VERTICAL CURVE DATA</p> <p>VS-5 - VERTICAL CURVE DATA</p> <p>VS-6 - VERTICAL CURVE DATA</p> <p>VS-7 - VERTICAL CURVE DATA</p> <p>VS-8 - VERTICAL CURVE DATA</p> <p>VS-9 - VERTICAL CURVE DATA</p> <p>VS-10 - VERTICAL CURVE DATA</p> <p>VS-11 - VERTICAL CURVE DATA</p> <p>VS-12 - VERTICAL CURVE DATA</p> <p>VS-13 - VERTICAL CURVE DATA</p> <p>VS-14 - VERTICAL CURVE DATA</p> <p>VS-15 - VERTICAL CURVE DATA</p> <p>VS-16 - VERTICAL CURVE DATA</p> <p>VS-17 - VERTICAL CURVE DATA</p> <p>VS-18 - VERTICAL CURVE DATA</p> <p>VS-19 - VERTICAL CURVE DATA</p> <p>VS-20 - VERTICAL CURVE DATA</p> <p>VS-21 - VERTICAL CURVE DATA</p> <p>VS-22 - VERTICAL CURVE DATA</p> <p>VS-23 - VERTICAL CURVE DATA</p> <p>VS-24 - VERTICAL CURVE DATA</p> <p>VS-25 - VERTICAL CURVE DATA</p> <p>VS-26 - VERTICAL CURVE DATA</p> <p>VS-27 - VERTICAL CURVE DATA</p> <p>VS-28 - VERTICAL CURVE DATA</p> <p>VS-29 - VERTICAL CURVE DATA</p> <p>VS-30 - VERTICAL CURVE DATA</p> <p>VS-31 - VERTICAL CURVE DATA</p> <p>VS-32 - VERTICAL CURVE DATA</p> <p>VS-33 - VERTICAL CURVE DATA</p> <p>VS-34 - VERTICAL CURVE DATA</p> <p>VS-35 - VERTICAL CURVE DATA</p> <p>VS-36 - VERTICAL CURVE DATA</p> <p>VS-37 - VERTICAL CURVE DATA</p> <p>VS-38 - VERTICAL CURVE DATA</p> <p>VS-39 - VERTICAL CURVE DATA</p> <p>VS-40 - VERTICAL CURVE DATA</p> <p>VS-41 - VERTICAL CURVE DATA</p> <p>VS-42 - VERTICAL CURVE DATA</p> <p>VS-43 - VERTICAL CURVE DATA</p> <p>VS-44 - VERTICAL CURVE DATA</p> <p>VS-45 - VERTICAL CURVE DATA</p> <p>VS-46 - VERTICAL CURVE DATA</p> <p>VS-47 - VERTICAL CURVE DATA</p> <p>VS-48 - VERTICAL CURVE DATA</p> <p>VS-49 - VERTICAL CURVE DATA</p> <p>VS-50 - VERTICAL CURVE DATA</p>

**DISTURBED AREA ANALYSIS**

TYPE OF DISTURBANCE	AREA (SQ. FT.)	PERCENT OF TOTAL AREA
Grass	1,200,000	10.0%
Shrub	800,000	7.0%
Tree	1,500,000	13.0%
Water	2,000,000	17.5%
Other	1,500,000	13.0%
<b>Total</b>	<b>12,000,000</b>	<b>100.0%</b>



**PARKING PLAN**



**SITE PLAN – Exhibit A2**  
 Zone Amendment 13-007  
 (Jones)  
 Millville Plains Area

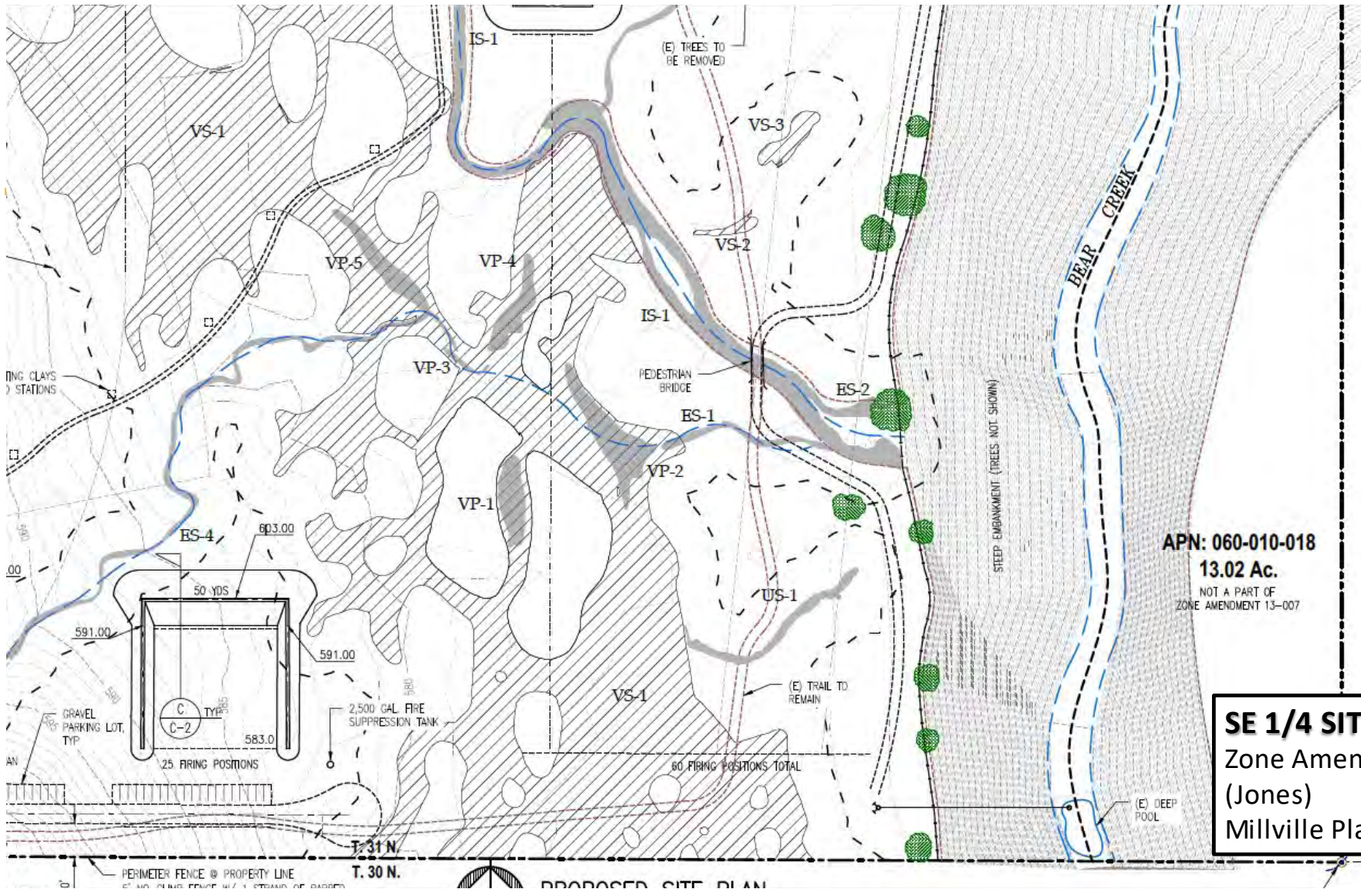
BUTLER ENGINEERING GROUP  
 CIVIL - STRUCTURAL - SURVEYING  
 1100 S. 10TH ST. SUITE 100  
 MILVILLE, WYOMING 82401  
 TEL: 307.688.1111  
 FAX: 307.688.1112  
 WWW.BUTLER-ENG.COM

HIGH PLAINS SHOOTING SPORTS CENTER  
 APN: 060-010-016  
 151.78 AC.  
 NOT A PART OF  
 ZONE AMENDMENT  
 13-007

04/17/23  
 C10  
 11.127







**APN: 060-010-018**  
**13.02 Ac.**  
 NOT A PART OF  
 ZONE AMENDMENT 13-007

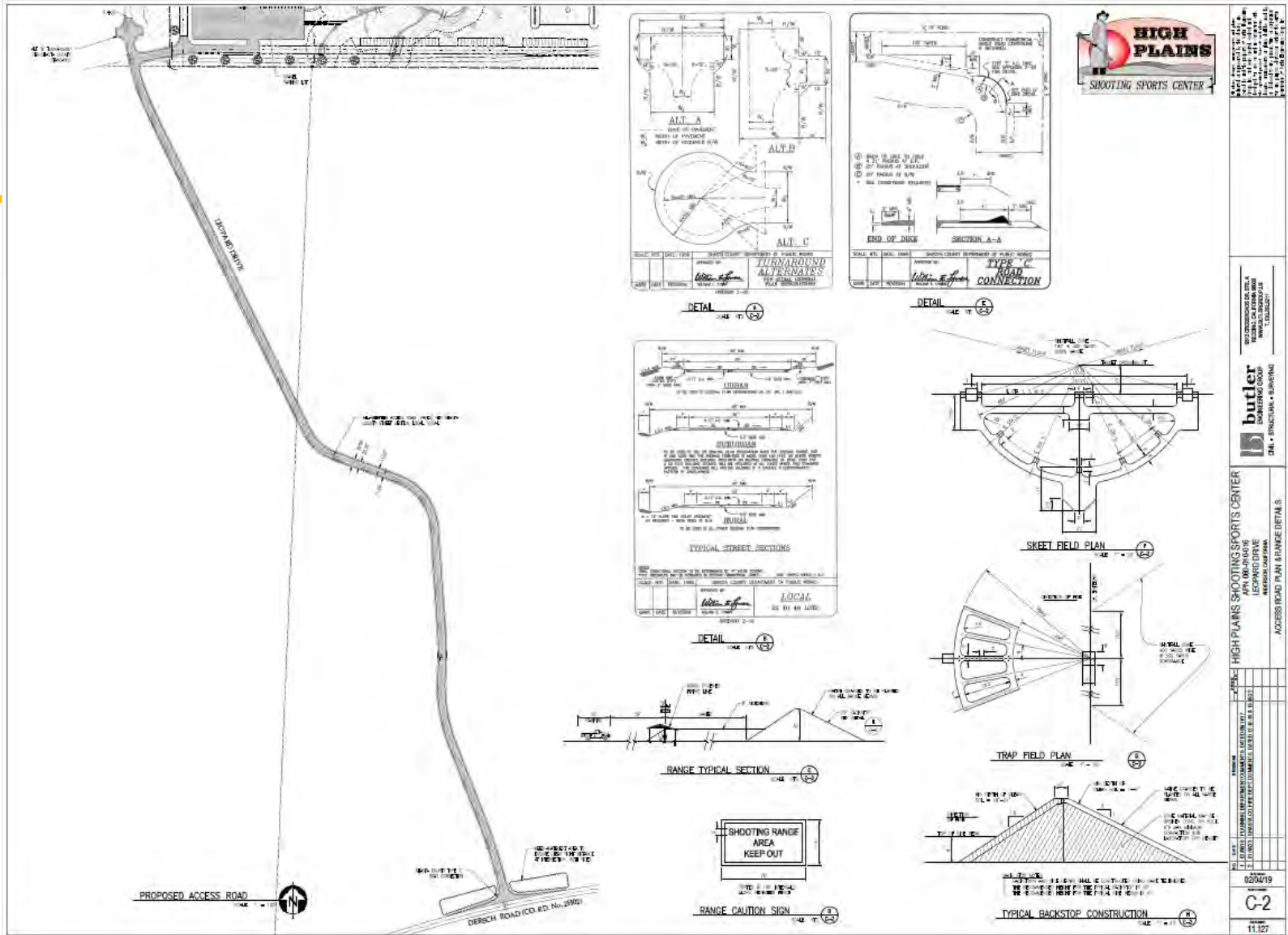


**SE 1/4 SITE PLAN VIEW**  
 Zone Amendment 13-007  
 (Jones)  
 Millville Plains Area

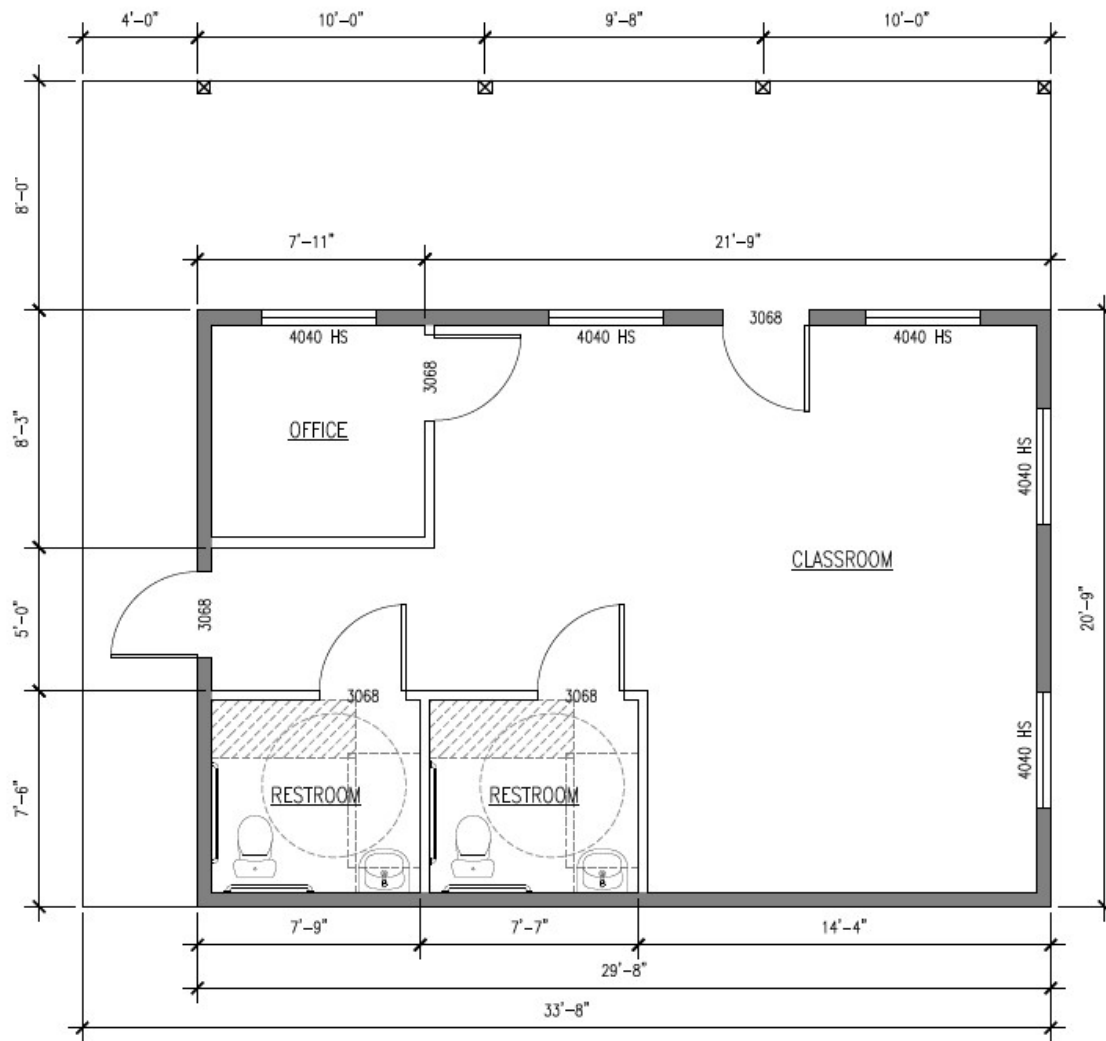








**ACCESS ROAD & SITE FEATURES – Exhibit B**  
 Zone Amendment 13-007  
 (Jones)  
 Millville Plains Area

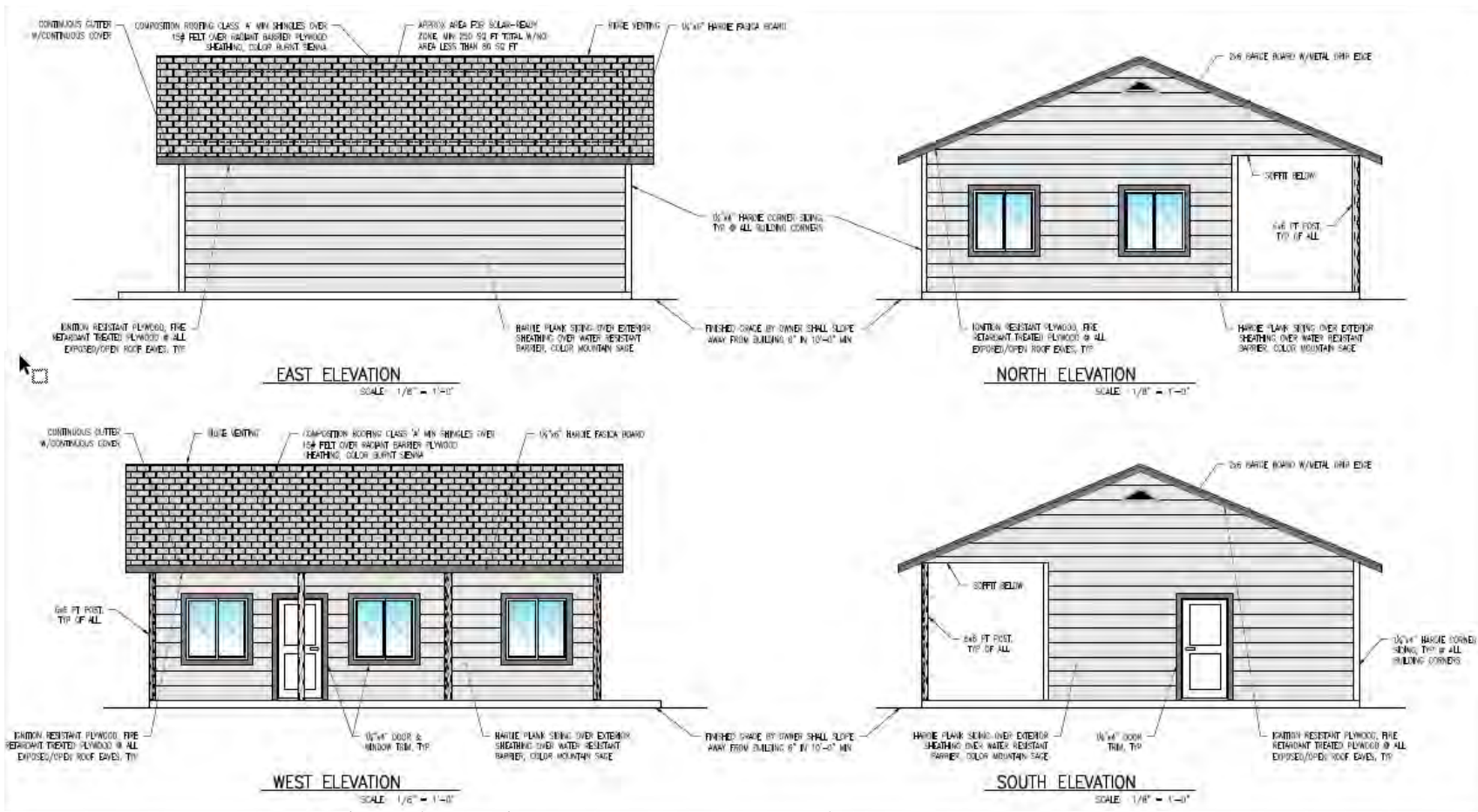


**LAW ENFORCEMENT CLUBHOUSE FLOOR PLAN**

SCALE: 1/4" = 1'-0"

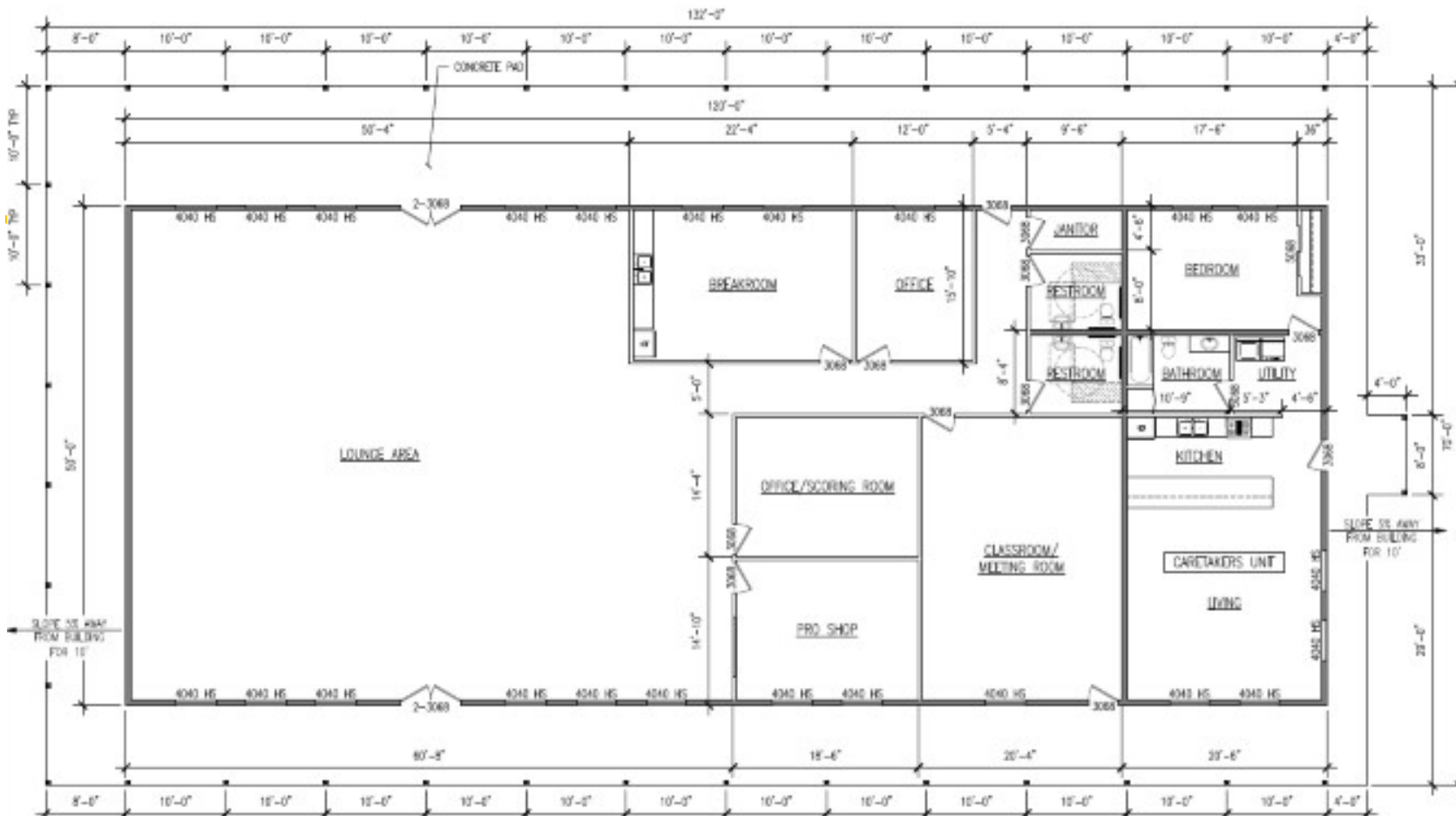


**LAW ENFORCEMENT CLUBHOUSE  
FLOORPLAN– Exhibit C1**  
Zone Amendment 13-007  
(Jones)  
Millville Plains Area



**LAW ENFORCEMENT CLUBHOUSE ELEVATIONS- Exhibit C2**  
 Zone Amendment 13-007  
 (Jones)  
 Millville Plains Area





**CLUBHOUSE & CARETAKERS UNIT FLOORPLAN – Exhibit D1**  
 Zone Amendment 13-007  
 (Jones)  
 Millville Plains Area





State of California – Natural Resources Agency  
DEPARTMENT OF FISH AND WILDLIFE  
Region 1 – Northern  
601 Locust Street  
Redding, CA 96001  
[www.wildlife.ca.gov](http://www.wildlife.ca.gov)

EDMUND G. BROWN JR., Governor  
CHARLTON H. BONHAM, Director



October 21, 2013

Mr. Kent Hector, Senior Planner  
Planning Division  
Department of Resource Management  
1855 Placer Street, Suite 103  
Redding, CA 96001

**Subject: October 14, 2013, Request for Informal Consultation for Zone Amendment 13-007 (High Plains Shooting Sports Center), Millville Area, Shasta County**

Dear Mr. Hector:

The California Department of Fish and Wildlife (Department) has reviewed the Subject Request for the High Plains Shooting Sports Center (Project). The Project is located at the end of Leopard Drive, 0.5 miles north of the intersection of Leopard Drive and Dersch Road in the Millville area. The Department offers the following comments and recommendations on the Project in our role as the State's trustee for fish and wildlife resources, and as a responsible agency under the California Environmental Quality Act (CEQA), California Public Resources Codes §21000 et seq. The following are informal comments intended to assist the Lead Agency in making informed decisions early in the Project development and review process.

### **Project Description**

The Project, as stated in the Request for Informal Consultation dated October 4, 2013, is to "rezone from Rural Residential, Mobile Home Combining, 40-acre minimum (R-L-T-BA 40) to Commercial Recreation (C-R) zone district to allow for a shooting range on a 150-acre parcel".

### **Project Specific Comments and Recommendations**

To enable Department staff to adequately review and comment on the proposed Project, we recommend the following information be included in the Mitigated Negative Declaration (MND) or Environmental Impact Report (EIR), as applicable:

The Project lies within the Millville Plains which is known for its vernal pools and vernal pool complexes, a type of sensitive wetland that is protected under state and federal laws. Vernal pools occur in depressions which have an impervious substrate that prevents downward percolation of water. Vernal pools typically fill with precipitation in the fall, winter and spring, and are dry by summer. The pool may be full for a short or an extended period of time before drying up. This

*Conserving California's Wildlife Since 1870*

drastic seasonal change from wet to dry creates a unique assemblage of specialized plants and wildlife many of which are endemic to this type of habitat. Species inhabiting vernal pools are able to complete their life cycle in a short time frame and tolerate a wide range of hydrologic conditions.

The Department recommends the applicant conduct a complete and thorough wetland delineation to identify vernal pools, vernal pool complexes, and stream and riparian resources. The delineation report should include a jurisdictional delineation including wetlands identification pursuant to the U.S. Fish and Wildlife Service wetland definition<sup>1</sup> as adopted by the Department<sup>2</sup>. Please note that some wetland and riparian habitats subject to the Department's authority may extend beyond the jurisdictional limits of the U.S. Army Corps of Engineers. The jurisdictional delineation should also include mapping of ephemeral, intermittent, and perennial stream courses potentially impacted by the Project. In addition to "federally protected wetlands" (see CEQA Appendix G), the Department considers impacts to any wetlands (as defined by the Department) as potentially significant. If the Project site supports vernal pool habitat, site design should include provisions for protection of vernal pools including their watersheds.

The Project, as proposed, will require Lake or Streambed Alteration Agreement (LSAA) notification, pursuant to §1600 et seq. of the Fish and Game Code, prior to the applicant's commencement of any activity that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank (which may include associated riparian resources) of a river, stream or lake, or use material from a streambed. The Department's issuance of a LSAA for a project that is subject to CEQA will require CEQA compliance actions by the Department as a Responsible Agency. The Department as a Responsible Agency under CEQA may consider the Lead Agency Negative Declaration or EIR for the Project. To minimize additional requirements by the Department pursuant to §1600 et seq. and/or under CEQA, the document should fully identify the potential impacts to the lake, stream, or riparian resources and provide adequate avoidance, mitigation, monitoring, and reporting commitments for issuance of the LSAA. A LSAA notification package may be obtained through the Department's website at <http://www.dfg.ca.gov/habcon/1600/>.

#### Special-Status Plants and Wildlife

A complete assessment of the flora and fauna within and adjacent to the Project footprint should be conducted, with particular emphasis upon identifying

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<sup>1</sup> Cowardin, Lewis M., et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service.

<sup>2</sup> California Fish and Game Commission Policies: Wetlands Resources Policy; Wetland Definition, Mitigation Strategies, and Habitat Value Assessment Strategy; Amended 1994.

special-status species including rare, threatened, and endangered species. This assessment should also address locally unique species, rare natural communities, and wetlands. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service. Links to some survey procedures are provided on the Department's website.<sup>3</sup> A thorough assessment of rare plants and rare natural communities should be conducted, following the Department's November 2009 *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (Attachment 1). The assessment area should be large enough to encompass areas potentially subject to both direct and indirect Project effects. Both the Project footprint and the assessment area (if different) should be clearly defined and mapped in the MND/EIR.

The Department's California Natural Diversity Data Base (CNDDDB) should be searched to obtain current information on previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code. In order to provide an adequate assessment of special-status species potentially occurring within the Project vicinity, the search area for CNDDDB occurrences should include all U.S.G.S 7.5-minute topographic quadrangles with Project activities, and all adjoining 7.5-minute topographic quadrangles. The MND or EIR should discuss how and when the CNDDDB search was conducted, including the names of each quadrangle queried, or why any areas may have been intentionally excluded from the CNDDDB query. In addition, the U.S. Fish and Wildlife Service database of federally protected species and the California Native Plant Society electronic inventory are both searchable databases and should be used in conjunction with the CNDDDB.

A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts, should be included as well as the following:

1. The MND or EIR should present clear thresholds of significance to be used by the Lead Agency in its determination of environmental effects. A threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect.
2. CEQA Guidelines, § 15125, direct that knowledge of environmental conditions at both the local and regional levels is critical to an assessment of environmental impacts and that special emphasis shall be placed on resources that are rare or unique to the region (such as

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<sup>3</sup> [http://www.dfg.ca.gov/wildlife/nongame/survey\\_monitor.html](http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html)

vernal pools and any rare, threatened, or endangered species occurring within such habitat).

3. Impacts associated with initial Project implementation as well as long-term operation and maintenance of the Project shall be addressed in the MND/EIR pursuant to CEQA Guidelines 15126.2 (a). Examples include whether lead ammunition will be permitted, and if so, how will lead contamination be managed or mitigated to avoid or reduce impacts to waterways and wildlife? How will the acoustic disturbance to wildlife be addressed?
4. In evaluating the significance of the environmental effect of the Project, the Lead Agency should consider direct physical changes in the environment which may be caused by the Project and reasonably foreseeable indirect physical changes in the environment which may be caused by the Project. Expected impacts should be quantified (e.g., acres, linear feet, number of individuals taken, volume or rate of water extracted, etc. to the extent feasible).
5. Project impacts should be analyzed relative to their effects on off-site habitats and species. Specifically, this may include public lands, open space, downstream aquatic habitats, areas of groundwater depletion, or any other natural habitat or species that could be affected by the Project.
6. Impacts to and maintenance of wildlife corridor/movement areas and other key seasonal use areas should be fully evaluated and provided.
7. A discussion of impacts associated with increased lighting, noise, human activity, changes in drainage patterns, changes in water volume, velocity, quantity, and quality, soil erosion, and/or sedimentation in streams and water courses on or near the Project site.
8. Special considerations applicable to linear projects include ground disturbance that may facilitate infestations by exotic and invasive species over a great distance.
9. A cumulative effects analysis shall be developed for species and habitats potentially affected by the Project. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts to species and habitats.

Mr. Kent Hector  
October 21, 2013  
Page 5

The Department appreciates the opportunity to comment on this Project early in the CEQA process and look forward to working with you. If you have any questions, please contact Amy Henderson at 530-225-2779 or email at [Amy.Henderson@wildlife.ca.gov](mailto:Amy.Henderson@wildlife.ca.gov).

Sincerely,



**Curt Babcock**  
Habitat Conservation Program Manager

Attachment

ec: Mss. Amy Henderson, Kristin Hubbard, and Donna Cobb  
Mr. Michael R. Harris  
California Department of Fish and Wildlife  
[Amy.Henderson@wildlife.ca.gov](mailto:Amy.Henderson@wildlife.ca.gov), [Kristin.Hubbard@wildlife.ca.gov](mailto:Kristin.Hubbard@wildlife.ca.gov),  
[Donna.Cobb@wildlife.ca.gov](mailto:Donna.Cobb@wildlife.ca.gov), [Michael.R.Harris@wildlife.ca.gov](mailto:Michael.R.Harris@wildlife.ca.gov)

Mr. Kent Hector  
Senior Planner, Department of Resource Management Planning Division  
[khector@co.shasta.ca.us](mailto:khector@co.shasta.ca.us)

# Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities

State of California  
CALIFORNIA NATURAL RESOURCES AGENCY  
Department of Fish and Game  
November 24, 2009<sup>1</sup>

## INTRODUCTION AND PURPOSE

The conservation of special status native plants and their habitats, as well as natural communities, is integral to maintaining biological diversity. The purpose of these protocols is to facilitate a consistent and systematic approach to the survey and assessment of special status native plants and natural communities so that reliable information is produced and the potential of locating a special status plant species or natural community is maximized. They may also help those who prepare and review environmental documents determine when a botanical survey is needed, how field surveys may be conducted, what information to include in a survey report, and what qualifications to consider for surveyors. The protocols may help avoid delays caused when inadequate biological information is provided during the environmental review process; assist lead, trustee and responsible reviewing agencies to make an informed decision regarding the direct, indirect, and cumulative effects of a proposed development, activity, or action on special status native plants and natural communities; meet California Environmental Quality Act (CEQA)<sup>2</sup> requirements for adequate disclosure of potential impacts; and conserve public trust resources.

## DEPARTMENT OF FISH AND GAME TRUSTEE AND RESPONSIBLE AGENCY MISSION

The mission of the Department of Fish and Game (DFG) is to manage California's diverse wildlife and native plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. DFG has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Fish and Game Code §1802). DFG, as trustee agency under CEQA §15386, provides expertise in reviewing and commenting on environmental documents and makes protocols regarding potential negative impacts to those resources held in trust for the people of California.

Certain species are in danger of extinction because their habitats have been severely reduced in acreage, are threatened with destruction or adverse modification, or because of a combination of these and other factors. The California Endangered Species Act (CESA) provides additional protections for such species, including take prohibitions (Fish and Game Code §2050 *et seq.*). As a responsible agency, DFG has the authority to issue permits for the take of species listed under CESA if the take is incidental to an otherwise lawful activity; DFG has determined that the impacts of the take have been minimized and fully mitigated; and, the take would not jeopardize the continued existence of the species (Fish and Game Code §2081). Surveys are one of the preliminary steps to detect a listed or special status plant species or natural community that may be impacted significantly by a project.

## DEFINITIONS

Botanical surveys provide information used to determine the potential environmental effects of proposed projects on all special status plants and natural communities as required by law (i.e., CEQA, CESA, and Federal Endangered Species Act (ESA)). Some key terms in this document appear in **bold font** for assistance in use of the document.

For the purposes of this document, **special status plants** include all plant species that meet one or more of the following criteria<sup>3</sup>:

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<sup>1</sup> This document replaces the DFG document entitled "Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities."

<sup>2</sup> <http://ceres.ca.gov/ceqa/>

<sup>3</sup> Adapted from the East Alameda County Conservation Strategy available at [http://www.fws.gov/sacramento/EACCS/Documents/080228\\_Species\\_Evaluation\\_EACCS.pdf](http://www.fws.gov/sacramento/EACCS/Documents/080228_Species_Evaluation_EACCS.pdf)



- Listed or proposed for listing as threatened or endangered under ESA or candidates for possible future listing as threatened or endangered under the ESA (50 CFR §17.12).
- Listed<sup>4</sup> or candidates for listing by the State of California as threatened or endangered under CESA (Fish and Game Code §2050 *et seq.*). A species, subspecies, or variety of plant is **endangered** when the prospects of its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, disease, or other factors (Fish and Game Code §2062). A plant is **threatened** when it is likely to become endangered in the foreseeable future in the absence of special protection and management measures (Fish and Game Code §2067).
- Listed as rare under the California Native Plant Protection Act (Fish and Game Code §1900 *et seq.*). A plant is **rare** when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens (Fish and Game Code §1901).
- Meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:
  - ◆ Species considered by the California Native Plant Society (CNPS) to be "rare, threatened or endangered in California" (Lists 1A, 1B and 2);
  - ◆ Species that may warrant consideration on the basis of local significance or recent biological information<sup>5</sup>;
  - ◆ Some species included on the California Natural Diversity Database's (CNDDDB) *Special Plants, Bryophytes, and Lichens List* (California Department of Fish and Game 2008)<sup>6</sup>.
- Considered a **locally significant species**, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

**Special status natural communities** are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special status species or their habitat. The most current version of the Department's *List of California Terrestrial Natural Communities*<sup>7</sup> indicates which natural communities are of special status given the current state of the California classification.

Most types of wetlands and riparian communities are considered special status natural communities due to their limited distribution in California. These natural communities often contain special status plants such as those described above. These protocols may be used in conjunction with protocols formulated by other agencies, for example, those developed by the U.S. Army Corps of Engineers to delineate jurisdictional wetlands<sup>8</sup> or by the U.S. Fish and Wildlife Service to survey for the presence of special status plants<sup>9</sup>.

<sup>4</sup> Refer to current online published lists available at: <http://www.dfg.ca.gov/biogeodata>.

<sup>5</sup> In general, CNPS List 3 plants (plants about which more information is needed) and List 4 plants (plants of limited distribution) may not warrant consideration under CEQA §15380. These plants may be included on special status plant lists such as those developed by counties where they would be addressed under CEQA §15380. List 3 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a List 4 plant are significant even if individual project impacts are not. List 3 and 4 plants are also included in the California Natural Diversity Database's (CNDDDB) *Special Plants, Bryophytes, and Lichens List*. [Refer to the current online published list available at: <http://www.dfg.ca.gov/biogeodata>.] Data on Lists 3 and 4 plants should be submitted to CNDDDB. Such data aids in determining or revising priority ranking.

<sup>6</sup> Refer to current online published lists available at: <http://www.dfg.ca.gov/biogeodata>.

<sup>7</sup> <http://www.dfg.ca.gov/biogeodata/veqcamp/pdfs/natcomlist.pdf>. The rare natural communities are asterisked on this list.

<sup>8</sup> <http://www.wetlands.com/regs/tpge02e.htm>

<sup>9</sup> U.S. Fish and Wildlife Service Survey Guidelines available at <http://www.fws.gov/sacramento/es/protocol.htm>

## BOTANICAL SURVEYS

Conduct botanical surveys prior to the commencement of any activities that may modify vegetation, such as clearing, mowing, or ground-breaking activities. It is appropriate to conduct a botanical field survey when:

- Natural (or naturalized) vegetation occurs on the site, and it is unknown if special status plant species or natural communities occur on the site, and the project has the potential for direct or indirect effects on vegetation; or
- Special status plants or natural communities have historically been identified on the project site; or
- Special status plants or natural communities occur on sites with similar physical and biological properties as the project site.

### SURVEY OBJECTIVES

Conduct field surveys in a manner which maximizes the likelihood of locating special status plant species or special status natural communities that may be present. Surveys should be **floristic in nature**, meaning that every plant taxon that occurs on site is identified to the taxonomic level necessary to determine rarity and listing status. "Focused surveys" that are limited to habitats known to support special status species or are restricted to lists of likely potential species are not considered floristic in nature and are not adequate to identify all plant taxa on site to the level necessary to determine rarity and listing status. Include a list of plants and natural communities detected on the site for each botanical survey conducted. More than one field visit may be necessary to adequately capture the floristic diversity of a site. An indication of the prevalence (estimated total numbers, percent cover, density, etc.) of the species and communities on the site is also useful to assess the significance of a particular population.

### SURVEY PREPARATION

Before field surveys are conducted, compile relevant botanical information in the general project area to provide a regional context for the investigators. Consult the CNDDDB<sup>10</sup> and BIOS<sup>11</sup> for known occurrences of special status plants and natural communities in the project area prior to field surveys. Generally, identify vegetation and habitat types potentially occurring in the project area based on biological and physical properties of the site and surrounding ecoregion<sup>12</sup>, unless a larger assessment area is appropriate. Then, develop a list of special status plants with the potential to occur within these vegetation types. This list can serve as a tool for the investigators and facilitate the use of reference sites; however, special status plants on site might not be limited to those on the list. Field surveys and subsequent reporting should be comprehensive and floristic in nature and not restricted to or focused only on this list. Include in the survey report the list of potential special status species and natural communities, and the list of references used to compile the background botanical information for the site.

### SURVEY EXTENT

Surveys should be comprehensive over the entire site, including areas that will be directly or indirectly impacted by the project. Adjoining properties should also be surveyed where direct or indirect project effects, such as those from fuel modification or herbicide application, could potentially extend offsite. Pre-project surveys restricted to known CNDDDB rare plant locations may not identify all special status plants and communities present and do not provide a sufficient level of information to determine potential impacts.

### FIELD SURVEY METHOD

Conduct surveys using **systematic field techniques** in all habitats of the site to ensure thorough coverage of potential impact areas. The level of effort required per given area and habitat is dependent upon the vegetation and its overall diversity and structural complexity, which determines the distance at which plants can be identified. Conduct surveys by walking over the entire site to ensure thorough coverage, noting all plant taxa

<sup>10</sup> Available at <http://www.dfg.ca.gov/biogeodata/cndddb>

<sup>11</sup> <http://www.bios.dfg.ca.gov/>

<sup>12</sup> *Ecological Subregions of California*, available at <http://www.fs.fed.us/r5/projects/ecoregions/toc.htm>

observed. The level of effort should be sufficient to provide comprehensive reporting. For example, one person-hour per eight acres per survey date is needed for a comprehensive field survey in grassland with medium diversity and moderate terrain<sup>13</sup>, with additional time allocated for species identification.

### TIMING AND NUMBER OF VISITS

Conduct surveys in the field at the time of year when species are both evident and identifiable. Usually this is during flowering or fruiting. Space visits throughout the growing season to accurately determine what plants exist on site. Many times this may involve multiple visits to the same site (e.g. in early, mid, and late-season for flowering plants) to capture the floristic diversity at a level necessary to determine if special status plants are present<sup>14</sup>. The timing and number of visits are determined by geographic location, the natural communities present, and the weather patterns of the year(s) in which the surveys are conducted.

### REFERENCE SITES

When special status plants are known to occur in the type(s) of habitat present in the project area, observe reference sites (nearby accessible occurrences of the plants) to determine whether those species are identifiable at the time of the survey and to obtain a visual image of the target species, associated habitat, and associated natural community.

### USE OF EXISTING SURVEYS

For some sites, floristic inventories or special status plant surveys may already exist. Additional surveys may be necessary for the following reasons:

- Surveys are not current<sup>15</sup>; or
- Surveys were conducted in natural systems that commonly experience year to year fluctuations such as periods of drought or flooding (e.g. vernal pool habitats or riverine systems); or
- Surveys are not comprehensive in nature; or fire history, land use, physical conditions of the site, or climatic conditions have changed since the last survey was conducted<sup>16</sup>; or
- Surveys were conducted in natural systems where special status plants may not be observed if an annual above ground phase is not visible (e.g. flowers from a bulb); or
- Changes in vegetation or species distribution may have occurred since the last survey was conducted, due to habitat alteration, fluctuations in species abundance and/or seed bank dynamics.

### NEGATIVE SURVEYS

Adverse conditions may prevent investigators from determining the presence of, or accurately identifying, some species in potential habitat of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any given year. Discuss such conditions in the report.

The failure to locate a known special status plant occurrence during one field season does not constitute evidence that this plant occurrence no longer exists at this location, particularly if adverse conditions are present. For example, surveys over a number of years may be necessary if the species is an annual plant having a persistent, long-lived seed bank and is known not to germinate every year. Visits to the site in more

<sup>13</sup> Adapted from U.S. Fish and Wildlife Service kit fox survey guidelines available at [www.fws.gov/sacramento/es/documents/kitfox\\_no\\_protocol.pdf](http://www.fws.gov/sacramento/es/documents/kitfox_no_protocol.pdf)

<sup>14</sup> U.S. Fish and Wildlife Service Survey Guidelines available at <http://www.fws.gov/sacramento/es/protocol.htm>

<sup>15</sup> Habitats, such as grasslands or desert plant communities that have annual and short-lived perennial plants as major floristic components may require yearly surveys to accurately document baseline conditions for purposes of impact assessment. In forested areas, however, surveys at intervals of five years may adequately represent current conditions. For forested areas, refer to "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at <https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf>

<sup>16</sup> U.S. Fish and Wildlife Service Survey Guidelines available at [http://www.fws.gov/ventura/speciesinfo/protocols\\_guidelines/docs/botanicalinventories.pdf](http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/botanicalinventories.pdf)

than one year increase the likelihood of detection of a special status plant especially if conditions change. To further substantiate negative findings for a known occurrence, a visit to a nearby reference site may ensure that the timing of the survey was appropriate.

## REPORTING AND DATA COLLECTION

Adequate information about special status plants and natural communities present in a project area will enable reviewing agencies and the public to effectively assess potential impacts to special status plants or natural communities<sup>17</sup> and will guide the development of minimization and mitigation measures. The next section describes necessary information to assess impacts. For comprehensive, systematic surveys where no special status species or natural communities were found, reporting and data collection responsibilities for investigators remain as described below, excluding specific occurrence information.

### SPECIAL STATUS PLANT OR NATURAL COMMUNITY OBSERVATIONS

Record the following information for locations of each special status plant or natural community detected during a field survey of a project site.

- A detailed map (1:24,000 or larger) showing locations and boundaries of each special status species occurrence or natural community found as related to the proposed project. Mark occurrences and boundaries as accurately as possible. Locations documented by use of global positioning system (GPS) coordinates must include the datum<sup>18</sup> in which they were collected;
- The site-specific characteristics of occurrences, such as associated species, habitat and microhabitat, structure of vegetation, topographic features, soil type, texture, and soil parent material. If the species is associated with a wetland, provide a description of the direction of flow and integrity of surface or subsurface hydrology and adjacent off-site hydrological influences as appropriate;
- The number of individuals in each special status plant population as counted (if population is small) or estimated (if population is large);
- If applicable, information about the percentage of individuals in each life stage such as seedlings vs. reproductive individuals;
- The number of individuals of the species per unit area, identifying areas of relatively high, medium and low density of the species over the project site; and
- Digital images of the target species and representative habitats to support information and descriptions.

### FIELD SURVEY FORMS

When a special status plant or natural community is located, complete and submit to the CNDDDB a California Native Species (or Community) Field Survey Form<sup>19</sup> or equivalent written report, accompanied by a copy of the relevant portion of a 7.5 minute topographic map with the occurrence mapped. Present locations documented by use of GPS coordinates in map and digital form. Data submitted in digital form must include the datum<sup>20</sup> in which it was collected. If a potentially undescribed special status natural community is found on the site, document it with a Rapid Assessment or Relevé form<sup>21</sup> and submit it with the CNDDDB form.

### VOUCHER COLLECTION

Voucher specimens provide verifiable documentation of species presence and identification as well as a public record of conditions. This information is vital to all conservation efforts. Collection of voucher specimens should

<sup>17</sup> Refer to current online published lists available at: <http://www.dfg.ca.gov/biogeodata>. For Timber Harvest Plans (THPs) please refer to the "Guidelines for Conservation of Sensitive Plant Resources Within the Timber Harvest Review Process and During Timber Harvesting Operations", available at <https://r1.dfg.ca.gov/portal/Portals/12/THPBotanicalGuidelinesJuly2005.pdf>

<sup>18</sup> NAD83, NAD27 or WGS84

<sup>19</sup> <http://www.dfg.ca.gov/biogeodata>

<sup>20</sup> NAD83, NAD27 or WGS84

<sup>21</sup> [http://www.dfg.ca.gov/biogeodata/vegcamp/veg\\_publications\\_protocols.asp](http://www.dfg.ca.gov/biogeodata/vegcamp/veg_publications_protocols.asp)

be conducted in a manner that is consistent with conservation ethics, and is in accordance with applicable state and federal permit requirements (e.g. incidental take permit, scientific collection permit). Voucher collections of special status species (or suspected special status species) should be made only when such actions would not jeopardize the continued existence of the population or species.

Deposit voucher specimens with an indexed regional herbarium<sup>22</sup> no later than 60 days after the collections have been made. Digital imagery can be used to supplement plant identification and document habitat. Record all relevant permittee names and permit numbers on specimen labels. A collecting permit is required prior to the collection of State-listed plant species<sup>23</sup>.

## BOTANICAL SURVEY REPORTS

Include reports of botanical field surveys containing the following information with project environmental documents:

- **Project and site description**
  - ♦ A description of the proposed project;
  - ♦ A detailed map of the project location and study area that identifies topographic and landscape features and includes a north arrow and bar scale; and,
  - ♦ A written description of the biological setting, including vegetation<sup>24</sup> and structure of the vegetation; geological and hydrological characteristics; and land use or management history.
- **Detailed description of survey methodology and results**
  - ♦ Dates of field surveys (indicating which areas were surveyed on which dates), name of field investigator(s), and total person-hours spent on field surveys;
  - ♦ A discussion of how the timing of the surveys affects the comprehensiveness of the survey;
  - ♦ A list of potential special status species or natural communities;
  - ♦ A description of the area surveyed relative to the project area;
  - ♦ References cited, persons contacted, and herbaria visited;
  - ♦ Description of reference site(s), if visited, and phenological development of special status plant(s);
  - ♦ A list of all taxa occurring on the project site. Identify plants to the taxonomic level necessary to determine whether or not they are a special status species;
  - ♦ Any use of existing surveys and a discussion of applicability to this project;
  - ♦ A discussion of the potential for a false negative survey;
  - ♦ Provide detailed data and maps for all special plants detected. Information specified above under the headings "Special Status Plant or Natural Community Observations," and "Field Survey Forms," should be provided for locations of each special status plant detected;
  - ♦ Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms should be sent to the CNDDDB and included in the environmental document as an Appendix. It is not necessary to submit entire environmental documents to the CNDDDB; and,
  - ♦ The location of voucher specimens, if collected.

<sup>22</sup> For a complete list of indexed herbaria, see: Holmgren, P., N. Holmgren and L. Barnett. 1990. *Index Herbariorum, Part 1: Herbaria of the World*. New York Botanic Garden, Bronx, New York. 693 pp. Or: <http://www.nybg.org/bsci/lh/ih.html>

<sup>23</sup> Refer to current online published lists available at: <http://www.dfg.ca.gov/bioceodata>.

<sup>24</sup> A vegetation map that uses the National Vegetation Classification System (<http://biology.usgs.gov/npsveg/nvcs.html>), for example *A Manual of California Vegetation*, and highlights any special status natural communities. If another vegetation classification system is used, the report should reference the system, provide the reason for its use, and provide a crosswalk to the National Vegetation Classification System.

- **Assessment of potential impacts**
  - ♦ A discussion of the significance of special status plant populations in the project area considering nearby populations and total species distribution;
  - ♦ A discussion of the significance of special status natural communities in the project area considering nearby occurrences and natural community distribution;
  - ♦ A discussion of direct, indirect, and cumulative impacts to the plants and natural communities;
  - ♦ A discussion of threats, including those from invasive species, to the plants and natural communities;
  - ♦ A discussion of the degree of impact, if any, of the proposed project on unoccupied, potential habitat of the species;
  - ♦ A discussion of the immediacy of potential impacts; and,
  - ♦ Recommended measures to avoid, minimize, or mitigate impacts.

### **QUALIFICATIONS**

Botanical consultants should possess the following qualifications:

- Knowledge of plant taxonomy and natural community ecology;
- Familiarity with the plants of the area, including special status species;
- Familiarity with natural communities of the area, including special status natural communities;
- Experience conducting floristic field surveys or experience with floristic surveys conducted under the direction of an experienced surveyor;
- Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
- Experience with analyzing impacts of development on native plant species and natural communities.

### **SUGGESTED REFERENCES**

- Barbour, M., T. Keeler-Wolf, and A. A. Schoenherr (eds.). 2007. *Terrestrial vegetation of California* (3rd Edition). University of California Press.
- Bonham, C.D. 1988. *Measurements for terrestrial vegetation*. John Wiley and Sons, Inc., New York, NY.
- California Native Plant Society. Most recent version. *Inventory of rare and endangered plants* (online edition). California Native Plant Society, Sacramento, CA. Online URL <http://www.cnps.org/inventory>.
- California Natural Diversity Database. Most recent version. *Special vascular plants, bryophytes and lichens list*. Updated quarterly. Available at [www.dfg.ca.gov](http://www.dfg.ca.gov).
- Elzinga, C.L., D.W. Salzer, and J. Willoughby. 1998. *Measuring and monitoring plant populations*. BLM Technical Reference 1730-1. U.S. Dept. of the Interior, Bureau of Land Management, Denver, Colorado.
- Leppig, G. and J.W. White. 2006. *Conservation of peripheral plant populations in California*. *Madroño* 53:264-274.
- Mueller-Dombois, D. and H. Ellenberg. 1974. *Aims and methods of vegetation ecology*. John Wiley and Sons, Inc., New York, NY.
- U.S. Fish and Wildlife Service. 1996. *Guidelines for conducting and reporting botanical inventories for federally listed plants on the Santa Rosa Plain*. Sacramento, CA.
- U.S. Fish and Wildlife Service. 1996. *Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants*. Sacramento, CA.
- Van der Maarel, E. 2005. *Vegetation Ecology*. Blackwell Science Ltd., Malden, MA.

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**DEPARTMENT OF THE ARMY**  
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT  
1325 J STREET  
SACRAMENTO CA 95814-2922

June 16, 2017

Regulatory Division (SPK-2016-00831)

Mr. Patrick Jones  
1600 E. Cypress Avenue  
Redding, California 96002

Dear Mr. Jones:

We are responding to your January 30, 2017, request and additional information provided on June 5, 2017, for a preliminary jurisdictional determination (JD) for the High Plains Shooting Center site. The approximately 134.7-acre project site is located near Bear Creek, Latitude 40.4945978074058°, Longitude -122.158796944431°, Shasta County, California.

Based on available information, we concur with your aquatic resources delineation for the site as depicted on the enclosed June 2, 2017, *High Plains Sports Center Wetland Delineation Map* drawing prepared by Wildland Resource Managers (enclosure 1). The approximately 11.725 acres of vernal swales, 0.428 acres of vernal pools, and 2.221 acres of intermittent and ephemeral streams present within the survey area are potential jurisdictional aquatic resources ("waters of the United States") regulated under Section 404 of the Clean Water.

At your request, we have completed a preliminary JD for the site. Enclosed find a copy of the *Preliminary Jurisdictional Determination Form* (enclosure 2). Please sign and return the completed form to this office, at the address listed below, within 30 days of the date of this letter. If you do not return the signed form within 30 days, we will presume concurrence and finalize the preliminary jurisdictional determination.

You may request an approved JD for this site at any time prior to starting work within waters, including after a permit decision is made.

We recommend you provide a copy of this letter and notice to all other affected parties, including any individual who has an identifiable and substantial legal interest in the property.

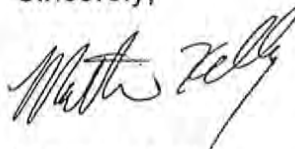
This preliminary jurisdictional determination has been conducted to identify the potential limits of wetlands and other aquatic resources at the project site which may be subject to U.S. Army Corps of Engineers jurisdiction under Section 404 of the Clean

Water Act and/or Section 9 and 10 of the Rivers and Harbors Act. A *Notification of Appeal Process and Request for Appeal Form* is enclosed to notify you of your options with this determination (enclosure 3).

We appreciate feedback, especially about interactions with our staff and processes.

Please refer to identification number SPK-2016-00831 in any correspondence concerning this project. If you have any questions, please contact Matthew Kelley at Redding Regulatory Office, 310 Hemsted Drive, Suite 310, Redding, California 96002, by email at [Matthew.P.Kelley@usace.army.mil](mailto:Matthew.P.Kelley@usace.army.mil), or telephone at (530) 223-9537. For program information or to complete our Customer Survey, visit our website at [www.spk.usace.army.mil/Missions/Regulatory.aspx](http://www.spk.usace.army.mil/Missions/Regulatory.aspx).

Sincerely,



Matthew Kelley  
Chief, Redding Regulatory Office

Enclosures

cc: (w/o encls)  
Mr. Joseph Morgan, U.S. Environmental Protection Agency, [Morgan.Joseph@epa.gov](mailto:Morgan.Joseph@epa.gov)  
Ms. Danna Berchtold, Regional Water Quality Control Board,  
[dberchtold@waterboards.ca.gov](mailto:dberchtold@waterboards.ca.gov)  
Mr. Steve Kerns, Wildland Resource Managers, [skerns7118@aol.com](mailto:skerns7118@aol.com)



## NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Mr. Patrick Jones

File No.: SPK-2016-00831

Date: June 16, 2017

Attached is:

	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	See Section below
	PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PERMIT DENIAL	B
	APPROVED JURISDICTIONAL DETERMINATION	C
✓	PRELIMINARY JURISDICTIONAL DETERMINATION	D
		E

**SECTION I** - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at [http://www.usace.army.mil/cecw/pages/reg\\_materials.aspx](http://www.usace.army.mil/cecw/pages/reg_materials.aspx) or Corps regulations at 33 CFR Part 331.

**A: INITIAL PROFFERED PERMIT:** You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

**B: PROFFERED PERMIT:** You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

**C: PERMIT DENIAL:** You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

**D: APPROVED JURISDICTIONAL DETERMINATION:** You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

**E: PRELIMINARY JURISDICTIONAL DETERMINATION:** You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

Type text here

**SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT**

**REASONS FOR APPEAL OR OBJECTIONS:** (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

**ADDITIONAL INFORMATION:** The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

**POINT OF CONTACT FOR QUESTIONS OR INFORMATION:**

If you have questions regarding this decision and/or the appeal process you may contact:

Matthew Kelley  
Chief, Redding Regulatory Office  
U.S. Army Corps of Engineers  
310 Hemsted Drive, Suite 310  
Redding, California 96002  
Phone: (530) 223-9537, FAX 916-557-7803  
Email: Matthew.P.Kelley@usace.army.mil

If you only have questions regarding the appeal process you may also contact:

Thomas J. Cavanaugh  
Administrative Appeal Review Officer  
U.S. Army Corps of Engineers  
South Pacific Division  
1455 Market Street, 2052B  
San Francisco, California 94103-1399  
Phone: 415-503-6574, FAX 415-503-6646  
Email: Thomas.J.Cavanaugh@usace.army.mil

**RIGHT OF ENTRY:** Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

\_\_\_\_\_  
Signature of appellant or agent.

Date:

Telephone number:

**PRELIMINARY JURISDICTIONAL DETERMINATION FORM**  
**Sacramento District**

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Regulatory Branch: **California North** File/ORM #: **SPK-2016-00831** PJD Date: **June 16, 2017**

State: **CA** City/County: **, Shasta County**  
 Nearest Waterbody: **Bear Creek**

Location (Lat/Long): **40.4945978074058° , -122.158796944431°**

Size of Review Area: **134.7** acres

Name/Address  
 Of Property **Mr. Patrick Jones**  
 Owner/ **1600 E. Cypress Avenue**  
 Potential **Redding, California 96002**  
 Applicant

**Identify (Estimate) Amount of Waters in the Review Area**

**Non-Wetland Waters:**  
 linear feet                      ft wide    **2.221** acre(s)  
 Stream Flow: **Mixed**

**Wetlands:** **12.153** acre(s)  
 Cowardin Class: **Palustrine, emergent**

Name of any Water Bodies Tidal:  
 on the site identified as

Section 10 Waters:    Non-Tidal:

Office (Desk) Determination  
 Field Determination:  
 Date(s) of Site Visit(s): **March 30, 2017**

**SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply – checked items should be included in case file and, where checked and requested, appropriately reference sources below)**

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **High Plains Ports Center Wetland Delineation Map, June 2, 2017**
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- Data sheets prepared by the Corps.
- Corps navigable waters' study.
- U.S. Geological Survey Hydrologic Atlas:
  - USGS NHD data.
  - USGS HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: **1:24K; CA-BALLS FERRY**
- USDA Natural Resources Conservation Service Soil Survey.
- National wetlands inventory map(s).
- State/Local wetland inventory map(s).
- FEMA/FIRM maps.
- 100-year Floodplain Elevation (if known):
- Photographs:  Aerial  
 Other
- Previous determination(s). File no. and date of response letter:
- Other information (please specify):

**IMPORTANT NOTE:** The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

 6-16-17  
 Signature and Date of Regulatory Project Manager  
 (REQUIRED)

\_\_\_\_\_  
 Signature and Date of Person Requesting Preliminary JD  
 (REQUIRED, unless obtaining the signature is impracticable)

**EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:**

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

93  
8283

-----Original Message-----

From: Weisser, Seth C SPK [mailto:Seth.C.Weisser@usace.army.mil]  
Sent: Wednesday, March 05, 2014 3:35 PM  
To: Kent Hector  
Subject: Zone amendment (High Planes Shooting Sports Center) (UNCLASSIFIED)

Classification: UNCLASSIFIED  
Caveats: NONE

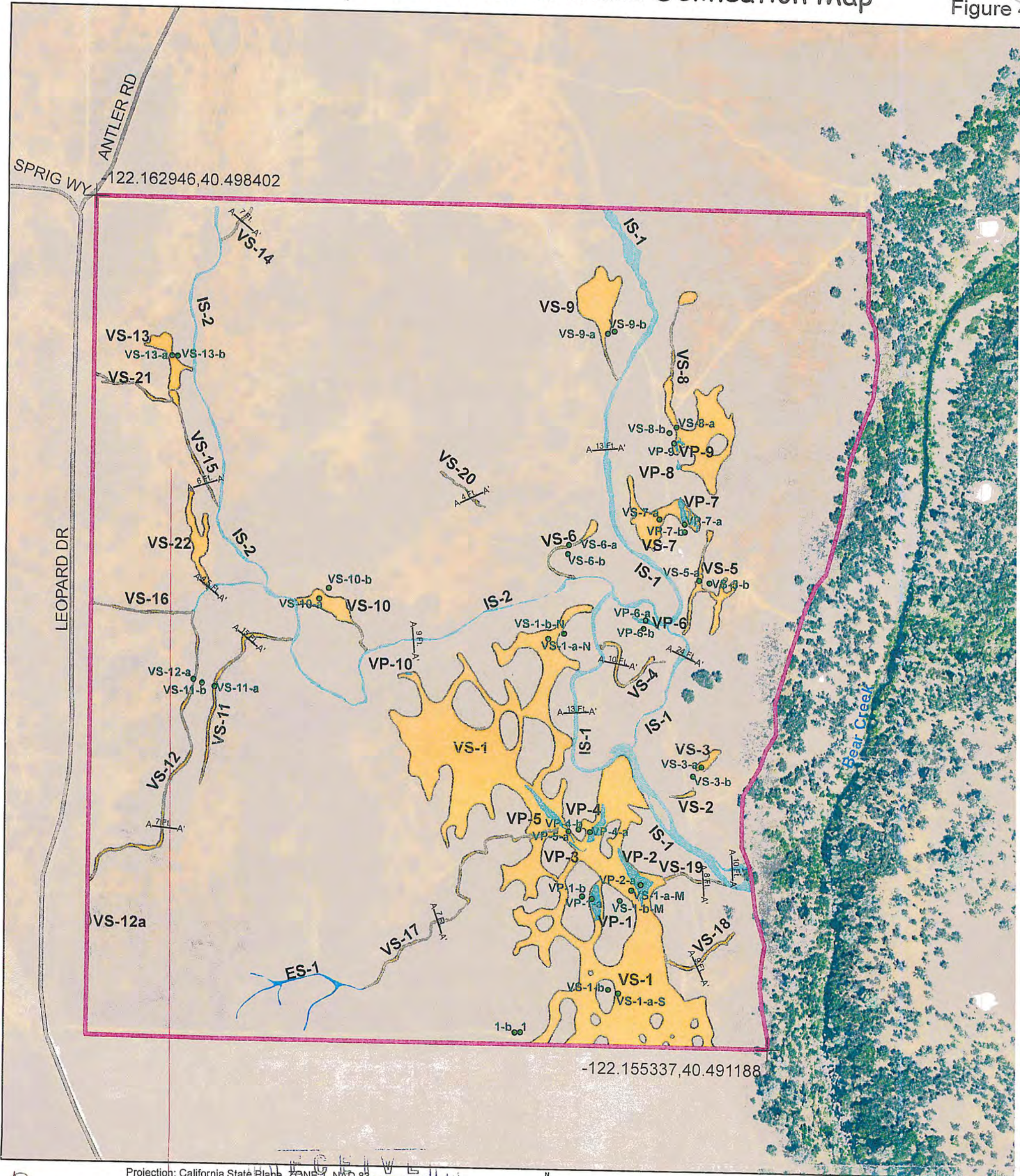
Kent,

The area being considered for zone amendment to accommodate the High Planes Shooting Sports Center contains hydrologic features that may be deemed waters of the U.S. In accordance with Section 404 of the Clean Water Act any discharge of dredged or fill material into waters of the U.S. will require a Department of the Army permit. At this point the Corps is not confirming or denying the existence of waters of the U.S. on site. The Corps must verify a wetland delineation prior to any official jurisdictional determination concerning possible waters of the U.S. on this site. If you have any questions/comments please feel free contact me by phone or email.

Best,

Seth Weisser  
Redding Field Office  
310 Hemsted Dr.  
Redding, CA 96002-1842  
Phone: 530-223-9536  
Fax: 530-223-9539  
seth.c.weisser@usace.army.mil

Classification: UNCLASSIFIED  
Caveats: NONE



Projection: California State Plane Zone 1, NAD 83

Field Work and Project Management  
by Wildland Resource Managers  
Steven J. Kerns  
Principal and Certified Wildlife Biologist

JUN 5 2017

Regulatory Division, Redding  
USACE-Sacramento

1 inch = 300 feet

0 50 100 200 300 400 Feet

0 0.0125 0.025 0.05 0.075 0.1 Miles

Legend	
+	XY Coordinate
●	Data Point
□	Project Boundary (134.7 Acres)
—	County Road
A 13 Ft A'	Stream Width
■	Ephemeral Stream (0.504 Acres)
■	Intermittent Stream (2.0604 Acres)
■	Vernal Pool (0.425 Acres)
■	Vernal Swale (11.070 Acres)

Image Date: Summer 2016

Data Type: California NAIP Orthophography,  
NAIP\_2016\_4Band  
Spatial Resolution: 0.600 Meters  
WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
Service Name: arcgis on map.dfg.ca.gov(user)

Sources:  
Wildland Resource Managers

GIS and Cartography Prepared By:  
rkBARON GEOvisuals  
Copyright 2005-2016

Type	ID	Acres	Type	ID	Acres
Ephemeral	ES-1	0.0869	Vernal Swale	VS-1	8.3995
<b>TOTAL:</b>		<b>0.0869</b>	Vernal Swale	VS-2	0.0185
Intermittent	IS-1	1.5048	Vernal Swale	VS-3	0.0488
Intermittent	IS-2	0.6292	Vernal Swale	VS-4	0.0730
<b>TOTAL:</b>		<b>2.1340</b>	Vernal Swale	VS-5	0.1921
Vernal Pool	VP-1	0.0641	Vernal Swale	VS-6	0.0650
Vernal Pool	VP-2	0.1189	Vernal Swale	VS-7	0.3718
Vernal Pool	VP-3	0.0067	Vernal Swale	VS-8	0.8
Vernal Pool	VP-4	0.0585	Vernal Swale	VS-9	0.01985
Vernal Pool	VP-5	0.0721	Vernal Swale	VS-10	0.1245
Vernal Pool	VP-6	0.0277	Vernal Swale	VS-11	0.1711
Vernal Pool	VP-7	0.0535	Vernal Swale	VS-12a	0.0100
Vernal Pool	VP-8	0.0076	Vernal Swale	VS-13	0.1731
Vernal Pool	VP-9	0.0155	Vernal Swale	VS-14	0.0190
Vernal Pool	VP-10	0.0038	Vernal Swale	VS-15	0.0672
<b>TOTAL:</b>		<b>0.4284</b>	Vernal Swale	VS-16	0.0377
			Vernal Swale	VS-17	0.1324
			Vernal Swale	VS-18	0.0574
			Vernal Swale	VS-19	0.0367
			Vernal Swale	VS-20	0.0175
			Vernal Swale	VS-21	0.0410
			Vernal Swale	VS-22	0.2008
<b>TOTAL:</b>			<b>TOTAL:</b>		<b>11.7245</b>

Figure 4

## Central Valley Regional Water Quality Control Board

14 March 2019

David Schlegel, Associate Planner  
Shasta County Department of Resource Management, Planning Division  
1855 Placer Street, Suite 103  
Redding, CA 96001

### **COMMENTS ON THE ZONE AMENDMENT 13-007 (HIGH PLAINS SHOOTING SPORTS CENTER) PROJECT, APN 060-010-016, MILLVILLE, SHASTA COUNTY**

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) is a responsible agency for this project, as defined by the California Environmental Quality Act (CEQA). On 5 March 2019, we received your request for comments on the Zone Amendment 13-007 (High Plains Shooting Sports Center) Project.

The applicant is requesting approval of a rezone from Rural Residential, Mobile Home Combining, 40-acre minimum to Commercial Recreation zone district to allow for a shooting range on a 150-acre parcel. The project site is located at the end of Leopard Drive, 0.5 miles north of the intersection of Leopard Drive and Dersch Road in the Millville area.

Based on our review of the information submitted for the proposed project, we have the following comments:

#### General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (CGP)

Construction activity, including demolition, resulting in a land disturbance of one acre or more must obtain coverage under the CGP. The Zone Amendment 13-007 (High Plains Shooting Sports Center) Project must be conditioned to implement storm water pollution controls during construction and post-construction as required by the CGP. To apply for coverage under the CGP the property owner must submit Permit Registration Documents electronically prior to construction. Detailed information on the CGP can be found on the State Water Board website:

[https://www.waterboards.ca.gov/water\\_issues/programs/stormwater/constpermits.shtml](https://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml)

#### Clean Water Act (CWA) Section 401, Water Quality Certification

The Central Valley Water Board has regulatory authority over wetlands and waterways under the Federal Clean Water Act (CWA) and the California Water Code, Division 7 (CWC). Discharge of dredged or fill material to waters of the United States requires a CWA Section 401 Water Quality Certification from the Central Valley Water Board. Typical activities include any modifications to these waters, such as stream crossings, stream bank modifications, filling of wetlands, etc. 401 Certifications are issued in combination with CWA Section 404 Permits issued by the Army Corps of Engineers. The proposed project must be evaluated for the

presence of jurisdictional waters, including wetlands and other waters of the State. Steps must be taken to first avoid and minimize impacts to these waters, and then mitigate for unavoidable impacts. Both the Section 404 Permit and Section 401 Water Quality Certification must be obtained prior to site disturbance. Any person discharging dredge or fill materials to waters of the State must file a report of waste discharge pursuant to Sections 13376 and 13260 of the California Water Code. Both the requirements to submit a report of waste discharge and apply for a Water Quality Certification may be met using the same application form, found at:

[http://www.waterboards.ca.gov/centralvalley/water\\_issues/water\\_quality\\_certification/wqc\\_application.pdf](http://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/wqc_application.pdf)

Isolated wetlands and other waters not covered by the Federal Clean Water Act

Some wetlands and other waters are considered "geographically isolated" from navigable waters and are not within the jurisdiction of the Clean Water Act. (e.g., isolated wetlands, vernal pools, or stream banks above the ordinary high-water mark). Discharge of dredged or fill material to these waters may require either individual or general waste discharge requirements from the Central Valley Water Board. If the U.S. Army Corps of Engineers determine that isolated wetlands or other waters exist at the project site, and the project impacts or has potential to impact these non-jurisdictional waters, a Report of Waste Discharge and filing fee must be submitted to the Central Valley Water Board. The Central Valley Water Board will consider the information provided and either issue or waive Waste Discharge Requirements. Failure to obtain waste discharge requirements or a waiver may result in enforcement action.

Any person discharging dredge or fill materials to waters of the State must file a report of waste discharge pursuant to Sections 13376 and 13260 of the CWC. Both the requirements to submit a report of waste discharge and apply for a Water Quality Certification may be met using the same application form, found at:

[http://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/water\\_quality/2004/wqo/wqo2004-0004.pdf](http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf)

Shooting range issues to be resolved

1. How will lead and other metals be retained on site (not discharged in storm water) at shooting areas, target areas, and fall zones?
2. Where fall zones include water courses, how will lead and other metals be retained on site and not discharged in surface water runoff?
3. How will spreading of lead and other metals contamination off site on shoes and vehicle tires be avoided?
4. How will toxic components in target discs be retained in the fall zones?
5. How will monitoring and maintenance of water quality protection measures be carried out?
6. How will effectiveness of water quality protection measures be assessed?

If you have any questions or comments regarding this matter, please contact me at (530) 224-4783 or by email at [Dannas.Berchtold@waterboards.ca.gov](mailto:Dannas.Berchtold@waterboards.ca.gov).

*Dannas Berchtold for*

Dannas J. Berchtold  
Engineering Associate  
Storm Water & Water Quality Certification Unit

DJB: db

cc w/o

enclosures: Mr. Matthew Roberts, U.S. Army Corps of Engineers, Redding  
Ms. Donna Cobb, Department of Fish and Wildlife, Region 1, Redding  
Patrick Jones, Redding  
Kevin Butler, K R Butler Engineering, Inc., Redding



Central Valley Regional Water Quality Control Board

RECEIVED  
SHASTA COUNTY

17 October 2013

OCT 17 2013

Mr. Kent Hector  
Shasta County Department of Resource Management  
1855 Placer Street, Suite 103  
Redding, CA. 96001

DEPT OF RESOURCE MGMT  
PLANNING DIVISION

**COMMENTS REGARDING ZONE AMENDMENT 13-007 HIGH PLAINS SHOOTING SPORTS CENTER**

The following comments concern permitting requirements and potential impacts to water quality from the proposed High Plains Shooting Sports Center (zone amendment 13-007). If constructed, this facility will be the largest outdoor shooting range in the northern Sacramento Valley, with capacity for approximately 200 shooters. The project will disturb more than 1 acre of soil during construction, and calls for addition of fill and culverts to ephemeral creeks.

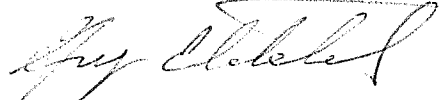
Based on the project description and plan sheet C1, the following permits and water-quality concerns need to be addressed:

1. Because more than 1 acre of soil will be disturbed, the project applicant and property owner must comply with the conditions of the General Construction Storm Water Permit (Order 2009-0009-DWQ).
2. If the project calls for addition of fill to seasonal wetlands, Clean Water Act § 404 and 401 permits are required.
3. Because the proposal allows use of toxic lead shot and bullets instead of restricting use to non-toxic "green" ammunition, best management practices for control of lead must be incorporated in shooting area locations, designs, operation and maintenance. For example, the location of trap and skeet areas needs reconsideration because the shot fall zone is over well-established drainage channels that could transport lead directly to Bear Creek during storms.
4. The information contained in the Zone Amendment application indicates that active capacity for approximately 200 shooters would be provided at the facility. Also, parking for 335 cars would be provided. Plans indicate two, small septic tank/leachfield systems are proposed. No sewage flow estimates were provided, but due to the significant number of people proposed to be accommodated at the facility, a permit for the treatment and disposal of sewage may be required from the Central Valley Water Board. This permit, referred to as Waste Discharge Requirements would be in addition to any sewage disposal permit required by Shasta County. In order to determine if Waste Discharge Requirements from the Central Valley Water Board will be required, the applicant should schedule an appointment with Central Valley Water Board staff to further discuss the project once more specific details about the sewage treatment and disposal system can be provided. If Waste Discharge Requirements are needed, the applicant would need to submit a complete application, referred to as a Report of Waste Discharge, to start the permitting process with the Central Valley Water Board. The

105

Central Valley Water Board has 140 days to issue Waste Discharge Requirements after a complete Report of Waste Discharge has been received.

If you have any questions, please contact me at (530)-224-4997 or the footer address.



Guy F. Chetelat, P.G.  
Engineering Geologist  
Storm Water and Non-Point Source Pollution

GFC:lmw

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Pages 81 – 112

Consist of

Wildland Resource Managers' response to the May 16,  
2023 letter to the Shasta County Board of Supervisors  
from Law Office of Donald Mooney, July 20, 2023

and

Letter from the Law Office of Donald B. Mooney, May 16,  
2023



## **Wildland Resource Managers' response to the May 16, 2023 letter to the Shasta County Board of Supervisors from Law Office of Donald Mooney**

Compiled by: Steven J. Kerns, Certified Wildlife Biologist, Principal  
Greg McKinley, WRM Staff Biologist, MBS

July 20, 2023

### **Introduction:**

Subsequent to the Shasta County Planning Commission's approving Zone Amendment 13-007 for the High Plains Shooting Sports Center, the Shasta County Board of Supervisors received a nine-page letter from the law office of Donald Mooney of Davis, California. In his letter Mr. Mooney states that he represents residents of the Anderson/Millville area objecting the approval of the Mitigated Negative Declaration (MND) stating that the MND "fails to comply with the requirements of the California Environmental Quality Act (CEQA)" (Mooney, 2023). On page four of his letter Mr. Mooney states that "The record before the County supports a fair argument that the Project may have significant environmental impacts" to several biological resources. These impacts include "potential impacts to nesting birds," "potential impacts to gray wolves" and "potential impacts to bald and golden eagles." The letter further states that wetland studies done in 2017 are no longer valid and that the "county failed to conduct the proper biological survey of the project site and adjacent area."

The Mooney letter asserts that there exists a sufficient enough body of evidence to support the need for an EIR. Determination of the necessity of an EIR lies solely with the lead agency as defined by CEQA (Mooney 2023). The

lead agency in the present case is Shasta County. At the request of the County, the information provided below constitutes WRM's response to the biological issues raised by the letter for the purposes of assisting the County in making the necessary determinations with respect to the following:

## **1. Potential impacts of the project to nesting birds**

To assess impacts of any project to a particular wildlife species one must understand the habitat requirements of the species. There are three types of nesting habitats found on the project area: annual grassland, vernal wetlands, and oak woodlands (found within the ravine along the eastern property line) (WRM, 2016). The proposed project will directly impact the annual grassland habitat with loss of some habitat due to constructed shooting facilities and their associated human disturbance. The project design calls for complete avoidance of direct impacts to all wetland and oak habitats (Butler, 2023). Impacts to species using these habitats will come from human related activities.

### **A. Impact to grassland habitat.**

The project footprint constitutes 11.74 acres or 7% of the 151.78 acres within the project area (Butler 2023, see Table 1 on the following page). Thus, less than 8% of the grassland habitat on the project area will be impacted. The remaining grassland habitat will be grazed in the late winter and early spring to reduce the grass competition with vernal wetland plant species and to reduce fire fuel loading in the area. With grazing, grass height will be variable across the area, generally ranging from only a few to several inches in height. Thus, the bird species impacted are those which nests in a short grass western prairie type ecosystem. These include western meadow lark, killdeer, burrowing owl, horned larks and sparrows.

**Table 1: Disturbed Area Analysis**

<u>TOTAL PARCEL AREA:</u>	6,954,084 S.F.	159.64 ACRES
<u>DISTURBED AREA:</u>		
ASPHALT ROAD & PARKING	61,681 S.F.	1.42 ACRES
GRAVEL ROAD & PARKING	204,540 S.F.	4.70 ACRES
BUILDING	5,000 S.F.	0.11 ACRES
TRAILS	43,966 S.F.	1.01 ACRES
TRAP SHOOTING	8,127 S.F.	0.19 ACRES
CONNECTING WALK	5,081 S.F.	0.12 ACRES
SKEET SHOOTING	5,047 S.F.	0.12 ACRES
BACK STOP BERMS	177,295 S.F.	4.07 ACRES
<hr/>		
TOTAL	510,737 S.F.	11.74 ACRES
DISTURBED AREA:	510,737 S.F.	RATIO OF PARCEL AREA
PARCEL AREA:	6,954,084 S.F.	– 0.07 (0.7%)

Source: Butler Engineering, 2023.

### Meadow larks

“The female Western Meadowlark chooses a nest spot on the ground in pasture, prairie, or other grassland habitat. She seeks out a small dip or depression such as a cow footprint, often shielded by dense vegetation that can make the nest difficult to see. Working alone, the female Western Meadowlark uses her bill to shape a depression in the soil into a cup-like shape, then lines the nest with soft, dry grasses and the pliable stems of shrubs. Although some nests are simple

grass-lined bowls, Western Meadowlarks often use the vegetation around the nest cup as an anchor to create a hoodlike, waterproof dome over the nest by weaving together grass and shrub stems. When finished the nest is 7–8 inches across, with a cup that is 4–5 inches across and 2–3 inches deep. It can take 6–8 days for the female to build the season’s first nest. As the parents move back and forth from the nest, they create short “runways” into surrounding grasslands” (Cornell University, 2023).

The western meadowlark is not endangered and is of the least concern because populations have been increasing. Many birds are in danger of extinction due to humans, but this is not true for the Western Meadowlark.

This bird species has been classified as a least concern on the International Union for the Conservation of Nature (IUCN) Red List since 1994 because their population has steadily increased over time. The most common cause of mortality for these birds is from predators such as hawks and owls” (Learning bird watching, 2023).

As the Western meadowlark is a common migrant and its population is increasing across its range, the limited amount of lost habitat imposed by this project will not impact the species.

### Killdeer

“The killdeer is a species of North American plover. They are often seen gathered in flocks on gravel or paved parking lots or in fields of low-cut grass, where they forage and socialize well into the night. These birds have adapted well to living near people, commonly nesting near abundant human activity.

Killdeers prefer relatively open nesting sites in an elevated area with little vegetation. Nests are typically located on a hill or knoll in a sandy or gravelly

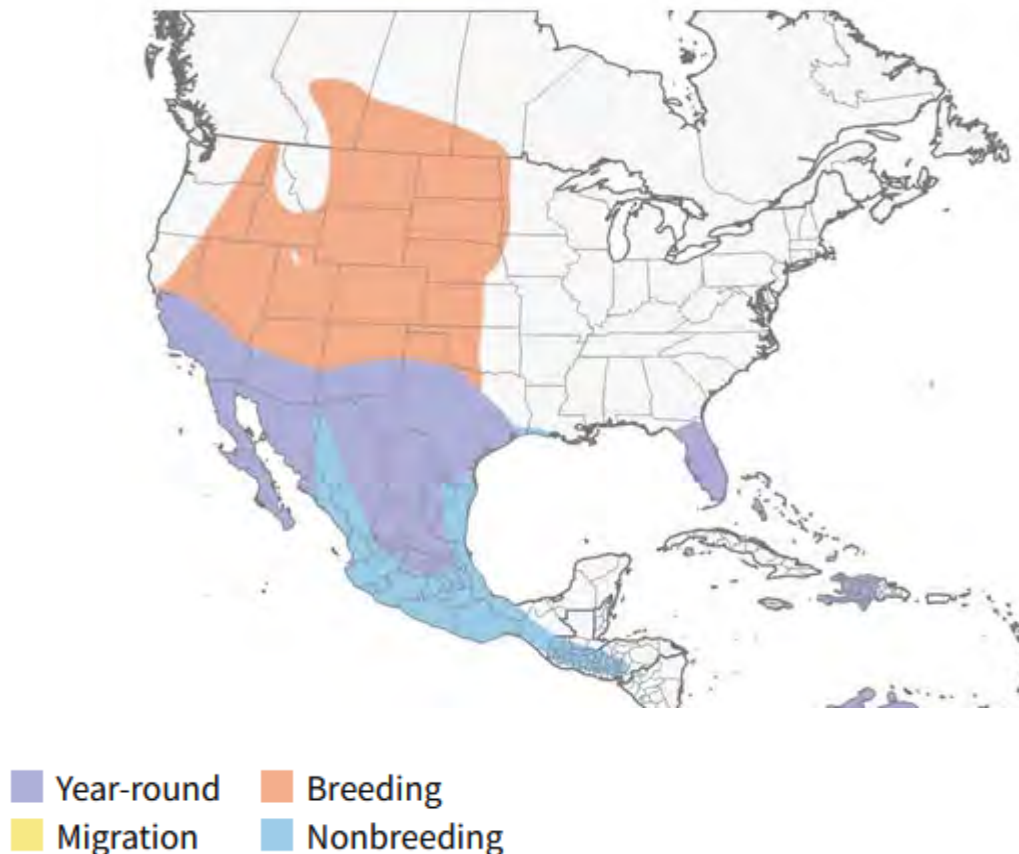
area. It is also not uncommon for nests to be along roadsides, in parking lots or near people’s homes” (Bird facts, 2023).

Killdeer are known to nest in gravel driveways, barn yards and equipment storage yards (Kerns, 2023). As killdeers are unlisted and are tolerant of human activity the project will not have insignificant impact on the species.

### Burrowing owls

Burrowing owls are not found within the northern Sacramento Valley. Figure 1 shows the range of burrowing owls.

Figure 1. Burrowing owl range (Cornell Lab. 2023).



As the species is not found within project area there will be no impact.



### Horned larks

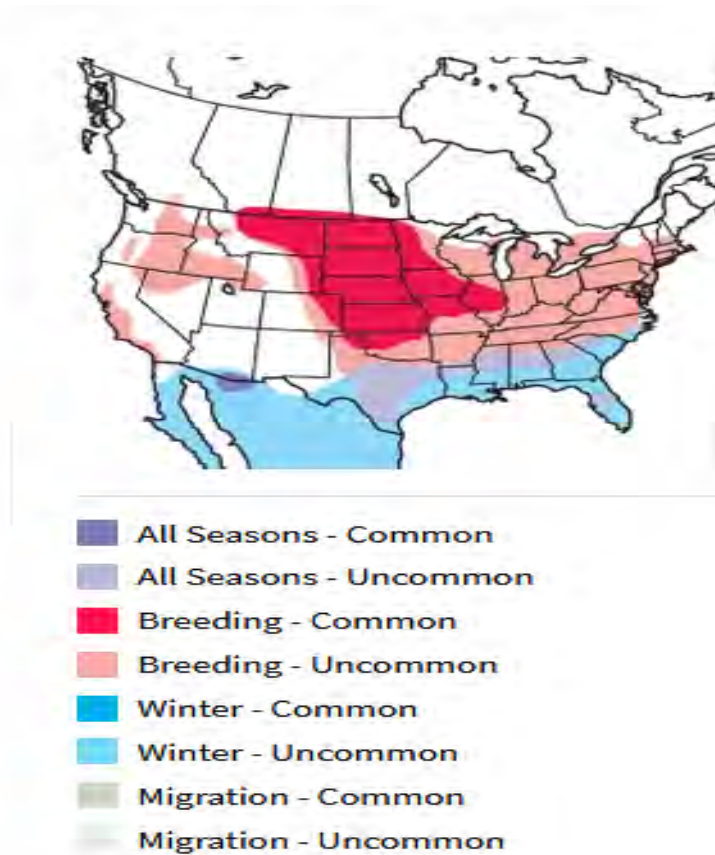
“Horned Larks prefer habitats with bare ground or very short vegetation. Across North America this includes a wide variety of treeless landscapes, from sea level to high in the Rockies. Habitats include short-grass prairie, fields with very low vegetation, close-cropped pastures, plowed crop fields, airport runway verges, roadsides, dunes, tundra (both alpine and Arctic), wide-open lakeshores, mine reclamation areas, recently burned sites, and deserts” (American bird conservancy. 2023).

Horned larks have not been observed on the project area by WRM staff. As the species is common across north America, the removal of less than 12 acres of grassland habitat will not have a significant impact to the species.

### Sparrows

There are 29 species of sparrows associated to some degree with California grasslands (Bird Advisors, 2023). Of those only the grasshopper sparrow is considered to be in serious decline due to loss of habitat. However, the range of the species does not extend into Shasta County. Figure 2 shows the extent of the sparrow’s range in North America.

Figure 2. Range of Grasshopper Sparrow in North America



As the grasshopper sparrow is not found in the area the project will have no impact on the species.

Sparrows are often found in association with human activity with varying degrees of noise and other activity. Aside from a limited loss of habitat, the project should not pose a significant impact to any of the other sparrow species.

### Raptors

Raptor species associated with the oak woodland areas along the eastern side of the project area will be addressed later in this report. Note however that no oak nesting habitat will physically be impacted.

## 2. Gray Wolf

The letter from the Law office of Donald Mooney cites a letter from a concerned adjacent property owner, Ms. Verhougstraete (no reference citation given). According to Mr. Mooney, the letter states that Ms. Verhougstraete has seen gray wolves on her property three times in 2013 and again that wolves were observed in the “Millville Plains” in 2018. Gray wolves are both State and Federally listed and are addressed in the State Wildlife Action Plan. There are several reasons the project in question cannot reasonably be expected to constitute a notable negative impact to gray wolves.

As noted by the Mooney letter, “substantial evidence consists of “facts, a reasonable assumption predicated upon fact, or expert opinion supported by fact” and specifically does not include “speculation” (Mooney, 2023). The publicly available facts and expert opinion with respect to the gray wolf are as follows:

First, CDFW publishes quarterly updates identifying the geographic locations of known wolf packs in California. These maps are archived on the CDFW website (see Figure 3) and are presented with written descriptions of the known movements of transient wolves including data retrieved from telemetry, fecal DNA sampling, photography, and citizen reported sightings of wolves. The maps specifically do not include individual or small groups of wolves thought to be dispersing. Such wolves are highly mobile and are in the process of seeking out new territories. They travel considerable distances (sometimes thousands of miles) before establishing new territories, returning to their pack of origin, or joining preexisting packs. Dispersing wolves are not considered residents in the current peer reviewed literature or by the CDFW (CDFW, 2023). The archived maps from CDFW each quarter dating back to October 2017 (the oldest map published on CDFW website as of 6/12/23) were reviewed. At no point since

2017 have any pack territories been established within any portion of Shasta County.

On 6/27/2023 WRM staff spoke directly to Kent Loudon, senior biologist with CDFW and wolf specialist (Loudon, 2023). The conversation provided additional information not currently published on the CDFW website. Relevant to the claims of the Mooney letter, Mr. Loudon stated that no wolf packs are known to be present in any portion of Shasta County, there are no known “puppering (denning) areas” near the site, and simply that “there is not a wolf issue” in Shasta County (Loudon, 2023). He agreed it is conceivable that wolves may have been sighted in 2013 and 2018, but that there is not a pack resident in that area currently and further that the department would not consider even confirmed sightings of that age as being particularly relevant for assessing wolf presence at the current time. Additionally, he noted that the site is at a low elevation for gray wolves and any hypothetical wolves in that area would most likely utilize the area between the months of February and March with the wolves most likely returning to higher elevations to the east sometime in April (Loudon 2023).

Secondly, of the individual wolves tracked since 2011, wolves OR54, OR25, and OR7 were all documented to have traversed portions of Shasta County. OR54 was found dead in Shasta County in 2020 of causes unknown. OR 25 was found deceased in 2017 near Fort Klamath, Oregon. OR7 was born in 2009, entered California in 2011 and subsequently returned to Oregon in April of 2013. According to CDFW, the last confirmed sighting of OR7 was in 2019 (CDFW 2023). The average estimates for wild gray wolf lifespans vary, but all sources suggest that their maximum lifespan in the wild is approximately 8-13 years with captive wolves outliving wild wolves (National Wildlife Federation, 2023). Since OR7 was known to be born in 2009 and has not been detected since 2019, it is reasonably likely that this wolf is deceased. Thus, all wolves known to CDFW to have entered Shasta County are either known to be

deceased or are reasonably expected to be deceased (Louden 2023, CDFW 2023).

Third, while it is within the realm of possibility that the wolf sightings in 2013 and 2018 documented in the Ms. Verhougstraete and Mooney letters were legitimate and simply not reported to CDFW, the fact pattern in evidence is of single or small numbers of wolves that are dispersing and did not establish territories which include the project site (Mooney 2023, Louden 2023, CDFW 2023). With no documented sightings since 2018, let alone CDFW verified sightings, to suggest that the gray wolf population could be significantly impacted by the project should be considered speculative at best and thus specifically excluded from consideration as “substantial evidence” as identified by CEQA and delineated in the Mooney letter.

Fourthly, in the event the project site was within a known wolf pack territory (which it is not currently known to be), the shooting range is projected to operate during daylight hours only and the wolves primary prey items in that area would be Columbian Black-Tailed Deer and domestic livestock, particularly calves, during the spring months (Kovacs et al. 2016). The deer would be unlikely to graze on the project site in the heat of the day during a significant portion of the year, preferring to seek thermal cover in the ravine. Wolves primarily hunt where their prey are most likely to be found. Deer would most likely graze on the project site during the hours shooting is not occurring (very early morning, late evenings, and during the night). Wolves could potentially prey on these animals during those times and the infrastructure proposed would not inhibit the wolves’ abilities to hunt.

Additionally, the principal concern emanating from the buildout of the project in question, though not explicitly stated in the letter by Mooney, would be noise disturbance. Gray wolves, like most canines, are highly intelligent animals and display a range of responses to a wide variety of stimuli. While there is

ample evidence in the literature of wolves in disturbed wilderness settings avoiding human noise sources and activities (Chapman, 1979), there also exists decades worth of peer reviewed literature evidence of individual wolves, wolf packs, and denning wolves/wolves with young pups, showing remarkable tolerance to substantial close-in human noise (Thiel, Merrill, and Mech 1998, Merrill and Erickson, 2003). Notably a breeding pair of wolves successfully raised multiple litters of pups between 1995 and 1996 on the Camp Ripley Military Reservation in Minnesota (Merrill, 1996). Camp Ripley trained approximately 40,000 infantry operating in tandem with artillery, tanks, and armored vehicles in groups ranging up to 100 vehicles reportedly within distances ranging between 30-1000 feet of the wolves frequently. Notably the adults repeatedly moved the pups to “rendezvous” sites at the edge of the live fire zones, however, they did not abandon the denning site, returning to den successfully in subsequent years (Thiel, Merrill, and Mech, 1998).

Additional noise sources tolerated by successfully denning wolves in the literature include wolves in close proximity to road use (300ft), heavily used ATV trails (500-2700ft), military live fire ranges inclusive of heavy ordinance (30ft), and active gravel quarries operating bulldozers and rock crushing machinery (300ft) (Mech et. Al. 1998, Thiel et. Al. 1997, Merrill 1996, and Thiel, Merrill, and Mech, 1998). In the case of the gravel pit, the adults and pups frequented the pit itself after hours of operation.

In conclusion, based on direct observation, a conversation with a CDFW wolf biologist, and the peer reviewed literature regarding the projected influence of this project on gray wolves presently and in the future can be summarized as follows: First, the likelihood that a pack currently utilizes the site as part of its territory is low, although it is possible that dispersing wolves were seen in the area in the past (and appear to have not selected the site for the establishment of a territory). Second, gray wolves are adaptable and the peer reviewed literature

supports the notion that some wolves would tolerate the presence of a shooting facility within their range and still successfully den even as close as 300ft to the noise disturbance itself, though typically wolves would have dens further from human noise sources. Third, the main prey sources of gray wolves currently on site are likely to continue to be present after the project is built out. Since the main prey are likely to remain, the ravine habitat will be structurally unaffected, and the water resource will remain in place, all the necessary features for wolves are arguably going to remain even after buildout. This ensures that wolves could still incorporate the area as part of a hypothetical future pack territory. Additionally, it does not appear that a “Fair Argument” could be made that the “proposed project may have a significant effect on the environment” relative to gray wolves (Mooney, 2023).

Lastly, and in the words of the executive summary of the CDFW Conservation Plan for Gray Wolves in California (2016), “The presence of wolves...is a testament to their adaptability...” (Kovacs et al. 2016). The WRM staff believe gray wolves are capable of adapting to the conditions on site in the future.

Note: WRM and CDFW do encourage the general public to report wolf sightings and wants to make clear that the best way to do this is to report those sighting to the CDFW at the following website:

<https://wildlife.ca.gov/Conservation/Mammals/Gray-Wolf/Sighting-Report>

Figure 3. 2023 CDFW map of gray wolf activity in California





### **3. Bald/Golden Eagles**

The Mooney letter also highlights concern from individuals and groups primarily related to impacts to bald and golden eagle nest sites (Wintu Audubon society, Mrs. Woodhouse, and CDFW). In sum these letters raise several issues related to raptors with a principal concern regarding nest sites, noise disturbance, impact to possible nesting habitat, and the qualifications of WRM staff as related to assessing noise impacts to wildlife in general and raptors in particular.

In regards to current nests, it is notable that the letters make frequent mention of “nests” as well as “nests in the vicinity”, however, no specific nest locations were identified in the materials made available to WRM. Additionally, no photographs of large raptor nests have been provided to substantiate the presence of nesting raptors of any kind on or near the project site. Both photographs and GPS coordinates can be easily obtained by any individual in possession of a common cell phone including the neighboring residents whence several letters making nest claims originated. This assertion with lack of empirical data is inconclusive.

In the absence of empirical evidence of nest locations, WRM staff conducted 6-man hours of field observations looking for nests, juveniles, and adult raptors on May 5<sup>th</sup>, 2023. On this date one adult bald eagle was seen soaring off-site to the east and southeast of the project area. Additionally, redtail hawks were seen hunting the rim of the ravine and a sparrow hawk was seen perched on a fence post in the northwest corner of the property. WRM staff walked the rim of the ravine along the entire property line glassing the ravine for any sign of large raptor nests. Special attention was paid to areas most likely to be suitable nesting habitat for large raptors. Eagle nests are large, often weighing

between 200 and 600 lbs. and visual searches with binoculars or spotting scopes stand a strong chance of detecting nests in mixed oak and gray pine landscapes like those on the site.

No nests of any large raptor species were observed and none of the large raptors noted above exhibited behavior clearly indicative of brooding or nesting while being observed by WRM staff. This is important due to the general period of nest construction (January-March) and incubation, hatching and rearing (March-June) in California (National Bald Eagle Management Guidelines, 2007). No nests were visible off the property as far as WRM was able to visually inspect from within the property boundary. No juvenile raptors of any species were noted during the survey.

The Bear Creek drainage does contain suitable nesting habitat for large raptors which have been seen in the area by WRM staff. Nests have been asserted to be in the immediate proximity of the property without corroborating empirical data. WRM staff have looked for such nests using industry standard survey techniques and did not locate any.

This is significant because many of the recommendations in the literature for buffer zones of the species in question are predicated on the identification of a specific nest location. These buffers vary by species and are not uniform across the literature. Review articles (summaries of the high-quality peer reviewed literature) occasionally resolve such differences by offering averaged buffer distances from the various literature sources. Richardson and Miller produced a review article and provided buffer distance averages ranging between 650m for Bald Eagles to 800m for Golden Eagles and assorted Hawk (Buteo) species (Richardson and Miller, 1997). The USFWS National Bald Eagle Management Guidelines separate buffer recommendations into different categories according to disturbance type. These guidelines specifically state that managers should take into account a number of factors including the intensity

and duration of the activity as well as the topography and sight distance in addition to the demonstrated tolerance (if any) of the birds in question (National Bald Eagle Management Guidelines, 2007). A shooting range would appear to best fit into “Category H” which covers “activities that produce extremely loud noises and includes “larger fireworks”. The recommendation of the guidelines is to avoid such activities “within 1/2 mile of an active nest unless greater tolerance to the activity (or similar activity) has been demonstrated by the eagles in the nesting area” (National Bald Eagle Management Guidelines, 2007).

The above documents, both of which are summaries of the high-quality peer reviewed literature covering studies published over a period stretching back to at least 1968 (the earliest cited study), are consistent in their recommendations regarding the use and usefulness of buffers for these large raptor species. The recommendation is to use buffers of no larger than ½ mile and to establish buffers based on a known, active nest location and then to tailor those buffers based on data specific to the individual birds present. At the time of this writing no nest location data was provided in the letters from CDFW (3/30/23), the Wintu Audubon Society (5/15/23), the Law Office of Donald Mooney (5/16/23), nor did the on-site surveys done by WRM detect the presence of nests.

The letters also raise questions relative to how the noise generated by the project will influence the suitability of the adjacent areas to support future hypothetical nesting of large raptors. Before addressing these issues, the concerns raised by the Mooney letter regarding the qualifications of WRM to assess how noise can influence wildlife in general and raptors in particular must be addressed. In short, WRM staff are fully licensed to complete the work on this project. Sound is a basic abiotic factor in every ecosystem and all biologists are familiar with both the mechanics of sound and its reception by organisms including the generalized structures and mechanisms by which organisms

process sound. Additionally, the WRM staff has a combined 40 years of direct experience working with a wide range of raptor species in the north state including goshawks, burrowing owls, bald eagles, golden eagles, red-tail hawks, Cooper's hawks, kestrels, rough-legged hawks, great-horned owls, pigmy owls, saw-whet owls, barred owls, spotted owls and WRM staff has held a master bird banding license from the U.S. Fish and Wildlife Service. In addition, WRM staff have over 50 years' experience reading and interpreting the peer reviewed literature which has much to say in regards to raptors and noise tolerance. The assertion that WRM is not qualified seems to be based on a lack of knowledge of staff's professional qualifications and experience. The noise question will be addressed later in this paper.

#### **4. Wetlands**

The Mooney letter correctly notes that the wetland mapping was done in January of 2017 and verified by the Army Corp of Engineers. The letter asserts that since the mapping was done six years ago it is no longer valid as a jurisdictional determination is valid for five years. However, when Mr. Jones submitted a request for determination, he requested a "preliminary jurisdictional determination" of which there is no expiration date (Jones, 2017). This was done knowing that the project planning and approval phases would take considerable time. One needs also to recognize that the project site plan was developed by Butler Engineering within the five-year time limit of a jurisdictional determination. The county review and approval process has extended the approval process into the sixth year since that delineation was done, but all project planning was done within the 5-year period.

The Mooney letter questions if there will be complete avoidance of wetlands on the project area. According to K. Butler, chief engineer for the project, the project

has been designed to avoid all wetland resources and to establish a 50-foot non-disturbance buffer around those resources. (Butler, pers. com. 2023).

## **5. Biological Survey**

The Moony letter states the Initial study/mitigated negative declaration (IS/MND) “fails to provide a timely and adequate biological survey” (Moony, 2023). In 2016 WRM was contracted by Mr. Jones to do a biological review (BR) and a wetland delineation for the project area. The BR identified the soils, vegetation, wildland habitats, wetlands and associated wildlife species present on the site. The report looked at two sources of botanical data for the project area, one compiled by the Western Shasta Resource Conservation District and the second done by WRM staff botanist Bud Adamson who prior to his retirement from the USDA Shasta Trinity National Forest served as a botanist/soil scientist for the USDA. Mr. Adamson (now deceased) was a competent and well-respected botanist in the north state having compiled, among other documents, a complete botanical inventory of the Shasta Trinity Wilderness area. With his expertise, the BR accurately represented the biological conditions of the site. The verification of the wetland mapping by the ACOE attests to the accuracy of the wetland delineation. Further, in the Summary and Management Recommendations section of the BR, WRM noted that sensitive and listed plant and wildlife species are likely present on-site and recommended avoidance of all wetland features (WRM 2019. High Plains Shooting Center Project Biological Review pg. 8). This recommendation was accepted and the project design avoided all wetland features.

## **6. Noise**

RCH Group (RCH) conducted noise measurements at the project site on March 12, 2014 to evaluate existing noise conditions as well as the likely noise levels

that would be experienced by residences adjacent to the shooting sports center. The measured sound levels were used to estimate sound levels from the project at the nearest residences adjacent to the project site. The test shooting was towards the north similar to the proposed project configuration and noise measurement locations were located to estimate noise levels that would occur at the nearest residences with noise reduction (attenuation) only from distance and also noise reduction (attenuation) from distance and topography (RCH, 2017).

The report concluded that “some noise reduction mitigation would be needed to reduce off-site noise from the pistol and rifle ranges and the Clay Sports Shooting Area. Both the pistol and rifle ranges and the Clay Sports Shooting Area require noise reduction mitigation of 6 dB to meet the county 1-hour average noise level standard of 50 dB at the nearest off-site residences. The most effective means for the mitigation would most likely be barriers that block the direct line of sight between the shooter locations and the off-site residences. Noise barriers that block the line of sight typically provide at least 5 dB of noise reduction, so the barrier would need to be slightly higher than the minimum height to block the direct line of sight.” The recommended mitigation buffers were designed into the project.

The RCH report focused on the noise impacts on residences close to the project area, not wildlife. The California Department of Fish and Wildlife noted in a March 2023 letter that the “IS/MUD failed to offer an assessment or avoidance and minimization measures for *potential impacts* to nesting birds due to substantial increase in ambient noise levels” (CDFW, 2023). Impacts to wildlife are always species specific and it is important to note which species would be impacted by the ambient noise levels. As detailed earlier in this report, WRM found no evidence of any nesting raptors on or near the project area. Eagle and other raptor nests are large and easily detected by trained biologists. As no raptor nests have been found by experienced and professional biologists, the noise

factor is not an issue for raptor species at this time. The grassland nesting birds discussed earlier in this report that might nest on the project area all have a high tolerance to human activity and associated noise. It is reasonable to assume that if they choose to nest within the project area, they will be conditioned to the ambient noise levels when choosing to nest, like the well documented bald eagle nest near Turtle Bay and Highway 44 in Redding and the Osprey nest near the old Simpson paper mill on Deschutes Road in Anderson. Killdeer are known to nest within barnyard driveways with heavy farm equipment operating and meadowlarks nesting within grassland adjacent to farming operations (Kerns. 2023). As detailed in WRM's April 6, 2023 letter to the county, the topography of the eastern Bear Creek drainage will act as an acoustical buffer for any passerines nesting within the gorge. This is easily demonstrated by walking down into the gorge and observing the buffering of sound coming from the project area.

In conclusion, noise will not be a factor for nesting eagles or other raptors as no nests are present within the immediate vicinity of the project area. If raptors choose to nest on the project area in the future, they will exhibit tolerance of the projects noise level by their choosing project area nest sites. Noise will be significantly buffered by the topography of the Bear Creek gorge and ambient noise resultant from shooting will be accepted by grassland species should they choose to nest on the project area once the shooting activities have commenced.

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May 16, 2023

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**Re: Zone Amendment 13-007 – High Plains Shooting Sports Center**

Dear Supervisors:

This office represents Anderson/Millville Residents regarding proposed Zone Amendment 13-007 – High Plains Shooting Sports Center. Anderson/Millville Residents object to the Project and objects to the approval of the Mitigated Negative Declaration (“MND”) for the Project on the grounds that the MND fails to comply with the requirements of the California Environmental Quality Act (“CEQA”), Public Resources Code section 21000 *et seq.* Anderson/Millville Residents respectfully requests that the Board of Supervisors not approve the Project and that County of Shasta prepare an Environmental Impact Report (“EIR”) prior to any further consideration of the Project.

**A. THE CALIFORNIA ENVIRONMENTAL QUALITY ACT**

“CEQA is a comprehensive scheme designed to provide long-term protection to the environment. [Citation.] In enacting CEQA, the Legislature declared its intention that all public agencies responsible for regulating activities affecting the environment give prime consideration to preventing environmental damage when carrying out their duties. [Citations.] CEQA is to be interpreted 'to afford the fullest possible protection to the environment within the reasonable scope of the statutory language. [Citation.]” (*Mountain Lion Foundation v. Fish & Game Com.* (1997) 16 Cal.4th 105, 112.)

In evaluating proposed projects, a public agency must evaluate whether a possibility exists that the project may have a significant environmental effect. (Pub. Resources Code, §§ 21100(a), 21151(a).) If so, then the agency must conduct an initial threshold study. (Pub. Resources Code, § 21080.1; Guidelines, § 15063.) If the initial study reveals that the project will not have any significant effect, then the agency may complete a negative declaration that describes the reasons supporting the determination. (Guidelines, §§ 15063; 15064(f)(3); 15070(a).) If the initial study identifies potentially significant effects but the applicant agrees to revisions in the project before the initial

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study and negative declaration are released for public review and the revisions reduce the impact to less than significant, then a mitigated negative declaration may be prepared. (Guidelines, §§ 15063(f)(2); 15070(b).) If the initial study determines that any aspect of the project may cause a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial, the agency must prepare an EIR. (*Id.*; see *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 86; see also *Sundstrom v. County of Mendocino* (1982) 202 Cal.App.3d 296, 304-305.)

The EIR, with all its specificity and complexity, is the mechanism prescribed by CEQA to force informed decision-making and to expose the decision-making process to public scrutiny. (*Planning and Conservation League v. Department of Water Resources* (2000) 83 Cal.App.4th 892, 910; citing *No Oil, Inc., supra*, 13 Cal.3d at p. 86.) The central purpose of an EIR is to identify the significant environmental effects of the proposed project, and to identify ways of avoiding or minimizing those effects through the imposition of feasible mitigation measures or the selection of feasible alternatives. (Pub. Resources Code, § 21002, 21002.1(a), 21061.) “An EIR provides the public and responsible government agencies with detailed information on the potential environmental consequences of an agency’s proposed decision.” (*Mountain Lion Foundation v. Fish & Game Com., supra*, 16 Cal.4th at p.113.) The EIR is “the heart of CEQA” and “an environmental alarm bell whose purpose is to alert the public and its responsible officials to environmental changes before they have reached the ecological point of no return.” (*Laurel Heights Improvement Ass’n v. Regents of the Univ. of California (“Laurel Heights I”)* (1988) 47 Cal.3d 376, 392.) The EIR is the “primary means” of ensuring that public agencies “take all action necessary to protect, rehabilitate, and enhance the environmental quality of the state.” (*Id.*, quoting Pub. Resources Code, § 21001(a).) The EIR is also a “document of accountability,” intended “to demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its actions.” (*Laurel Heights I, supra*, 47 Cal.3d at 392 (quoting *No Oil, Inc., supra*, 13 Cal.3d at p. 86.)

## **B. THE FAIR ARGUMENT STANDARD**

“In reviewing an agency’s decision to adopt a negative declaration, a trial court applies the ‘fair argument’ test.” (*City of Redlands v. County of San Bernardino (“City of Redlands”)* (2002) 96 Cal.App.4th 398, 405; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1399; see also *Pala Band of Mission Indians v. County of San Diego* (1998) 68 Cal.App.4th 556, 571.) The fair argument test requires that an agency “prepare an EIR whenever substantial evidence in the record supports a fair argument that a proposed project may have a significant effect on the environment.” (*City of Redlands*, 96 Cal.App.4th at 405; quoting *Gentry v. City of Murrieta, supra*, 36 Cal.App.4th at 1399-1400; see *Laurel Heights Improvement Ass’n v. Regents of the Univ. of Cal.* (1993) 6 Cal.4th 1112, 1123; *No Oil, Inc., supra*, 13 Cal.3d at 75, 82,118.) “If there is substantial evidence in light of the whole record before the lead agency that the project may have a significant effect on the environment, an environmental impact report shall be

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prepared.” (Pub. Resources Code, §§ 21080(d), 21151(a).) If such evidence exists, the court must set aside the agency’s decision to adopt a negative declaration as an abuse of discretion in failing to proceed in a manner as required by law. (*City of Redlands, supra*, 36 Cal.App.4th at 406; *Pala Band of Mission Indians v. County of San Diego, supra*, 68 Cal.App.4th at 571.) Thus, an EIR must be prepared “whenever it can be fairly argued on the basis of substantial evidence that the project may have significant environmental impact” (*No Oil, Inc., supra*, 13 Cal.3d at 75) even if there is substantial evidence to the contrary. (*Arviv Enterprises, Inc. v. South Valley Area Planning Com.* (2002) 101 Cal.App.4th 1333, 1346; *Friends of “B” Street v. City of Hayward* (1980) 106 Cal.App.3d 988, 1002).

Based upon the fair argument standard of review, the County must prepare an EIR instead of a mitigated negative declaration if any substantial evidence in the record supports a fair argument that the Project may have a significant effect on the environment, even if other substantial evidence supports the opposite conclusion. (Pub. Resources Code § 21151(a); Guidelines § 15064(f)(1)-(2); *No Oil, Inc., supra*, 13 Cal.3d at 75; *Architectural Heritage Ass’n v. County of Monterey* (2004) 122 Cal.App.4th 1095, 1109.) It is the function of an EIR, not a negative declaration, to resolve these conflicting claims. (See *No Oil, Inc., supra*, 13 Cal.3d at 85.) It is well-established that CEQA creates “a low threshold requirement” for the initial preparation of an EIR and reflects a preference for resolving doubts in favor of environmental review when the question is whether any such review is warranted. (See *No Oil, Inc., supra*, 13 Cal.3d at 84; *Oro Fino Gold Mining Corp. v. County of El Dorado* (1990) 225 Cal.App.3d 872, 880-881.)

CEQA and the CEQA Guidelines provide assistance in evaluating what constitutes substantial evidence to support a “fair argument”. (See Guidelines § 15384(a) (“‘substantial evidence’ means enough relevant information and reasonable inferences...that a fair argument can be made to support a conclusion, even though other conclusions might also be reached.”).) Substantial evidence consists of “fact, a reasonable assumption predicated upon fact, or expert opinion supported by fact.” (Pub. Resources Code § 21080(e)(1); see also Guidelines § 15384(b).) It does not include “argument, speculation, unsubstantial opinion or narrative, evidence that is clearly inaccurate ...or evidence of social or economic impacts that do not contribute to, or are not caused by, physical impacts on the environment.” (Pub. Resources Code § 21080(e)(2).) Comments that present evidence of facts and reasonable assumptions from those facts may constitute substantial evidence to support fair argument that the project may have a significant effect on the environment. (See *City of Redlands, supra*, 96 Cal.App.4th at 590; see also *Stanislaus Audubon Society, Inc. v. County of Stanislaus* (1995) 33 Cal.App.4th 144, 152-153.) Relevant personal observations of area residents on nontechnical subjects, such as aesthetics, qualify as substantial evidence to support a fair argument. (*Ocean View Estates Homeowner’s Assn., Inc. v. Montecito Water District* (2004) 116 Cal.App.4th 396, 402.)

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**C. SUBSTANTIAL EVIDENCE SUPPORTS A FAIR ARGUMENT THAT THE PROJECT MAY HAVE SIGNIFICANT ENVIRONMENTAL IMPACTS**

The record before the County supports a fair argument that the Project may have significant environmental impacts.

**1. Biological Resources**

**a. Nesting Birds**

The California Department of Fish and Wildlife is the trustee agency for fish and wildlife resources. Fish and Game Code section 1802 requires that CDFW consult with lead and responsible agencies and provide, as available, the required biological expertise to review and comment on environmental documents and impacts arising from a proposed project's activities. (See *Center for Biological Diversity v. Department of Forestry & Fire Protection* (2014) 232 Cal.App.4th 931, 953.) As such, CDFW's expert comments constitute substantial evidence supporting a fair argument that the Project may have a significant environmental impact.

With respect to nesting birds, CDFW concurred with Mitigation Measure IV.a.1 regarding "vegetation removal and other ground disturbing activities outside of the nesting bird season, or with the implementation of pre-construction surveys." (CDFW Letter dated Marcy 30, 2023 at 2-3.) CDFW, however, pointed out that the Project would generate a permanent substantial increase in ambient noise levels. (CDFW Letter at 3, citing IS/MND, § XIII at 21-22.) CDFW then pointed out that the IS/MND failed to "offer an assessment or avoidance and minimization measures for potential impacts to nesting birds due to substantial increase in ambient noise levels throughout the life of the Project." (CDFW Letter at 3.)

It should also be noted that despite CDFW's concern about the impact to nesting birds, the biological evaluation contains no assessment of nesting birds on the project site. Moreover, the biological evaluation's brief discussion of birds in the project vicinity excludes any reference to bald eagles, golden eagles and ospreys which are known to be present in the area. (See Biological Review at 8; and letter dated May 11, 2023 from Marily Woodhouse, Executive Director of Battle Creek Alliance.)

CDFW then stated that "[e]levated noise levels are known to alter nesting behavior, which may lead to nest abandonment, therefore, CDFW strongly encourages a nesting bird assessment of the perceived permanent elevated noise regime that is typical of shooting centers." (*Id.*) This assessment, however, was not completed. (See Revised IS/MND at 21-22.) Instead, the Staff Report discusses an April 6, 2023 letter from Wildland Resource Management disputing CDFW's claims about potential impacts associated to nesting birds from the operation of the Project. (See April 12, 2023 Staff

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Report at p. 1.) Wildland Resource Management opined that “various factors, including the existing topography, would effectively reduce and limit the impacts on nesting birds with the corridor.” (*Id.* at 1, see also Wildland Resource Management dated April 6, 2023.) It should be noted, however, that Wildland Resources Management does not have any expertise in noise, thus such an opinion without personal knowledge of noise at the project site may not constitute substantial evidence. Also, Wildland Resources’ opinion however, is countered by the lay testimony Tracy Verhougstraete, who lives at “7447 Leopard Drive, which is located directly next to the proposed gun range complex.” (Verhougstraete Letter.) Based upon her personal knowledge, Ms. Verhougstraete states that the noise will be ever present as the plains are fairly flat and open and “there are very few trees or hills to buffer the sound.” (*Id.*) This is not speculative as Ms. Verhougstraete goes on to state that “[w]hen Supervisor Joes and his friends are there shooting it sounds as if they are outsider our home.” (*Id.*) Thus, Ms. Verhougstraete’s lay testimony, which clearly constitutes substantial evidence counters the opinion offered by Wildland Resources. Thus, even assuming that Wildland’s opinion regarding noise constituted substantial evidence, this amounts to conflicting substantial evidence regarding the project’s operation (noise from shooting) on nesting birds. In such a situation CEQA mandates the preparation of an EIR. As discussed above, it is the function of an EIR, not a negative declaration, to resolve these conflicting claims. (See *No Oil, Inc.*, *supra*, 13 Cal.3d at 85.) CEQA creates “a low threshold requirement” for the initial preparation of an EIR and reflects a preference for resolving doubts in favor of environmental review when the question is whether any such review is warranted. (See *No Oil, Inc.*, *supra*, 13 Cal.3d at 84; *Oro Fino Gold Mining Corp. v. County of El Dorado*, *supra*, 225 Cal.App.3d at 880-881.) The comments submitted by CDFW and the public clearly meet the low-threshold set by CEQA for preparation of an environmental impact report.

**b. The IS/MND Fails to Address Potential Impacts to the Gray Wolf**

Gray wolves are listed as endangered under the both the California and federal Endangered Species and also listed as a Species of Greatest Conservation Need in the State Wildlife Action Plan. (State Wildlife Action Plan at 2-6, 5.2-16, 5.4-23) Gray wolves were spotted on the Millville Plains in 2018, including several times at the Project site. (Verhougstraete Letter.) In 2013, Ms. Verhougstraete has observed them three times on her property, which is adjacent to the Project site. The IS/MND, however, make no mention or reference to the presence of gray wolves nor the potential impact to them from a shooting range. One explanation for this significant omission regarding the gray wolf is the fact that the Biological Review for the Project is seriously out dated as it was prepared over seven years ago.

As the gray wolf, an endangered species, has been observed multiple times at the Project site and in the immediate vicinity, the IS/MND needs to address the Project’s potentially significant impacts to the species. The failure to do results in an

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environmental document that fails to provide the required information to the public and decisionmakers. As such, approval of the IS/MND would constitute a prejudicial abuse of discretion.

**c. The IS/MND Fails to Address Potential Impacts to Bald Eagles and Golden Eagles**

The IS/MND states that a review of the 2022 California Natural Diversity Database (CNDDDB) inventory found that no species identified as a candidate, sensitive, or special-status have been known to occur at the Project site. (IS/MND at 10.) The evidence in the record, however, indicates that bald eagles, which are listed as endangered under the California Endangered Species Act, are present in the project vicinity. (See Woodhouse Letter.) The IS/MND, however, contains no assessment and/or discussion regarding the Project's potential impact on bald eagles.

Golden eagles are also present in the project vicinity. While not a listed species, along with bald eagles they are protected under the federal Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and the Lacey Act. These laws prohibit the possession, use, and sale of eagle feathers and parts as well as the transport of eagles and feathers and parts that have been illegally obtained.

Also, as stated in the Woodhouse letter:

I have consulted with the US Fish and Wildlife Service recently regarding another project that affects eagles. Their ecologist wrote: "Both bald eagles and golden eagles are also protected under the federal Migratory Bird Treaty Act... Ground crew activity during (as well as before and after, if necessary) would need to be minimized and kept at a distance from the nest so as to avoid disturbance to the eagles from these activities...Golden eagles appear to be less tolerant of human activity, so we generally recommend a one-mile buffer around golden eagle nests for human activity... As bald eagle populations continue to grow, we foresee breeding eagles and their nests showing up in more locations... Eagle nests are also protected under the Bald and Golden Eagle Protection Act. Nests are protected from destruction at any time...you would need to apply for a permit for eagle nest take. Information on, as well as the application process for, permits for eagle nest take can be found here: [https://fwsepermits.servicenowservices.com/fws?id=fws\\_kb\\_view&sys\\_id=4b14a5691b9f10104fa520eae54bcb6](https://fwsepermits.servicenowservices.com/fws?id=fws_kb_view&sys_id=4b14a5691b9f10104fa520eae54bcb6)" Environmental Effects and Protections

Thus, given the presence of golden eagles and bald eagles in the vicinity, including nests, substantial evidence supports a fair argument that the Project may have potentially significant environmental impacts to these two species. Additionally, as with



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the gray wolf, the IS/MND's failure to address bald eagles and golden eagles results in an environmental document that fails to provide the required information to the public and decisionmakers. As such, approval of the IS/MND would constitute a prejudicial abuse of discretion.

**d. Wetlands**

The IS/MND's discussion and analysis regarding vernal pools and wetlands relies upon a wetlands delineation prepared by Wildland Resources Managers in January 2017. The IS/MND relies upon this wetland delineation to determine that the impacts to wetlands from the project are considered to be less-than-significant. (IS/MND at 11.) The wetlands delineation, however, was prepared over 6 year ago. This is in contrast to the Army Corps of Engineers' requirement that a wetlands delineation is only good for five years. A jurisdictional determination from the Corps is based upon a wetland delineation map. The jurisdictional determination is relied upon by the landowner to determine what areas of the property can and cannot be disturbed without obtaining a 404 permit from the Corps. The determination remain valid for five years. Regulatory Guidance Letter (RGL) 05-02 (June 14, 2005). The Corps selected the five-year period because wetlands are affected over time by natural and man-made activities. Those activities may result in changes to the jurisdictional boundaries that are not identified in the IS/MND.

Thus, the IS/MND's reliance on an outdated wetlands delineation does not constitute substantial evidence and should not be used to support a finding that the Project is designed to entirely avoid nearly all designated wetland features that could serve as habitat for listed species. (IS/MND at 10.)

It should also be noted that the IS/MND states that the nearly all designated wetland features that could serve as habitat for listed species will be avoided. This statement, however, indicates that some areas will not be avoided. While the IS/MND provides a discussion of the wetland area, it does not identify what areas will not be avoided. (IS/MND at 11.)

**e. The County Failed to Conduct the Proper Biological Survey of the Project Site and the Adjacent Area**

For the reasons discussed in the letter dated May 15, 2023, from Shasta Environmental Alliance the Biological Survey that serves the basis for the IS/MND's discussion and analysis is completely inadequate and violates CEQA. (See *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502.) In *Sierra Club*, the Court held that the ultimate inquiry, as case law and the CEQA guidelines make clear, is whether the environmental document includes enough detail "to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project. (*Id.* at 521.) The Court further held that whether or not the alleged inadequacy is

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the complete omission of a required discussion or a patently inadequate one-paragraph discussion devoid of analysis, the reviewing court must decide whether the environmental document serves its purpose as an informational document. (*Id.*) Thus, “a sufficient discussion of significant impacts requires not merely a determination of whether an impact is significant, but some effort to explain the nature and magnitude of the impact. (*Id.*, citing *Cleveland National Forest Foundation v. San Diego Association of Governments* (2017) 3 Cal.5th 497, 514-515.)

In the present matter, the IS/MND fails to provide a timely and adequate biological survey and thus, fails to provide the requisite information for informed decision making.

## 2. Noise

The discussion of noise in the IS/MND and the noise study are significantly flawed. First, the Noise Study is based upon a single gun being fired and does not account for the shooting of multiple guns at the same time. This flaw is significant because when multiple guns are shot at the same time the noise level increases.

“Sound can best be expressed on a logarithmic basis. Consequently, sound levels cannot be added by ordinary arithmetic means. Sound levels from two equal sources will result in a total increase of 3 decibels. For example; two cars, each generating 60 decibels of sound, will result in 63 decibels of sound at a receptor, not 120 decibels.”<sup>1</sup>

If more than two guns are fired at the same time the noise level increases even further.<sup>2</sup> Nothing in the project description or IS/MND indicates that shooting on the site would be limited to one gun at a time. Thus, the Noise Study failed to account for multiple sounds at the same time.

Applying the calculations for multiple sources of sound as provided in the footnotes below clearly indicates that substantial evidence supports a fair argument that the project may result in significant noise impacts – noise impacts that exceed the standards set forth in the General Plan. As such, CEQA mandates the preparation of an EIR.

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<sup>1</sup> See <https://environment.transportation.org/education/environmental-topics/traffic-noise/traffic-noise-overview/>

<sup>2</sup> See <https://www.sonitron.be/combined-sound-sources-calculator/> ; see also [http://www.snapfour.com/CombinedNoise\\_Calculations.aspx](http://www.snapfour.com/CombinedNoise_Calculations.aspx)

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The Noise Study is also flawed as it failed to account for multiple diesel generators that will need to run air conditioning and refrigeration all summer once it warms up to 80. Again, running multiple generators will result in an increase in sound.

**D. CONCLUSION**

As set forth above and in the numerous comment letters sent by members of the public and environmental organizations, as well as the California Department of Fish and Wildlife it is clear that substantial evidence supports a fair argument that the Project may have significant environmental impacts. As such, CEQA mandates the preparation of a legally adequate EIR for the Project and approval of the Project based upon this IS/MND would constitute an abuse of discretion and be contrary to law.

Sincerely,



Donald B. Mooney  
Attorney for Anderson/Millville Residents

cc: Client

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Consist of

Memorandum RE: Response to Dwight DeMers Letter Dated May 12, 2023. Noise Report for Environmental Initial Study & Mitigated Negative Declaration – Zone Amendment 13-007 (Jones), with associated data, Paul Miller, RCH Group, May 15, 2023;

Memorandum RE: Response to Winford Sample Letter Dated August 2023. Noise Report for Environmental Initial Study & Mitigated Negative Declaration (IS/MND) – Zone Amendment 13-007 (Jones), October 16, 2023;

Letter RE: Proposed Zone Amendment 13-007 (Jones) Request to Deny Re-Zoning to allow a gun range due to negative impact to community & environment, Dwight Demers, May 12, 2023; and

Letter RE: Zone Amendment 13-007, Winford Sample, September 2, 2023

## ***MEMORANDUM***

**TO:** Paul Hellman, Director [phellman@co.shasta.ca.us](mailto:phellman@co.shasta.ca.us)  
Shasta County Department of Resource Management

**FROM:** Paul Miller, Managing Principal, Senior Noise Scientist  
**RCH Group**

**CC:** Kevin Butler [kevin@butlergroup.us](mailto:kevin@butlergroup.us)  
Patrick Jones [patrickhenry@live.com](mailto:patrickhenry@live.com)  
Luis Rosas [lrosas@TheRCHGroup.com](mailto:lrosas@TheRCHGroup.com)

**DATE:** May 15, 2023

**REGARDING:** Response to Dwight DeMers Letter Dated May 12, 2023. Noise Report for Environmental Initial Study & Mitigated Negative Declaration – Zone Amendment 13-007 (Jones)

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The Dwight DeMers Letter (DeMers Letter) has no credibility as a technical noise response. It is an amateur internet-research fueled attempt to discredit the March 2017 *Noise Technical Report – High Plains Shooting Sports Center* prepared by RCH Group (or RCH). The DeMers Letter shows no understanding of how to analyze noise from the proposed gun range. This is clear in the summary on page 1 that claims noise would be 100.87 Decibels at one mile away. That is not possible and is far above any reasonable estimate. The decibel level for guns on page 4 (in the DeMers Letter) are from an internet page of promotional advertising by a company that sells gun silencers. The decibels levels are meaningless to this report because they don't provide a reference distance – a critical factor in estimating noise levels at other distances. When the DeMers Letter starts discussing attenuation and simultaneous firing of guns the conclusion becomes more convoluted, because the noise levels at distances for individual guns are the starting point of this analysis and those estimates are wrong. My conclusion is that there are no valid noise estimates contained in the DeMers Letter.

The DeMers Letter also claims there is no data in the *Noise Technical Report* that RCH published in March 2017. That is not the case. RCH did an afternoon sound study at the project site on March 12, 2014 with three noise specialists, and five calibrated sound level meters (to measure noise simultaneously directly behind the shooting location and to the north, northeast and south of the shooting location (see Figure 3 in the March 2017 *Noise Technical Report*).

Furthermore, RCH is qualified to measure the noise levels, our analysts have been collecting noise measurement for more than 20 years for clients that include the California Public Utilities Commission, the California Energy Commission, and private projects in Cities and Counties throughout California. I managed and participated in the 2014 field noise measurements. In response to the DeMers Letter, **I again reviewed the RCH March 2017 Noise Technical Report -- High Plains Shooting Sports Center and it is a noise study that the County can rely upon, it is an incredibly detailed assessment of the proposed gun range using live guns at the proposed project site, with the actual topography.**

The RCH Technical Noise Study for the gun range is summarized in the March 2017 *Noise Technical Report* as follows:

“Noise from the Shooting Sports Range

RCH conducted noise measurements at the project site on March 12, 2014 to evaluate existing noise conditions as well as the likely noise levels that would be experienced by residences adjacent to the shooting sports center. RCH collected noise measurements using Metrosonics dB308 Sound Level Meters. Sound levels were recorded at five locations simultaneously while a shooter fired several types of guns representative of those that would be used at the proposed shooting sports center. The guns included a .22 rifle, 12 gauge shotgun, 9 mm handgun and a 4570 rifle. The measured sound levels were used to estimate sound levels from the project at the nearest residences adjacent to the project site. The locations of the sound level meters during the testing are shown on **Figure 3**. The noise meters were in locations to assess noise levels behind the shooter, unmitigated noise in front of the shooter, and noise levels north, northwest and south of the shooter. The shooter changed guns each five minutes and fired twenty rounds of the .22 rifle the first five minutes, then 10 rounds with the 12 gauge, then 10 rounds of the 9 mm handgun, then 10 rounds with the 4570 rifle. The shooting was towards the north similar to the proposed project configuration. During the tests, RCH staff monitored sound level meters at noise measurement test locations M1, M4 and M5 and recorded  $L_{max}$  levels ( $L_{max}$  is the maximum noise levels) seen on the sound level meters during the tests. Sound level meters at locations M2 and M3 recorded automatically and therefore were not affected by any inadvertent noise potentially caused by the RCH staff observers at the other locations.”

The data from all these measurements were condensed into Table 8 (in the March 2017 *Noise Technical Report*), taking into consideration the hillside topography of the project area, shown as follows:.

“**Table 8: Estimated Noise Levels from Gunfire at Rifle Range (Mitigated by Hillside Topography)**

Residence	Distance (Feet)	.22 Rifle		9mm Handgun		Distance (Feet)	4570 Rifle	
		Lmax	Leq <sup>1</sup>	Lmax	Leq		Lmax	Leq
R1	3280	45	39	45	39	3570	46	38
R2	3480	44	38	45	38	3710	45	37
R3	4770	41	35	41	34	4770	43	35
R4	1610	52	46	53	46	1610	54	46
R5	1870	51	45	51	45	1870	53	45

Source: RCH Group 2014

**Notes:** Estimated noise levels in this table are based on the reference noise levels and distances measured at location M2, which was shielded by existing topography; an attenuation rate of 7.5 decibels per doubling of the distance was assumed.

Distances were measured 100 feet from each residence to closest point on rifle range where each firearm would be fired. Leq is based on 240 rounds per hour for the .22 rifle and 120 rounds per hour for the 9mm handgun and 4570 rifle.

Estimates were based on reference noise levels at M2. The 22 Rifle was 50 dB Lmax and 44 dB Leq. 9mm handgun was 51 dB Lmax and 44 dB Leq. 4570 Rifle was 52 dB Lmax and 44 dB Leq.

The County General Plan Noise Element indicates that non-transportation impulsive noise should not result in a 1-hour average noise level greater than 50 dBA.”

<sup>1</sup> Leq is the average sound level over a specified period of time, described as the Equivalent Sound Level ( $L_{eq}$ ) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time-varying sound energy in the measurement period.

## **Overall Conclusion:**

The noise impacts from the proposed project were assessed in the RCH March 2017 *Noise Technical Report – High Plains Shooting Sports Center*. The estimates of the gun noise at the nearest residential properties were derived from noise measurements of four guns fired at the proposed project site, measurements to the residential properties and standard attenuation factors.

I managed and participated in the 2014 field noise measurements. In response to the DeMers Letter, **I again reviewed the RCH March 2017 Noise Technical Report -- High Plains Shooting Sports Center and it is a noise study that the County can rely upon, it is an incredibly detailed assessment of the proposed gun range using live guns at the proposed project site, with the actual topography.**

The Environmental Initial Study Noise for Zone Amendment 13-007 (Jones) noise analysis properly includes the conclusions from the RCH March 2017 *Noise Technical Report* for the High Plains Shooting Sports Center.

METROSONICS db-308 SN 2062 V2.3 3/87

CURRENT DATE: 3/13/14

CURRENT TIME: 9:32:47

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CALIBRATED: 3/11/14 @ 14:05:51

DISPLAY RANGE: 42.4dB TO 138.4dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: FAST

SCHEDULED RUN: OFF

START DATE: 3/12/14

START TIME:18:00:00

LENGTH: 1:00:00

\*\* OVERALL REPORT \*\*

TEST STARTING DATE: 3/12/14

TEST STARTING TIME: 11:50:01

TEST LENGTH: 0DAYS 2:07:16

Lav = 43.9dB

Lav 80= 42.4dB

Lav 90= 42.4dB

SEL = 82.6dB

Lmax = 69.4dB ON 3/12/14 @ 13:16:25

Lpk < 117dB

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB



8 HR DOSE ( 80dB CUTOFF)= 0.00%  
 8 HR PROJ. DOSE ( 80dB CUTOFF)= 0.00%  
 8 HR DOSE ( 90dB CUTOFF)= 0.00%  
 8 HR PROJ. DOSE ( 90dB CUTOFF)= 0.00%

\*\* TIME HISTORY REPORT \*\*

MODE: CONTINUOUS  
 PERIOD LENGTH: 0:05:00  
 TIME HISTORY CUTOFF: NONE  
 Ln(1): 1.0% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk			
TAG#	TIME	ET	L1	L2			
1	3/12/14	47.1	63.2	<117		*	+
0	11:50:01	0:05:00	58	42			
2	3/12/14	42.5	58.7	<117	*		+
0	11:55:01	0:05:00	42	42			
3	3/12/14	42.4	52.9	<117	*		+
0	12:00:01	0:05:00	43	42			
4	3/12/14	42.4	44.2	<117	*	+	
0	12:05:01	0:05:00	42	42			
5	3/12/14	42.9	61.0	<117	*		+
0	12:10:01	0:05:00	45	42			
6	3/12/14	46.6	65.6	<117		*	+
0	12:15:01	0:05:00	57	42			
7	3/12/14	42.4	44.8	<117	*	+	
0	12:20:01	0:05:00	42	42			
8	3/12/14	42.5	55.1	<117	*		+
0	12:25:01	0:05:00	42	42			
9	3/12/14	42.4	43.2	<117	*+		
0	12:30:01	0:05:00	42	42			
10	3/12/14	46.4	61.7	<117		*	+
0	12:35:01	0:05:00	58	42			
11	3/12/14	43.9	63.5	<117	*		+
0	12:40:01	0:05:00	52	42			

12	3/12/14	42.6	59.5	<117	*					+
0	12:45:01	0:05:00	42	42						
13	3/12/14	42.4	51.4	<117	*				+	
0	12:50:01	0:05:00	42	42						
14	3/12/14	42.7	53.7	<117	*					+
0	12:55:01	0:05:00	46	42						
15	3/12/14	42.4	46.9	<117	*				+	
0	13:00:01	0:05:00	42	42						

INT#	START	Lav	Lmax	Lpk						
TAG#	TIME	ET	L1	L2						

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16	3/12/14	44.5	68.5	<117	*						+
0	13:05:01	0:05:00	52	42							
17	3/12/14	42.5	51.3	<117	*				+		
0	13:10:01	0:05:00	43	42							
18	3/12/14	44.0	69.4	<117	*						+
0	13:15:01	0:05:00	48	42							
19	3/12/14	42.7	57.1	<117	*					+	
0	13:20:01	0:05:00	47	42							
20	3/12/14	43.8	68.7	<117	*						+
0	13:25:01	0:05:00	47	42							
21	3/12/14	45.7	65.1	<117	*						+
0	13:30:01	0:05:00	56	42							
22	3/12/14	44.2	69.1	<117	*						+
0	13:35:01	0:05:00	51	42							
23	3/12/14	43.4	67.0	<117	*						+
0	13:40:01	0:05:00	47	42							
24	3/12/14	42.8	49.3	<117	*					+	
0	13:45:01	0:05:00	46	42							
25	3/12/14	42.4	48.5	<117	*					+	
0	13:50:01	0:05:00	43	42							
26	3/12/14	47.4	66.6	<117	*						+
0	13:55:01	PARTIAL	59	42							

\*\* AMPLITUDE DISTRIBUTION REPORT \*\*

TOTAL SAMPLES = 244380

dB	SAMPLES	% OF TOTAL
42	228183 *****	93.37
43	4200 **	1.71
44	2821 *	1.15
45	1828 *	.74
46	1142 +	.46
47	999 +	.40
48	681 +	.27
49	634 +	.25
50	526 +	.21
51	560 +	.22
52	487 +	.19
53	444 +	.18
54	335 +	.13
55	329 +	.13
56	353 +	.14
57	296 +	.12
58	253 +	.10
59	110 .	.04
60	59 .	.02
61	44 .	.01
62	28 .	.01
63	21	.00
64	16	.00
65	9	.00
66	6	.00
67	7	.00
68	7	.00
69	2	.00

Ln( 0.0) = 69dB  
 Ln(10.0) = 42dB  
 Ln(50.0) = 42dB  
 Ln(99.9) = 42dB

	NO	80.0dB	90.0dB
	CUTOFF	CUTOFF	CUTOFF
Ldod	42.9dB	42.0dB	42.0dB
Losha	42.7dB	42.0dB	42.0dB
Leq(6)	42.6dB	42.0dB	42.0dB

METROSONICS db-308 SN 2574 V2.3 3/87

CURRENT DATE: 3/13/14

CURRENT TIME: 9:37:31

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CALIBRATED: 3/11/14 @ 14:18:37

DISPLAY RANGE: 42.8dB TO 138.8dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: FAST

SCHEDULED RUN: OFF

START DATE: 3/12/14

START TIME:18:00:00

LENGTH: 1:00:00

\*\* OVERALL REPORT \*\*

TEST STARTING DATE: 3/12/14

TEST STARTING TIME: 12:05:01

TEST LENGTH: 0DAYS 1:58:45

Lav = 51.7dB

Lav 80= 47.4dB

Lav 90= 42.8dB

SEL = 90.1dB

Lmax = 87.6dB ON 3/12/14 @ 13:32:18

Lpk < 117dB

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB

8 HR DOSE ( 80dB CUTOFF)= 0.00%  
 8 HR PROJ. DOSE ( 80dB CUTOFF)= 0.00%  
 8 HR DOSE ( 90dB CUTOFF)= 0.00%  
 8 HR PROJ. DOSE ( 90dB CUTOFF)= 0.00%

\*\* TIME HISTORY REPORT \*\*

MODE: CONTINUOUS  
 PERIOD LENGTH: 0:05:00  
 TIME HISTORY CUTOFF: NONE  
 Ln(1): 1.0% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk			
TAG#	TIME	ET	L1	L2			
1	3/12/14	59.6	80.7	<117		*	+
0	12:05:01	0:05:00	71	42			
2	3/12/14	46.6	63.1	<117		*	+
0	12:10:01	0:05:00	57	42			
3	3/12/14	42.8	42.8	<117	+		
0	12:15:01	0:05:00	42	42			
4	3/12/14	42.8	42.8	<117	+		
0	12:20:01	0:05:00	42	42			
5	3/12/14	42.8	42.8	<117	+		
0	12:25:01	0:05:00	42	42			
6	3/12/14	42.8	42.8	<117	+		
0	12:30:01	0:05:00	42	42			
7	3/12/14	42.8	49.7	<117	*	+	
0	12:35:01	0:05:00	42	42			
8	3/12/14	43.5	51.6	<117	*	+	
0	12:40:01	0:05:00	49	42			
9	3/12/14	43.0	56.9	<117	*		+
0	12:45:01	0:05:00	46	42			
10	3/12/14	43.4	57.8	<117	*		+
0	12:50:01	0:05:00	50	42			
11	3/12/14	42.9	57.5	<117	*		+
0	12:55:01	0:05:00	44	42			

12	3/12/14	42.8	47.7	<117	*	+		
0	13:00:01	0:05:00	43	42				
13	3/12/14	42.8	42.8	<117	+			
0	13:05:01	0:05:00	42	42				
14	3/12/14	42.8	48.0	<117	*	+		
0	13:10:01	0:05:00	42	42				
15	3/12/14	43.4	54.0	<117	*		+	
0	13:15:01	0:05:00	48	42				

INT#	START	Lav	Lmax	Lpk				
TAG#	TIME	ET	L1	L2				

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16	3/12/14	57.1	85.7	<117			*		+
0	13:20:01	0:05:00	68	42					
17	3/12/14	47.5	70.5	<117		*			+
0	13:25:01	0:05:00	59	42					
18	3/12/14	61.8	87.6	<117			*		+
0	13:30:01	0:05:00	74	42					
19	3/12/14	42.9	50.1	<117	*			+	
0	13:35:01	0:05:00	45	42					
20	3/12/14	44.0	58.5	<117	*			+	
0	13:40:01	0:05:00	51	42					
21	3/12/14	48.1	66.5	<117		*			+
0	13:45:01	PARTIAL	59	42					
22	3/12/14	43.4	62.8	<117	*				+
0	15:36:03	0:05:00	48	42					
23	3/12/14	43.3	55.0	<117	*			+	
0	15:41:03	PARTIAL	50	42					
24	3/12/14	47.8	68.8	<117		*			+
0	15:50:02	0:05:00	60	42					
25	3/12/14	45.2	63.7	<117	*				+
0	15:55:02	0:05:00	54	42					
26	3/12/14	50.2	59.3	<117		*			+
0	16:00:02	PARTIAL	56	44					

\*\* AMPLITUDE DISTRIBUTION REPORT \*\*

TOTAL SAMPLES = 228028

dB	SAMPLES		% OF TOTAL
42	202958	*****	89.00
43	4237	**	1.85
44	2801	*	1.22
45	2576	*	1.12
46	1832	*	.80
47	1505	*	.66
48	1319	*	.57
49	1369	*	.60
50	1178	*	.51
51	952	+	.41
52	893	+	.39
53	725	+	.31
54	630	+	.27
55	564	+	.24
56	629	+	.27
57	591	+	.25
58	482	+	.21
59	459	+	.20
60	405	+	.17
61	343	+	.15
62	239	+	.10
63	236	+	.10
64	178	.	.07
65	171	.	.07
66	100	.	.04
67	103	.	.04
68	98	.	.04
69	80	.	.03
70	65	.	.02
71	46	.	.02
72	41	.	.01
73	37	.	.01
74	26	.	.01
75	27	.	.01
76	25	.	.01
77	19	.	.00
78	13	.	.00
79	15	.	.00
80	20	.	.00
81	8	.	.00
82	10	.	.00
83	8	.	.00
84	7	.	.00

85	5	.00
86	2	.00
87	1	.00

Ln( 0.0) = 87dB  
 Ln(10.0) = 43dB  
 Ln(50.0) = 42dB  
 Ln(99.9) = 42dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	46.8dB	43.5dB	42.0dB
Losha	45.0dB	42.5dB	42.0dB
Leq(6)	44.3dB	42.2dB	42.0dB



METROSONICS db-308 SN 2671 V2.3 3/87

CURRENT DATE: 3/13/14

CURRENT TIME: 9:40:04

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CALIBRATED: 3/11/14 @ 14:14:09

DISPLAY RANGE: 43.0dB TO 139.0dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: FAST

SCHEDULED RUN: OFF

START DATE: 3/12/14

START TIME:18:00:00

LENGTH: 1:00:00

\*\* OVERALL REPORT \*\*

TEST STARTING DATE: 3/12/14

TEST STARTING TIME: 12:30:13

TEST LENGTH: 0DAYS 1:36:13

Lav = 53.0dB

Lav 80= 43.0dB

Lav 90= 43.0dB

SEL = 90.5dB

Lmax = 78.4dB ON 3/12/14 @ 14:06:24

Lpk < 118dB

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB

8 HR DOSE ( 80dB CUTOFF)= 0.00%  
 8 HR PROJ. DOSE ( 80dB CUTOFF)= 0.00%  
 8 HR DOSE ( 90dB CUTOFF)= 0.00%  
 8 HR PROJ. DOSE ( 90dB CUTOFF)= 0.00%

\*\* TIME HISTORY REPORT \*\*

MODE: CONTINUOUS  
 PERIOD LENGTH: 0:05:00  
 TIME HISTORY CUTOFF: NONE  
 Ln(1): 1.0% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk			
TAG#	TIME	ET	L1	L2			
1	3/12/14	54.1	72.9	<118		*	
0	12:30:13	0:05:00	65	43			+
2	3/12/14	49.5	65.9	<118		*	
0	12:35:13	0:05:00	60	43			+
3	3/12/14	47.8	63.6	<118		*	
0	12:40:13	0:05:00	60	43			+
4	3/12/14	45.4	64.2	<118		*	
0	12:45:13	0:05:00	55	43			+
5	3/12/14	52.4	71.1	<118		*	
0	12:50:13	0:05:00	64	43			+
6	3/12/14	53.8	68.5	<118		*	
0	12:55:13	0:05:00	65	43			+
7	3/12/14	58.3	77.4	<118		*	
0	13:00:13	0:05:00	72	43			+
8	3/12/14	48.9	68.9	<118		*	
0	13:05:13	0:05:00	61	43			+
9	3/12/14	52.8	73.4	<118		*	
0	13:10:13	0:05:00	65	43			+
10	3/12/14	48.6	65.5	<118		*	
0	13:15:13	0:05:00	61	43			+
11	3/12/14	53.4	71.3	<118		*	
0	13:20:13	0:05:00	68	43			+

12	3/12/14	48.7	65.5	<118	*		+
0	13:25:13	0:05:00	61	43			
13	3/12/14	54.6	73.2	<118		*	+
0	13:30:13	0:05:00	68	43			
14	3/12/14	49.3	63.6	<118	*		+
0	13:35:13	0:05:00	59	43			
15	3/12/14	54.8	73.0	<118		*	+
0	13:40:13	0:05:00	68	43			
INT#	START	Lav	Lmax	Lpk			
TAG#	TIME	ET	L1	L2			
16	3/12/14	54.5	71.6	<118		*	+
0	13:45:13	0:05:00	68	43			
17	3/12/14	46.1	64.5	<118	*		+
0	13:50:13	0:05:00	57	43			
18	3/12/14	54.2	73.2	<118		*	+
0	13:55:13	0:05:00	67	43			
19	3/12/14	51.3	68.3	<118	*		+
0	14:00:13	0:05:00	62	43			
20	3/12/14	61.2	78.4	<118			*
0	14:05:13	PARTIAL	72	47			+

\*\* AMPLITUDE DISTRIBUTION REPORT \*\*

TOTAL SAMPLES = 184754

dB	SAMPLES	% OF TOTAL
43	123480 *****	66.83
44	7999 ****	4.32
45	6112 ***	3.30
46	4931 ***	2.66
47	4992 ***	2.70
48	3961 **	2.14

49	3352 **	1.81
50	3023 **	1.63
51	3033 **	1.64
52	3017 **	1.63
53	2942 **	1.59
54	2443 *	1.32
55	1957 *	1.05
56	1913 *	1.03
57	2060 *	1.11
58	1700 *	.92
59	1503 *	.81
60	1171 *	.63
61	1035 *	.56
62	803 +	.43
63	682 +	.36
64	649 +	.35
65	370 +	.20
66	359 +	.19
67	281 +	.15
68	291 +	.15
69	164 .	.08
70	163 .	.08
71	154 .	.08
72	92 .	.04
73	40 .	.02
74	15	.00
75	23 .	.01
76	21 .	.01
77	21 .	.01
78	2	.00

Ln( 0.0) = 78dB  
 Ln(10.0) = 53dB  
 Ln(50.0) = 43dB  
 Ln(99.9) = 43dB

	NO	80.0dB	90.0dB
	CUTOFF	CUTOFF	CUTOFF
Ldod	50.2dB	43.0dB	43.0dB
Losha	48.8dB	43.0dB	43.0dB
Leq(6)	48.1dB	43.0dB	43.0dB

METROSONICS db-308 SN 2796 V2.3 3/87

CURRENT DATE: 3/13/14

CURRENT TIME: 9:42:55

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CALIBRATED: 3/11/14 @ 13:59:41

DISPLAY RANGE: 43.9dB TO 139.9dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: FAST

SCHEDULED RUN: OFF

START DATE: 3/12/14

START TIME:18:00:00

LENGTH: 1:00:00

\*\* OVERALL REPORT \*\*

TEST STARTING DATE: 3/12/14

TEST STARTING TIME: 11:55:01

TEST LENGTH: 0DAYS 19:53:00

Lav = 85.7dB

Lav 80= 85.7dB

Lav 90= 85.7dB

SEL =134.1dB

Lmax =139.9dB ON 3/13/14 @ 9:16:52

Lpk = 141dB ON 3/12/14 @ 16:21:42

TIME OVER 115dB 0D 0:00:01.40

DOSE CRITERION: 90dB

8 HR DOSE ( 80dB CUTOFF)= 92.33%  
 8 HR DOSE ( 90dB CUTOFF)= 92.26%

\*\* TIME HISTORY REPORT \*\*

MODE: CONTINUOUS  
 PERIOD LENGTH: 0:05:00  
 TIME HISTORY CUTOFF: NONE  
 Ln(1): 1.0% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk		
TAG#	TIME	ET	L1	L2		
1	3/12/14	62.6	85.2	<118		
0	11:55:01	0:05:00	74	43	*	+
2	3/12/14	44.0	52.7	<118	*	+
0	12:00:01	0:05:00	46	43		
3	3/12/14	44.4	56.7	<118	*	+
0	12:05:01	0:05:00	51	43		
4	3/12/14	46.4	60.0	<118	*	+
0	12:10:01	0:05:00	57	43		
5	3/12/14	43.9	52.0	<118	*	+
0	12:15:01	0:05:00	45	43		
6	3/12/14	43.9	43.9	<118	+	
0	12:20:01	0:05:00	43	43		
7	3/12/14	44.0	54.6	<118	*	+
0	12:25:01	0:05:00	46	43		
8	3/12/14	43.9	52.3	<118	*	+
0	12:30:01	0:05:00	45	43		
9	3/12/14	44.1	63.8	<118	*	+
0	12:35:01	0:05:00	44	43		
10	3/12/14	46.0	61.0	<118	*	+
0	12:40:01	0:05:00	55	43		
11	3/12/14	43.9	43.9	<118	+	
0	12:45:01	0:05:00	43	43		
12	3/12/14	43.9	43.9	<118	+	
0	12:50:01	0:05:00	43	43		

13	3/12/14	44.0	54.2	<118	*	+
0	12:55:01	0:05:00	45	43		
14	3/12/14	43.9	43.9	<118	+	
0	13:00:01	0:05:00	43	43		
15	3/12/14	43.9	44.0	<118	+	
0	13:05:01	0:05:00	43	43		

INT#	START	Lav	Lmax	Lpk		
TAG#	TIME	ET	L1	L2		

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16	3/12/14	43.9	43.9	<118	+		
0	13:10:01	0:05:00	43	43			
17	3/12/14	44.2	50.2	<118	*	+	
0	13:15:01	0:05:00	47	43			
18	3/12/14	44.3	58.0	<118	*	+	
0	13:20:01	0:05:00	48	43			
19	3/12/14	44.1	50.7	<118	*	+	
0	13:25:01	0:05:00	47	43			
20	3/12/14	44.3	52.3	<118	*	+	
0	13:30:01	0:05:00	47	43			
21	3/12/14	44.3	57.4	<118	*	+	
0	13:35:01	0:05:00	47	43			
22	3/12/14	44.2	48.4	<118	*	+	
0	13:40:01	0:05:00	46	43			
23	3/12/14	44.1	48.8	<118	*	+	
0	13:45:01	0:05:00	46	43			
24	3/12/14	44.2	58.5	<118	*	+	
0	13:50:01	0:05:00	48	43			
25	3/12/14	52.9	72.2	<118		*	+
0	13:55:01	PARTIAL	57	45			
26	3/12/14	71.3	97.6	126		*	+
0	15:25:05	0:05:00	82	43			
27	3/12/14	72.0	95.7	125		*	+
0	15:30:05	0:05:00	86	43			

28	3/12/14	72.9	98.2	126		*	+
0	15:35:05	0:05:00	85	43			
29	3/12/14	71.6	96.3	125		*	+
0	15:40:05	0:05:00	86	43			
30	3/12/14	73.5	98.8	126		*	+
0	15:45:05	0:05:00	87	43			
31	3/12/14	56.1	77.6	<118	*		+
0	15:50:05	0:05:00	70	43			
32	3/12/14	69.9	95.9	123		*	+
0	15:55:05	0:05:00	83	43			
33	3/12/14	74.2	98.2	125		*	+
0	16:00:05	0:05:00	88	43			

INT#	START	Lav	Lmax	Lpk			
TAG#	TIME	ET	L1	L2			

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34	3/12/14	56.8	78.1	<118	*		+
0	16:05:05	0:05:00	70	43			
35	3/12/14	60.5	88.4	<118	*		+
0	16:10:05	0:05:00	71	43			
36	3/12/14	62.5	89.2	138		*	+
0	16:15:05	0:05:00	73	43			
37	3/12/14	66.0	92.8	141		*	+
0	16:20:05	0:05:00	74	45			
38	3/12/14	58.1	70.4	<118	*		+
0	16:25:05	0:05:00	66	46			
39	3/12/14	62.6	90.7	140		*	+
0	16:30:05	0:05:00	71	45			
40	3/12/14	70.2	78.7	<118		*	+
0	16:35:05	0:05:00	74	66			
41	3/12/14	69.6	76.7	<118		*	+
0	16:40:05	0:05:00	74	65			
42	3/12/14	71.6	77.4	<118		*	+
0	16:45:05	0:05:00	75	66			



43	3/12/14	70.1	79.2	<118	*	+
0	16:50:05	0:05:00	74	66		
44	3/12/14	66.0	76.6	<118	*	+
0	16:55:05	0:05:00	71	64		
45	3/12/14	66.6	74.1	<118	*	+
0	17:00:05	0:05:00	70	64		
46	3/12/14	68.3	77.4	<118	*	+
0	17:05:05	0:05:00	73	65		
47	3/12/14	70.4	80.6	<118	*	+
0	17:10:05	0:05:00	75	68		
48	3/12/14	70.6	77.9	<118	*	+
0	17:15:05	0:05:00	74	68		
49	3/12/14	69.2	76.1	<118	*	+
0	17:20:05	0:05:00	72	67		
50	3/12/14	70.1	77.0	<118	*	+
0	17:25:05	0:05:00	72	68		
51	3/12/14	69.8	78.2	<118	*	+
0	17:30:05	0:05:00	72	68		

INT#	START	Lav	Lmax	Lpk		
TAG#	TIME	ET	L1	L2		

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52	3/12/14	70.5	81.0	<118	*	+
0	17:35:05	0:05:00	72	68		
53	3/12/14	70.9	79.8	<118	*	+
0	17:40:05	0:05:00	75	68		
54	3/12/14	70.8	76.9	<118	*	+
0	17:45:05	0:05:00	72	69		
55	3/12/14	69.2	82.1	<118	*	+
0	17:50:05	0:05:00	73	66		
56	3/12/14	68.1	78.2	<118	*	+
0	17:55:05	0:05:00	72	66		
57	3/12/14	68.7	80.0	<118	*	+
0	18:00:05	0:05:00	72	67		

58	3/12/14	68.6	78.4	<118	*	+
0	18:05:05	0:05:00	71	67		
59	3/12/14	68.9	78.4	<118	*	+
0	18:10:05	0:05:00	72	67		
60	3/12/14	69.3	78.5	<118	*	+
0	18:15:05	0:05:00	72	67		
61	3/12/14	69.3	78.8	<118	*	+
0	18:20:05	0:05:00	72	67		
62	3/12/14	68.3	80.1	<118	*	+
0	18:25:05	0:05:00	70	67		
63	3/12/14	69.0	79.9	<118	*	+
0	18:30:05	0:05:00	76	66		
64	3/12/14	68.2	76.4	<118	*	+
0	18:35:05	0:05:00	73	65		
65	3/12/14	69.7	80.7	<118	*	+
0	18:40:05	0:05:00	76	67		
66	3/12/14	70.5	81.7	<118	*	+
0	18:45:05	0:05:00	76	67		
67	3/12/14	70.9	81.3	<118	*	+
0	18:50:05	0:05:00	76	68		
68	3/12/14	69.1	80.3	<118	*	+
0	18:55:05	0:05:00	76	66		
69	3/12/14	64.0	81.7	<118	*	+
0	19:00:05	0:05:00	70	50		

INT#	START	Lav	Lmax	Lpk
TAG#	TIME	ET	L1	L2

70	3/12/14	60.9	88.1	124	*	+
0	19:05:05	0:05:00	70	47		

71	3/12/14	67.0	94.6	127	*	+
0	19:10:05	0:05:00	78	43		

72	3/12/14	43.9	44.0	<118	+
0	19:15:05	0:05:00	43	43	

73	3/12/14	43.9	43.9	<118	+
0	19:20:05	0:05:00	43	43	
74	3/12/14	43.9	43.9	<118	+
0	19:25:05	0:05:00	43	43	
75	3/12/14	43.9	43.9	<118	+
0	19:30:05	0:05:00	43	43	
76	3/12/14	43.9	43.9	<118	+
0	19:35:05	0:05:00	43	43	
77	3/12/14	43.9	44.1	<118	+
0	19:40:05	0:05:00	43	43	
78	3/12/14	43.9	43.9	<118	+
0	19:45:05	0:05:00	43	43	
79	3/12/14	43.9	43.9	<118	+
0	19:50:05	0:05:00	43	43	
80	3/12/14	43.9	43.9	<118	+
0	19:55:05	0:05:00	43	43	
81	3/12/14	43.9	43.9	<118	+
0	20:00:05	0:05:00	43	43	
82	3/12/14	43.9	43.9	<118	+
0	20:05:05	0:05:00	43	43	
83	3/12/14	43.9	44.3	<118	+
0	20:10:05	0:05:00	43	43	
84	3/12/14	43.9	43.9	<118	+
0	20:15:05	0:05:00	43	43	
85	3/12/14	43.9	44.1	<118	+
0	20:20:05	0:05:00	43	43	
86	3/12/14	43.9	43.9	<118	+
0	20:25:05	0:05:00	43	43	
87	3/12/14	43.9	47.9	<118	* +
0	20:30:05	0:05:00	43	43	

INT#	START	Lav	Lmax	Lpk
TAG#	TIME	ET	L1	L2

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88	3/12/14	43.9	45.3	<118	+
0	20:35:05	0:05:00	43	43	
89	3/12/14	43.9	49.8	<118	* +
0	20:40:05	0:05:00	43	43	
90	3/12/14	43.9	43.9	<118	+
0	20:45:05	0:05:00	43	43	
91	3/12/14	43.9	43.9	<118	+
0	20:50:05	0:05:00	43	43	
92	3/12/14	43.9	43.9	<118	+
0	20:55:05	0:05:00	43	43	
93	3/12/14	43.9	43.9	<118	+
0	21:00:05	0:05:00	43	43	
94	3/12/14	43.9	43.9	<118	+
0	21:05:05	0:05:00	43	43	
95	3/12/14	43.9	43.9	<118	+
0	21:10:05	0:05:00	43	43	
96	3/12/14	43.9	43.9	<118	+
0	21:15:05	0:05:00	43	43	
97	3/12/14	43.9	44.4	<118	+
0	21:20:05	0:05:00	43	43	
98	3/12/14	43.9	43.9	<118	+
0	21:25:05	0:05:00	43	43	
99	3/12/14	43.9	43.9	<118	+
0	21:30:05	0:05:00	43	43	
100	3/12/14	43.9	43.9	<118	+
0	21:35:05	0:05:00	43	43	
101	3/12/14	43.9	43.9	<118	+
0	21:40:05	0:05:00	43	43	
102	3/12/14	43.9	43.9	<118	+
0	21:45:05	0:05:00	43	43	
103	3/12/14	43.9	47.7	<118	*+
0	21:50:05	0:05:00	43	43	
104	3/12/14	43.9	43.9	<118	+

	0	21:55:05	0:05:00	43	43	
105	3/12/14	43.9	43.9	<118	+	
	0	22:00:05	0:05:00	43	43	

INT#	START	Lav	Lmax	Lpk	
TAG#	TIME	ET	L1	L2	

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106	3/12/14	43.9	43.9	<118	+
	0	22:05:05	0:05:00	43	43

107	3/12/14	43.9	43.9	<118	+
	0	22:10:05	0:05:00	43	43

108	3/12/14	43.9	43.9	<118	+
	0	22:15:05	0:05:00	43	43

109	3/12/14	43.9	43.9	<118	+
	0	22:20:05	0:05:00	43	43

110	3/12/14	43.9	43.9	<118	+
	0	22:25:05	0:05:00	43	43

111	3/12/14	43.9	43.9	<118	+
	0	22:30:05	0:05:00	43	43

112	3/12/14	43.9	52.2	<118	* +
	0	22:35:05	0:05:00	43	43

113	3/12/14	44.0	55.9	<118	* +
	0	22:40:05	0:05:00	44	43

114	3/12/14	43.9	53.0	<118	* +
	0	22:45:05	0:05:00	44	43

115	3/12/14	45.5	65.5	<118	* +
	0	22:50:05	0:05:00	52	43

116	3/12/14	44.1	57.2	<118	* +
	0	22:55:05	0:05:00	46	43

117	3/12/14	43.9	44.0	<118	+
	0	23:00:05	0:05:00	43	43

118	3/12/14	43.9	43.9	<118	+
	0	23:05:05	0:05:00	43	43

119	3/12/14	43.9	43.9	<118	+
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	0	23:10:05	0:05:00	43	43	
120	3/12/14	43.9	43.9	<118		+
	0	23:15:05	0:05:00	43	43	
121	3/12/14	43.9	48.7	<118		* +
	0	23:20:05	0:05:00	43	43	
122	3/12/14	43.9	43.9	<118		+
	0	23:25:05	0:05:00	43	43	
123	3/12/14	43.9	43.9	<118		+
	0	23:30:05	0:05:00	43	43	

INT#	START	Lav	Lmax	Lpk	
TAG#	TIME	ET	L1	L2	

---

124	3/12/14	43.9	43.9	<118		+
	0	23:35:05	0:05:00	43	43	
125	3/12/14	43.9	43.9	<118		+
	0	23:40:05	0:05:00	43	43	
126	3/12/14	43.9	43.9	<118		+
	0	23:45:05	0:05:00	43	43	
127	3/12/14	43.9	43.9	<118		+
	0	23:50:05	0:05:00	43	43	
128	3/12/14	43.9	43.9	<118		+
	0	23:55:05	0:05:00	43	43	
129	3/13/14	43.9	44.3	<118		+
	0	0:00:05	0:05:00	43	43	
130	3/13/14	43.9	43.9	<118		+
	0	0:05:05	0:05:00	43	43	
131	3/13/14	43.9	43.9	<118		+
	0	0:10:05	0:05:00	43	43	
132	3/13/14	43.9	43.9	<118		+
	0	0:15:05	0:05:00	43	43	
133	3/13/14	43.9	43.9	<118		+
	0	0:20:05	0:05:00	43	43	
134	3/13/14	43.9	43.9	<118		+

	0	0:25:05	0:05:00	43	43	
135	3/13/14	43.9	43.9	<118	+	
	0	0:30:05	0:05:00	43	43	
136	3/13/14	43.9	44.1	<118	+	
	0	0:35:05	0:05:00	43	43	
137	3/13/14	43.9	43.9	<118	+	
	0	0:40:05	0:05:00	43	43	
138	3/13/14	43.9	43.9	<118	+	
	0	0:45:05	0:05:00	43	43	
139	3/13/14	43.9	43.9	<118	+	
	0	0:50:05	0:05:00	43	43	
140	3/13/14	43.9	52.2	<118	* +	
	0	0:55:05	0:05:00	43	43	
141	3/13/14	43.9	43.9	<118	+	
	0	1:00:05	0:05:00	43	43	

INT#	START	Lav	Lmax	Lpk	
TAG#	TIME	ET	L1	L2	

---

142	3/13/14	43.9	43.9	<118	+
	0	1:05:05	0:05:00	43	43
143	3/13/14	43.9	43.9	<118	+
	0	1:10:05	0:05:00	43	43
144	3/13/14	43.9	43.9	<118	+
	0	1:15:05	0:05:00	43	43
145	3/13/14	43.9	43.9	<118	+
	0	1:20:05	0:05:00	43	43
146	3/13/14	43.9	43.9	<118	+
	0	1:25:05	0:05:00	43	43
147	3/13/14	43.9	43.9	<118	+
	0	1:30:05	0:05:00	43	43
148	3/13/14	43.9	43.9	<118	+
	0	1:35:05	0:05:00	43	43
149	3/13/14	43.9	43.9	<118	+

0	1:40:05	0:05:00	43	43	
150	3/13/14	43.9	43.9	<118	+
0	1:45:05	0:05:00	43	43	
151	3/13/14	43.9	43.9	<118	+
0	1:50:05	0:05:00	43	43	
152	3/13/14	43.9	43.9	<118	+
0	1:55:05	0:05:00	43	43	
153	3/13/14	43.9	43.9	<118	+
0	2:00:05	0:05:00	43	43	
154	3/13/14	43.9	44.9	<118	+
0	2:05:05	0:05:00	43	43	
155	3/13/14	43.9	43.9	<118	+
0	2:10:05	0:05:00	43	43	
156	3/13/14	43.9	43.9	<118	+
0	2:15:05	0:05:00	43	43	
157	3/13/14	43.9	43.9	<118	+
0	2:20:05	0:05:00	43	43	
158	3/13/14	43.9	48.3	<118	* +
0	2:25:05	0:05:00	43	43	
159	3/13/14	43.9	43.9	<118	+
0	2:30:05	0:05:00	43	43	

INT#	START	Lav	Lmax	Lpk	
TAG#	TIME	ET	L1	L2	

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160	3/13/14	43.9	44.6	<118	+
0	2:35:05	0:05:00	43	43	
161	3/13/14	43.9	43.9	<118	+
0	2:40:05	0:05:00	43	43	
162	3/13/14	43.9	43.9	<118	+
0	2:45:05	0:05:00	43	43	
163	3/13/14	43.9	43.9	<118	+
0	2:50:05	0:05:00	43	43	
164	3/13/14	43.9	43.9	<118	+



0	2:55:05	0:05:00	43	43	
165	3/13/14	43.9	44.9	<118	+
0	3:00:05	0:05:00	43	43	
166	3/13/14	43.9	45.8	<118	*+
0	3:05:05	0:05:00	44	43	
167	3/13/14	43.9	44.7	<118	+
0	3:10:05	0:05:00	44	43	
168	3/13/14	43.9	46.8	<118	*+
0	3:15:05	0:05:00	44	43	
169	3/13/14	43.9	44.7	<118	+
0	3:20:05	0:05:00	44	43	
170	3/13/14	43.9	44.7	<118	+
0	3:25:05	0:05:00	44	43	
171	3/13/14	43.9	44.9	<118	+
0	3:30:05	0:05:00	44	43	
172	3/13/14	43.9	45.2	<118	+
0	3:35:05	0:05:00	44	43	
173	3/13/14	43.9	44.6	<118	+
0	3:40:05	0:05:00	44	43	
174	3/13/14	43.9	44.7	<118	+
0	3:45:05	0:05:00	44	43	
175	3/13/14	43.9	44.7	<118	+
0	3:50:05	0:05:00	44	43	
176	3/13/14	43.9	44.6	<118	+
0	3:55:05	0:05:00	44	43	
177	3/13/14	43.9	44.7	<118	+
0	4:00:05	0:05:00	44	43	

INT#	START	Lav	Lmax	Lpk	
TAG#	TIME	ET	L1	L2	

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178	3/13/14	43.9	44.7	<118	+
0	4:05:05	0:05:00	44	43	
179	3/13/14	43.9	44.9	<118	+

0	4:10:05	0:05:00	44	43	
180	3/13/14	43.9	44.6	<118	+
0	4:15:05	0:05:00	44	43	
181	3/13/14	43.9	44.7	<118	+
0	4:20:05	0:05:00	44	43	
182	3/13/14	43.9	44.4	<118	+
0	4:25:05	0:05:00	44	43	
183	3/13/14	43.9	44.4	<118	+
0	4:30:05	0:05:00	44	43	
184	3/13/14	43.9	44.4	<118	+
0	4:35:05	0:05:00	44	43	
185	3/13/14	43.9	44.3	<118	+
0	4:40:05	0:05:00	43	43	
186	3/13/14	43.9	44.3	<118	+
0	4:45:05	0:05:00	43	43	
187	3/13/14	43.9	44.1	<118	+
0	4:50:05	0:05:00	43	43	
188	3/13/14	43.9	44.1	<118	+
0	4:55:05	0:05:00	43	43	
189	3/13/14	43.9	44.3	<118	+
0	5:00:05	0:05:00	43	43	
190	3/13/14	43.9	44.3	<118	+
0	5:05:05	0:05:00	43	43	
191	3/13/14	43.9	44.3	<118	+
0	5:10:05	0:05:00	43	43	
192	3/13/14	43.9	44.3	<118	+
0	5:15:05	0:05:00	44	43	
193	3/13/14	43.9	44.4	<118	+
0	5:20:05	0:05:00	44	43	
194	3/13/14	43.9	44.4	<118	+
0	5:25:05	0:05:00	44	43	
195	3/13/14	43.9	44.4	<118	+
0	5:30:05	0:05:00	44	43	

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
196 0	3/13/14 5:35:05	43.9 0:05:00	44.3 44	<118 43	+
197 0	3/13/14 5:40:05	43.9 0:05:00	44.4 44	<118 43	+
198 0	3/13/14 5:45:05	43.9 0:05:00	44.4 44	<118 43	+
199 0	3/13/14 5:50:05	43.9 0:05:00	44.4 44	<118 43	+
200 0	3/13/14 5:55:05	43.9 0:05:00	44.7 44	<118 43	+
201 0	3/13/14 6:00:05	43.9 0:05:00	46.6 44	<118 43	*+
202 0	3/13/14 6:05:05	43.9 0:05:00	44.4 44	<118 43	+
203 0	3/13/14 6:10:05	43.9 0:05:00	45.0 44	<118 43	+
204 0	3/13/14 6:15:05	43.9 0:05:00	44.6 44	<118 43	+
205 0	3/13/14 6:20:05	43.9 0:05:00	44.4 44	<118 43	+
206 0	3/13/14 6:25:05	43.9 0:05:00	44.4 44	<118 43	+
207 0	3/13/14 6:30:05	43.9 0:05:00	44.6 44	<118 43	+
208 0	3/13/14 6:35:05	43.9 0:05:00	44.4 44	<118 43	+
209 0	3/13/14 6:40:05	43.9 0:05:00	44.4 44	<118 43	+
210 0	3/13/14 6:45:05	43.9 0:05:00	44.6 44	<118 43	+

211	3/13/14	43.9	44.4	<118	+
0	6:50:05	0:05:00	44	43	
212	3/13/14	43.9	44.6	<118	+
0	6:55:05	0:05:00	44	43	
213	3/13/14	43.9	44.6	<118	+
0	7:00:05	0:05:00	44	43	

INT#	START	Lav	Lmax	Lpk	
TAG#	TIME	ET	L1	L2	

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214	3/13/14	43.9	44.6	<118	+
0	7:05:05	0:05:00	44	43	
215	3/13/14	43.9	44.4	<118	+
0	7:10:05	0:05:00	44	43	
216	3/13/14	43.9	44.4	<118	+
0	7:15:05	0:05:00	44	43	
217	3/13/14	43.9	44.7	<118	+
0	7:20:05	0:05:00	44	43	
218	3/13/14	44.6	65.7	<118	* +
0	7:25:05	0:05:00	50	43	
219	3/13/14	44.5	60.3	<118	* +
0	7:30:05	0:05:00	49	43	
220	3/13/14	44.1	57.7	<118	* +
0	7:35:05	0:05:00	47	43	
221	3/13/14	43.9	49.3	<118	* +
0	7:40:05	0:05:00	45	43	
222	3/13/14	43.9	47.6	<118	*+
0	7:45:05	0:05:00	44	43	
223	3/13/14	43.9	54.0	<118	* +
0	7:50:05	0:05:00	44	43	
224	3/13/14	44.0	55.6	<118	* +
0	7:55:05	0:05:00	44	43	
225	3/13/14	43.9	47.1	<118	*+
0	8:00:05	0:05:00	44	43	

226	3/13/14	44.1	55.2	<118	*	+
0	8:05:05	0:05:00	48	43		
227	3/13/14	44.0	57.5	<118	*	+
0	8:10:05	0:05:00	44	43		
228	3/13/14	43.9	49.7	<118	*	+
0	8:15:05	0:05:00	45	43		
229	3/13/14	44.0	48.5	<118	*	+
0	8:20:05	0:05:00	45	43		
230	3/13/14	44.0	52.4	<118	*	+
0	8:25:05	0:05:00	45	43		
231	3/13/14	44.0	58.5	<118	*	+
0	8:30:05	0:05:00	45	43		

INT#	START	Lav	Lmax	Lpk		
TAG#	TIME	ET	L1	L2		

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232	3/13/14	44.0	53.5	<118	*	+
0	8:35:05	0:05:00	45	43		
233	3/13/14	44.1	55.3	<118	*	+
0	8:40:05	0:05:00	46	43		
234	3/13/14	44.1	53.7	<118	*	+
0	8:45:05	0:05:00	46	43		
235	3/13/14	44.0	56.9	<118	*	+
0	8:50:05	0:05:00	45	43		
236	3/13/14	45.0	56.4	<118	*	+
0	8:55:05	0:05:00	50	43		
237	3/13/14	44.5	57.5	<118	*	+
0	9:00:05	0:05:00	49	43		
238	3/13/14	43.9	47.4	<118	*+	
0	9:05:05	0:05:00	44	43		
239	3/13/14	63.7	91.5	<118		*
0	9:10:05	0:05:00	74	43		+
240	3/13/14	113.7	139.9	130		*
0	9:15:05	PARTIAL	120	49		+

\*\* AMPLITUDE DISTRIBUTION REPORT \*\*

TOTAL SAMPLES = 2290572

dB	SAMPLES		% OF TOTAL
43	1815734	*****	79.26
44	65282	***	2.85
45	16271	*	.71
46	10272	+	.44
47	9022	+	.39
48	9385	+	.40
49	7196	+	.31
50	6097	+	.26
51	5998	+	.26
52	4955	+	.21
53	4751	+	.20
54	4439	+	.19
55	4158	+	.18
56	3177	+	.13
57	4772	+	.20
58	5209	+	.22
59	4100	+	.17
60	3767	+	.16
61	3471	+	.15
62	3303	+	.14
63	3794	+	.16
64	7931	+	.34
65	15067	*	.65
66	26994	*	1.17
67	44983	**	1.96
68	51193	**	2.23
69	56334	**	2.45
70	43295	**	1.89
71	23312	*	1.01
72	12024	*	.52
73	5388	+	.23
74	2972	+	.12
75	1527	.	.06
76	843	.	.03
77	637	.	.02
78	418	.	.01
79	264	.	.01
80	238	.	.01
81	240	.	.01
82	218	.	.00
83	200	.	.00
84	195	.	.00
85	181	.	.00

86	167	.00
87	142	.00
88	124	.00
89	107	.00
90	83	.00
91	49	.00
92	50	.00
93	34	.00
94	31	.00

dB	SAMPLES	% OF TOTAL
95	38	.00
96	18	.00
97	17	.00
98	10	.00
99	3	.00
100	5	.00
101	3	.00
102	6	.00
103	2	.00
104	4	.00
105	3	.00
106	2	.00
107	3	.00
108	3	.00
109	2	.00
110	3	.00
111	1	.00
112	2	.00
113	3	.00
114	5	.00
115	1	.00
116	2	.00
117	2	.00
118	2	.00
119	2	.00
120	2	.00
121	2	.00
122	2	.00
123	1	.00
124	1	.00
125	1	.00
126	9	.00
127	1	.00
128	1	.00
129	0	.00
130	0	.00
131	1	.00

132	1	.00
133	2	.00
134	2	.00
135	1	.00
136	3	.00
137	2	.00
138	2	.00
139	2	.00

$\text{Ln}(0.0) = 139\text{dB}$   
 $\text{Ln}(10.0) = 67\text{dB}$   
 $\text{Ln}(50.0) = 43\text{dB}$   
 $\text{Ln}(99.9) = 43\text{dB}$

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	69.6dB	68.8dB	68.7dB
Losha	59.5dB	53.2dB	52.8dB
Leq(6)	55.3dB	47.2dB	46.7dB



METROSONICS db-308 SN 2939 V3.0 4/88  
REPORT PRINTED 3/13/14 @ 9:49:08

DOUBLING RATE: 3dB FILTER: A WGHT  
DOSE CRITERION: 90dB RESPONSE: FAST  
PRE-CALIBRATION TIME: 1/01/88 @ 0:01:12  
PRE-CALIBRATION RANGE: 41.1dB TO 141.1dB  
NO POST-CALIBRATION

CALIBRATOR TYPE & SERIAL # : \_\_\_\_\_

CALIBRATOR CALIBRATION DATE: \_\_\_\_\_

TEST BEGAN 3/12/14 @ 13:15:08  
TEST LENGTH: 0DAYS 0:20:10  
TEST ENDED 3/12/14 @ 13:35:19  
TEST INTERRUPTIONS: 1

Lav = 76.7dB Lav ( 80)= 76.7dB  
SEL =107.4dB Lav ( 90)= 76.4dB  
Lmax =103.3dB ON 3/12/14 @ 13:33:14  
Lpk =130.8dB ON 3/12/14 @ 13:33:14  
TIME OVER 115dB 0D 0:00:00.00

8 HR DOSE ( 80dB CUTOFF)= 0.19%  
8 HR PROJ. DOSE ( 80dB CUTOFF)= 4.51%  
8 HR DOSE ( 90dB CUTOFF)= 0.18%  
8 HR PROJ. DOSE ( 90dB CUTOFF)= 4.28%

"TIME HISTORY REPORT

"# OF PERIODS: 5 MODE: CONTINUOUS  
"PERIOD LENGTH: 0:05:00  
"TIME HISTORY CUTOFF: NONE  
"Ln(1): 1.0% Ln(2): 90.0%

"DATE: 3/12/14 TAG #: 0

"INT"	"TIME"	"Lav"	"Lmx"	"Lpk"	"L1"	"L2"
1	"13:15:08"	55.0	77.0	"UNR"	69	41
2	"13:20:08"	76.1	100.3	128.5	89	41
3	"13:25:08"	78.0	102.1	129.5	91	41
4	"13:30:08"	79.3	103.3	130.8	93	41
5	"13:35:08"	52.5	66.8	"UNR"	64	41

\*\* AMPLITUDE DISTRIBUTION REPORT \*\*

TOTAL SAMPLES = 77482

dB	SAMPLES		% OF TOTAL
41	57486	*****	74.19
42	2338	***	3.02
43	1675	**	2.16
44	1694	**	2.19
45	1370	**	1.77
46	1143	*	1.48
47	847	*	1.09
48	696	*	.90
49	610	*	.79
50	578	*	.75
51	486	*	.63
52	510	*	.66
53	468	*	.60
54	472	*	.61
55	454	*	.59
56	436	*	.56
57	411	*	.53
58	360	+	.46
59	350	+	.45
60	395	*	.51
61	348	+	.45
62	341	+	.44
63	338	+	.44
64	282	+	.36
65	247	+	.32
66	269	+	.35
67	218	+	.28
68	222	+	.29
69	204	+	.26
70	173	+	.22
71	149	+	.19
72	136	+	.18
73	92	+	.12
74	82	+	.11
75	72	.	.09
76	76	+	.10
77	80	+	.10
78	69	.	.09
79	71	.	.09
80	67	.	.09

81	61 .	.08
82	59 .	.08
83	57 .	.07
84	59 .	.08
85	58 .	.07
86	57 .	.07
87	57 .	.07
88	53 .	.07
89	54 .	.07
90	56 .	.07
91	56 .	.07
92	58 .	.07

dB	SAMPLES	% OF TOTAL
93	58 .	.07
94	54 .	.07
95	56 .	.07
96	58 .	.07
97	55 .	.07
98	59 .	.08
99	58 .	.07
100	44 .	.06
101	26 .	.03
102	13 .	.02
103	1	.00

Ln( 0.0) = 103dB  
 Ln(10.0) = 53dB  
 Ln(50.0) = 41dB  
 Ln(99.9) = 41dB

	NO	80.0dB	90.0dB
	CUTOFF	CUTOFF	CUTOFF
Ldod	69.7dB	69.4dB	68.7dB
Losha	64.0dB	62.9dB	61.6dB
Leq(6)	59.4dB	56.5dB	54.6dB

## ***MEMORANDUM***

**TO:** Paul Hellman, Director [phellman@co.shasta.ca.us](mailto:phellman@co.shasta.ca.us)  
Shasta County Department of Resource Management

**FROM:** Paul Miller, Managing Principal, Senior Noise Scientist  
**RCH Group**

**CC:** Kevin Butler [kevin@butlergroup.us](mailto:kevin@butlergroup.us)  
Patrick Jones [patrickhenry@live.com](mailto:patrickhenry@live.com)  
Luis Rosas [lrosas@TheRCHGroup.com](mailto:lrosas@TheRCHGroup.com)

**DATE:** October 16, 2023

**REGARDING:** Response to Winford Sample Letter Dated August 2023. Noise Report for Environmental Initial Study & Mitigated Negative Declaration (IS/MND) – Zone Amendment 13-007 (Jones)

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### **Summary**

The Winford Sample letter expresses concern about “impulse” noise and states that only discussions about ambient noise levels were provided in the California Environmental Quality Act (CEQA) Initial Study Mitigated Negative Declaration (IS/MND) and that therefore the noise measurements and discussion provided in the IS/MND are inadequate. This is incorrect, as the March 12, 2014, sound study was focused on Maximum Noise Levels (Lmax) measurements that represent the maximum peak noise level from each round of gun firings. Because the measured levels are within the capabilities of the Sound Level Meters used, the Lmax measurements are the measurements of the burst of gun sounds or the “impulse” noise from the gun firings.

I managed and participated in the 2014 field noise measurements. In response to the Winford Sample Letter, I again reviewed the RCH March 2017 Noise Technical Report -- *High Plains Shooting Sports Center* and it is a noise study that the County can rely upon, it is an incredibly detailed assessment of the proposed gun range using live guns at the proposed project site, with the actual topography. Residence “R4” is the Winford Sample residence and was considered in the measurement and modeling estimated in the Noise Technical Report of 2017. The Environmental Initial Study Noise for Zone Amendment 13-007 (Jones) noise analysis properly includes the conclusions from the RCH March 2017 *Noise Technical Report* for the High Plains Shooting Sports Center.

### **Overview**

The March 2017 *Noise Technical Report – High Plains Shooting Sports Center* prepared by RCH Group (or RCH) provides a substantial amount on information on the noise measurements that were captured during shooting occurring at the project site. RCH did an afternoon sound study at the project site on March 12, 2014, with three noise specialists, and five calibrated sound level meters (to measure noise simultaneously directly behind the shooting location and to the north, northeast and south of the shooting location (see Figure 3 in the March 2017 *Noise Technical Report*). These noise levels were measured using Type 2 Metrosonics dB 308 Sound Level Meters and captured Maximum Sound Levels (Lmax) from various types of firearms.

The claim made in the Winford Sample letter that the noise measurements collected at the shooting range are inadequate for a shooting range is an invalid statement. The Lmax metric is widely used and cited in most technical noise reports and criteria because it is an A-weighted metric that best reflects the human ear’s perception of

instantaneous noise. The Lmax noise captured from the shooting at the project site was used to estimate noise from gunfire at several sensitive receptors (see Tables 6-8 in the March 2017 *Noise Technical Report*). Furthermore, although there was no noise measurement taken at the Sample residence in 2014, RCH conducted noise measurements at a location south of the shooting range to observe noise from gunfire (location "M4" on Figure 3 in the Noise Technical Report – March 2017). This location is approximately 0.5 miles southwest of the Sample residence. Maximum noise levels at this location from gunfire to the north ranged from 45-54 dB, Lmax. Based on observations on March 12, 2014, and aerial views of the Sample residence on google earth, there is a significant amount of topography and trees (and attenuation through distance alone) that act as natural sound barriers for noise reaching the Sample residence. The statement in the Winford Sample letter that says there are no barriers to protect the residence from shooting range noise is inaccurate. The Winford Sample home is identified as Residence "R4" on Figure 3 in the Noise Technical Report – March 2017.

The Winford Sample letter states that there have been no measurements near them, and they see no indication of mitigation barriers to protect them. This statement is inaccurate as the CEQA IS/MND did provide mitigation measures to reduce noise at the residences to the south and southeast. Mitigation measure XIII.a.1.b recommended in the CEQA IS/MND (shown below) would mitigate noise levels to the southeast (at Resident "R4").

**Mitigation/Monitoring:** With the mitigation measures being proposed, the impacts will be less-than-significant:

"XIII.a.1: To mitigate noise levels by 6 dBA at the nearest sensitive receptors to specified firing locations, the applicant shall:

- a. Install a sound attenuation noise barrier as close as possible to the northern two firing locations for the clay sports shooting area to obstruct line of sight from those firing locations to the residences to the north and northwest; and
- b. **Install a sound attenuation noise barrier as close as possible to all rifle firing locations along the southern property boundary to obstruct line of sight from those firing locations to the residences to the south and southeast. (bold emphasis added)**

Each sound attenuation barrier shall be constructed at a height slightly higher than the minimum height to block the direct line of sight to the nearest residence(s). Final construction drawings shall indicate the location and construction method of the required sound attenuation barriers prior to issuance of building permits. Prior to final inspection of a building permit, an acoustical analysis ensuring the effectiveness of the proposed mitigation measure will be required pursuant to Table N-V of the Shasta County General Plan Noise Element."

The Winford Sample letter states that the IS/MND failed to identify wildlife that would be affected by noise. Section IV (Biological Resources) of the IS/MND discusses noise from the project and its potential effect on biologically sensitive species in detail. The IS/MND states that "noise impacts on wildlife is a very complicated issue which must take into account species behavior, types of noise, duration of sound, distance from source, frequency, time of day and weather." The IS/MND concludes that due to the operating hours (no nighttime operations), low vibration from vehicles (due to limited access routes), and implementation of noise barriers, (as part of Mitigation Measure XIII.a.1) that noise would have a less than significant impact on biologically sensitive species. Mitigation Measure XIII.a.1 would further reduce noise from gun firing and therefore reduce, somewhat, the area that noise from operations would affect wildlife behavior. The list of animals (cited by Winford Sample) that were not mentioned by in the IS/MND (wild turkeys, dove, quail, and woodpeckers, deer, fox's, cougar, racoons, coyotes) were probably not mentioned in the IS/MND because they are not given special-status species protections (they are common wildlife species). These species are all mobile and able to move further from the firing range if affected by noise from the guns.

The Winford Sample letter also provides an article that discussed impulsive noise from the NIOSH Science Blog (dated July 2018). The article states that Type 2 sound level meters tend to max out at around 140-146 dB and therefore are limited in recording impulsive noise. However, the loudest recorded maximum noise level at

approximately 16 meters (52 feet) away from gunfire captured by our Type 2 sound level meter was 103 dB, Lmax. This is much lower than the 146 dB reference given in the article. A sound level of 146 dB is incredibly loud and would not apply to the type of gunfire that was observed and recorded at the project site on March 12, 2014. Therefore, this article is not relevant to the proposed project.

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May 12, 2023

Shasta County Board of Supervisors  
Emailed using the Board of Supervisors Email: [Shastacountybos@co.shasta.ca.us](mailto:Shastacountybos@co.shasta.ca.us)

**RE: Proposed Zone Amendment 13-007 (Jones)  
Request to DENY Re-Zoning to allow a gun range due to negative impact to community & environment**

**Dear Shasta County:**

Thank you for this opportunity to be heard on this important issue for the benefit of the community residents.

When I first heard about a gun range being built in our neighborhood back in 2015 or so, I thought “no way would the county rob us of our property rights”. Now, 8 years later, with the proposed gun range developer being the Lead Chair of the County Board of Supervisors, and having friends on such board who consistently vote for, or with him, I now see that robbing one of their property rights is possible. Despite this, the remaining supervisors who are not representatives of Mr. Jones, but rather represent the people, must understand that the consequences of re-zoning the parcel does not only not conform to the General Plans goals, but also has significant impact on adjoining and nearby properties and **MUST** be denied. If the re-zoning is approved, we, all the parties affect by the noise, must then rely on the courts and file a Mass action lawsuit against the board.

1. **Rezoning is not in alignment with the general plan**, our Limited-Residential use represents a carefully thought-out growth plan with the full input of the community and is a plan that we, as a community relied upon when purchasing our properties. No one will want to build a home within a mile, or more, of this complex. Why should my community be punished with re-zoning for the profit of one person?
2. Rezoning the property will greatly depreciate the value of, and the rights to develop the land for residential or recreational use. Who wants to live, work, camp, horseback ride, or hike in an area that is under the constant barrage of high-powered rifle, handgun or shotgun fire. Gun noise has been proven to travel well over a mile. So, at 1,609 meters, or one mile away, which extends well into neighboring properties, the CONSTANT “pop, pop, pop, pop” of the gunfire will be 100.87 Decibels, a level enough to ***drive one mad, not to mention to the doctor.*** PLEASE, ask yourself, would you want someone screaming in your ear “pop, pop, pop, pop”, at a noise level of 100.87 DB, even if you live 1 mile away, all day long as you tried to have a meal outside, entertain your guests, or even open a window? How about working or enjoying your property? Not possible. That is what this rezoning will do to our lives. It’s just NOT RIGHT and it’s against the principle of the General Plan and the Zoning plan.
3. Rezoning will be an environmental disaster. There is a high risk of lead and copper contamination on this land, which WILL ultimately leak into Bear creek and possibly the water table. While the owner suggests he will prevent ALL lead and copper bullets from being used, I suggest then the that owner, his estate and family be held PERSONALLY LIABLE for ANY lead contamination along with the damage his proposed use will cause to the Vernal pools, wet lands and Ephemeral streams. A facility that is designed to accommodate hundreds of people, RV’s, Camping, will have gunfire residue and WILL HAVE a significant environmental impact – maybe not right away, but definitely over the years. Further, the range is simply NOT far enough away to prevent heavy rains from taking the bullet shards, dust, plastics, loose trash and other waste and depositing them into our wonderful Bear Creek. Can you imagine the mess Re-zoning would cause WHEN this happens? Some of it might take years, some will have nearly immediate impact, but regardless all the pollution WILL happen. Rezoning should NOT be

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short sighted, instead the county supervisors **should protect our future!** Make the hard decision, deny this application.

4. Rezoning will result in a substantial noise nuisance. The Noise Technical Report dated March 2017 for Patrick Jones has numerous errors, as outlined in the attached analysis **"Errors in Noise Report / Wrong Conclusions and lack of supportive data.** Completely debunks the noise report in its entirety. Further the report did not identify all the affected homes, uses incorrect mathematical equations, assumes multiple factors, and does not provide data from key noise level areas, which are needed to draw their conclusion. The facts they use conclude the drop in decibels at 1,000 yards is much less than what it would be in reality. RCH even concludes the noise caused by a car or traffic has the same effect / nuisance as a constant barrage of bullets from hundreds of potential shooters. The report is contrary to dozens of reports one can find by simply googling "Noise Problems related to Gun Ranges". **The Noise Technical Report is so egregious,** that section 3.15.5 of the California Environmental Settings, Impacts and Mitigation, should be applied, deeming the report to be "too Speculative for evaluation", as it does NOT properly determine the impacts on the neighboring properties based on (CEQA Guidelines, Section 15145). Using this debunked report alone should result in Re-Zoning request denial. Or, are you ready to move in next door full time to start enjoying the sound mixed in with your holiday plans – if you can even hear your family?

Please, support the General Plan, the county residents, the individuals that invested in community property, established growth and community plans, and protect the **LONG-TERM health** of our water resources, deny the rezoning of the Limited Residential into a commercial property. Certainly, YOU would not want to live next door to this development. Do the right thing, vote NO.

Sincerely,

Dwight DeMers



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The report and analysis below are based on a comprehensive review of the applicants re-zoning application for a Proposed Gun Range. However, only having a short period of time due to postal issues and being out of town to help with my aging father, I was not aware of the report and re-zoning request until (Mid-April). Hence the review mostly focus on "The Nosie report" herein after called the report. However, there are many issues.

To begin, the Noise Report, or report, leaves out key factors, uses the incorrect noise attenuation logarithm, and assumes many of the factors it used to compile the report. Hence as will be shown, the report should be deemed "too Speculative for evaluation", under CEQA Guidelines, Section 15145. Based on this one grievously incorrect report alone, a report that has severe impacts on properties which relied on the General plan, the Re-Zoning request should be denied. Not only should it be denied, but it should be fully and forever extinguished due to its serious impact on neighboring properties, which the Zoning code protects by stating its purpose of preserving "the public health, safety, pace, morals, comfort, convenience and general welfare" of property owners as prescribed by section 17.02.010 pf the Zoning plan/code.

See [https://library.municode.com/ca/shasta\\_county/codes/code?nodeld=CD\\_TIT17ZO\\_ch17GEPR\\_ARTIZOPLGE](https://library.municode.com/ca/shasta_county/codes/code?nodeld=CD_TIT17ZO_ch17GEPR_ARTIZOPLGE)

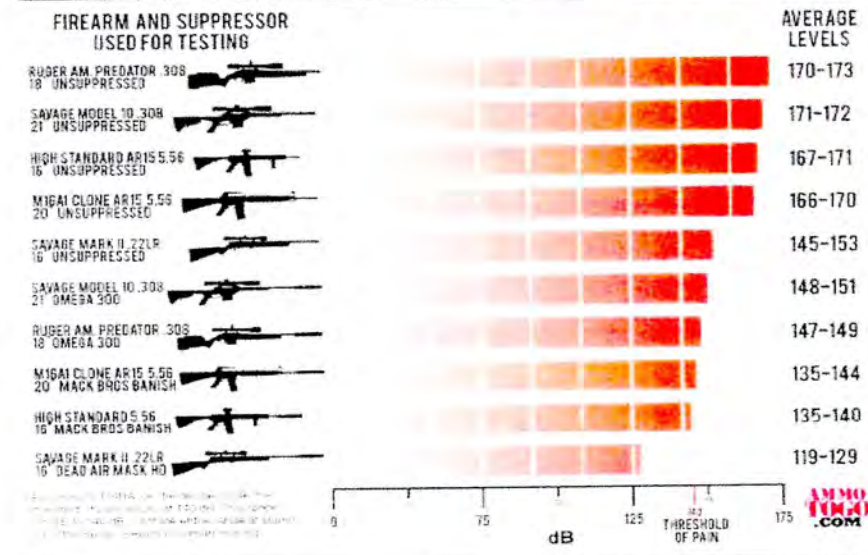
1. References used to debunk this report include, but are not limited to:
2. ENVIROMENTAL INITIAL STUDY & MITIGATED NEGATIVE DECLARTION
3. REPORT TO THE SHASTA COUNTY PLANNING COMMISSION
4. Noise Technical Report (addendum to Application).
5. CEQA CHECKLIST
6. Shasta County General Plan
7. California Department of Transports, in regards to formulas and assumption used in the report.
8. Addition reports or images included herein.

### **1: Errors in Noise Report / Wrong Conclusions and lack of supportive data:**

To being, a gun report/analysis should provide a noise basis, (the decibel readings of several gunshots from various caliber weapons) with said data being used at multiple locations. This report does not provide this information. RCH's report says they use a ".22 Rifle, 12-gauge shotgun, 9mm handgun and a 4570 Rifle (which is similar to a 30-30) at a single location, but they do not provide the Decibel readings from any of the guns used at said location, nor do they provide any data on their receptors M1-M5. Therefore, we have NO DATA as to what the decibels were at the source of the test, nor do we have any data at the receptors of the source. If this data was provided, we could use it to determine the Attenuation rate RCH uses, rather than using an assumed rate "an attenuation rate of 7.5 Decibels er doubling of the distance **was assumed**". (As reference in multiple point throughout the report – see Notes on Page 17 of the report for one example). This leads to the possibility of Ammunition being used in the test that was lower in gunpowder, or load, and thereby considerably quieter than the ammunition which will be used. Without these readings, which should have and could have easily been logged and provided, all data at their Sensitive Receptor sites are questionable. In other words, they use speculation to determine their ultimate result at Sensitive receptors as no data was provided. As such,

we will use two easily obtained noise level graphs which show noise level from typical firearms, and do the work for them:

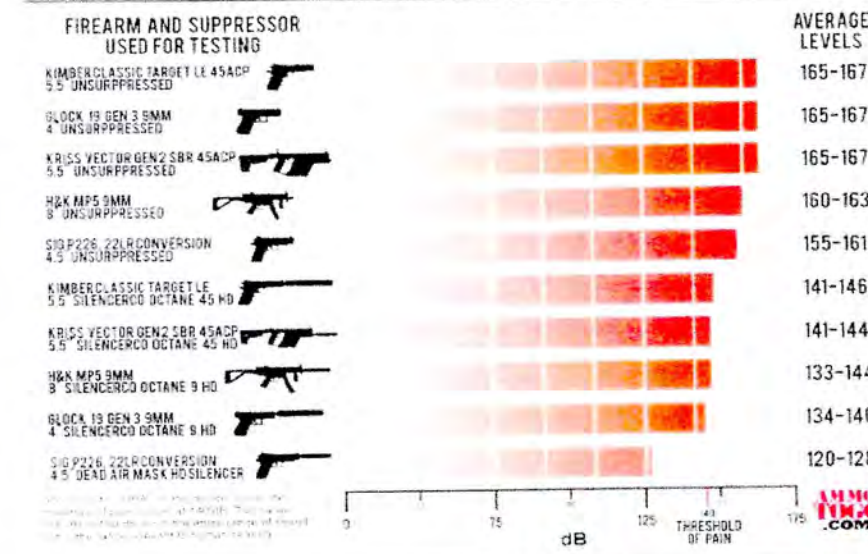
## POPULAR RIFLE CALIBER DECIBEL LEVELS



Testing Conditions: Rifle Caliber Ammo Tested

1. 100 yds. range  
 2. 100 yds. range  
 3. 100 yds. range  
 4. 100 yds. range  
 5. 100 yds. range  
 6. 100 yds. range  
 7. 100 yds. range  
 8. 100 yds. range  
 9. 100 yds. range  
 10. 100 yds. range

## POPULAR PISTOL CALIBER DECIBEL LEVELS



Testing Conditions: Pistol Caliber Ammo Tested

1. 100 yds. range  
 2. 100 yds. range  
 3. 100 yds. range  
 4. 100 yds. range  
 5. 100 yds. range  
 6. 100 yds. range  
 7. 100 yds. range  
 8. 100 yds. range  
 9. 100 yds. range  
 10. 100 yds. range

And:

5/1/23, 12:35 PM

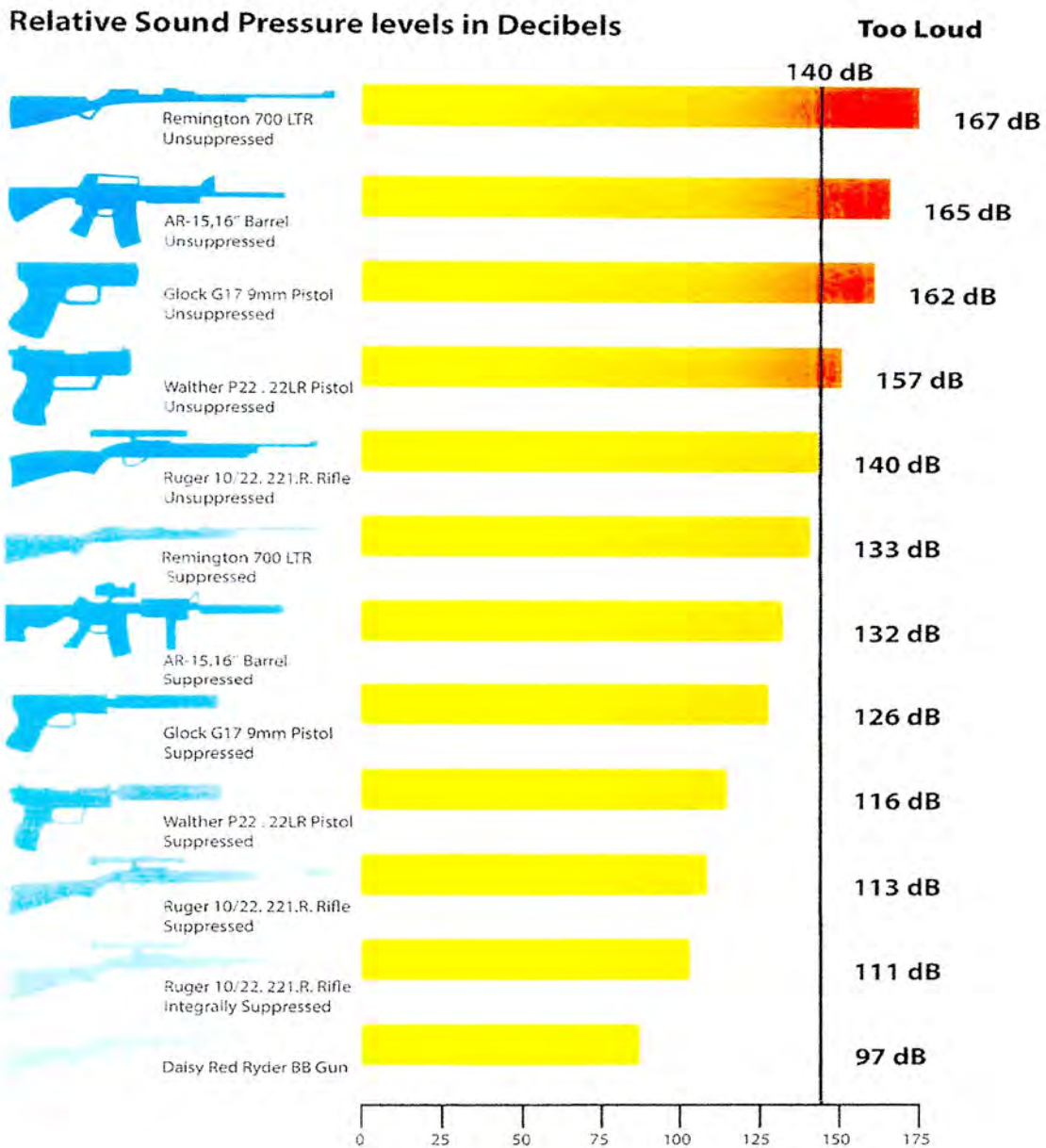
How Many Decibels Is A Gunshot | How Far Away Can You Hear a Gunshot



Decibel Pro:  
dB Sound Level Meter

BLOG

The chart below shows the difference in decibels between suppressed and unsuppressed firearms:

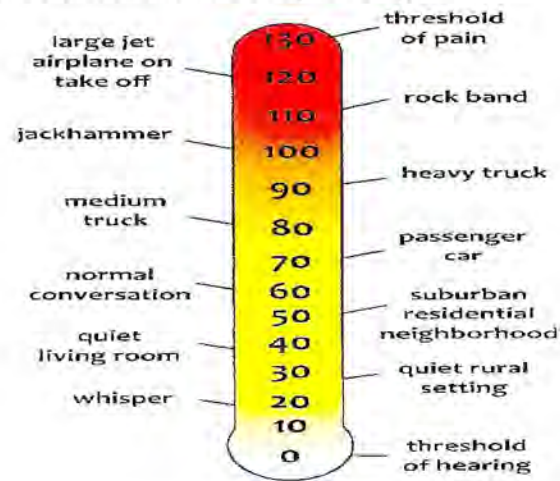


**This gives us a basis for the sound location at the base of their study  
Sound Levels at the point of origin of each firearm**

Gun Assessed	Decibels at Source- lowest reading
Savage Mark II .22 Lr	145
9 MM handgun	162
AR-15	165
Ruger Predator .308	170

Now that we have a Basis for the sound point RCH uses in its report, 170 DBs (the highest level must be use to determine actual Attenuation, we need to determine which mathematical Attenuation logarithm to use. Base on the findings below, RCH again fails to use the correct formula. RCH uses the Geometric spreading (or the inverse Square Law) which is defined as "Sound from a small localized source "See Caltrans Basics of HWY Noise Section 2.1.3.8-2.1.4.2, also known as the Technical Noise Supplement. While the Inverse Square law if often used to measure gunshot sounds, it is also a major reason the sound decibels seem to increase once people begin using it. This is because this method Tests Single shots at specific points rather than testing when multiple shooters are shooting, especially when they shoot in a straight line. This is because the logarithmic formula changes for a stationary single shot unit from Geometrical spreading to Spherical Spreading. This is the case for the Jones property sound report. A gun range with 200 shooting location, with those shooting locations spread over an area of nearly a ½, with the Southern portion having nearly 100 inline stations over 1/4 and the eastern section also having approximately 100 inline shooting stations over ¼ mile. Hence the noise attenuation would change to a spherical spreading because the sound would travel in a linear fashion up and down those ranges making the sound from the range more like a moving object. Hence the proper Noise Attenuation Logarithmic formula would be the Spherical Spreading of noises as it is inclusive of the two noise movements in 2 sperate lines. With RCH using the Inverse square law of noise attenuation over space is therefore not applicable, therefore the loss of attenuation decreases from 6 decibels per doubling of space and is now measured at a noise attenuation Rate of 3 Decibel per doubling of space. This is similar to having one jet take off near you every few seconds versus or having multiple ones take off near you, or like having several recitals done near you vs having multiple orchestras near you.

### Decibel Scale (dBA)



So, NCH's Noise report has so far left out relevant date, used the incorrect formula for natural attenuation, and even stated that their 7.5 DBA reduction in sound level is "assumed". This alone should debunk the report, but I'll continue as there are two more factors for which RCH gets totally wrong, or completely leaves out. RCH States that an addition 1.5 attenuation occurs because of ground absorption. They do not, however, describe how they come up with this number – again a complete failure on the reports side. The only reference to how they came up with this number is when they state the factor they use, or rather assume is they state "Soft sites attenuate at 7.5 DBA per doubling because they have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. (Page 7 of the report). This assumption is not backed up by and data, anywhere. In fact they would like you to think that the soil absorbs an additional 7.5 dba, but in fact they come up with this number using the inverse square law, or and attenuation of 6 dba, then arbitrarily add 1.5 dba to come up with the 7.5 dbas they use throughout the report. RCH once again fabricates data, in this case assuming the soil is such that it adds 1.5 dba per doubling. First of all, though its hard to read on the report, or even the ENVIROMENTAL INITIAL STUDY & MITIGATED NEGATIVE DECLARTION, the topography from all shooting sites to the initial site reading area drops in elevation and continues to drop until you reach the cliff where the property drops from a low of 582 ft above sea level to 550 ft above sea level. In fact, soil attenuation is, other than the defining its baseless rate of attenuation is referred to only when they examine properties to the West and North west, as they do have some topographical attenuation there. The arbitrary addition of 1.5 dbs. is import because just a 3 DB level increases the noise by 50% of what the human ear hears, and there for its important in the final results. Going back to the soil type, while the Noise Report does not mention the soil type, or provide findings of attenuation, the ENVIROMENTAL INITIAL STUDY & MITIGATED NEGATIVE DECLARTION does. See page 15 of said report. There the soil type of "lgo Gravelly Loam" consumes about 1/3<sup>rd</sup> of the property, "Keefer Gravelly Loam", another 1/3<sup>rd</sup> of the property and "Toomes Vary Rocky Loam" the remaining 1/3<sup>rd</sup> of the property. Using "lg Gravelly Loom as a base, its drainage and permeability is defined as "duripan (and) is nearly impermeable with water moving only through widely separated cracks". This type of soil, along with the other two, which are similar in nature, have "0" natural noise attenuation due to their Hardpan classification.

Lastly, the noise report, again leaves out pertinent data. “When “adding two equal sounds intensities” (multiple internet examples) the sound level increases by 3 dBs’, for example if two separate shooters fire an AR-15 at the same time, which is likely given the size of the project, the decibel reading at the midpoint increase by 3 decibels. While this won’t be used in this report, as the probability of shooting 2 of the higher decibel gun simultaneously is low as compared to other weapons, this rule should be noted as it shows that the overall decibel level of the proposed re-zoning will remain high.

We now have our noise data, despite having to find a base number, correct the Attenuation formula used, and debunk the soil absorption rate. In other words, the noise report is completely useless when it comes to this project and should not be considered in the report, resulting in denying the re-zoning request.

Using the above information, we can now calculate the noise level at the site used in the noise report – using 165 decibels at the site reference in the report. This number was used because of its popularity and using it would be a sort of average without having to use the 3 dba rule. Putting this into a chart we see the following effects of the range on the Sensitive receptor they used.

**Noise levels at all Referenced Existing Family Residence using the Spherical Spreading**

Sensitive receptors	Distance (feet)	Converted to Meters	Noise Level in dba with 3 DbA Reduction	Noise Level at the Receptor using the Inverse Square Law or 6 dba reduction
R5 South residence (project Site boundary)	685	208.79	141.8	118.6
R2 – Northwest Residence	1800	548.6	137.6	110.2
R1 – Northwest Residence	1230	374.9	139.3	113.5
R4 – Southeast Residence	1270	387.1	139.1	113.2
R3 – North Residence	2440	743.71	136.3	107.6

As such, with some minor changes possible from site to site, due to topography, all Sensitive Receptors Level extremely higher that the noise report claims, even if a 6 dba law were applied, vs the 3 dba that should be used given the spherical model. I believe the differences are because no initial decibel reading were given, and shot used in the study was significantly lower than what would normally be used. **Therefore, this report must be eliminated and the project must be DENIED.**

**Using the data above, and even doubling the noise attenuation rate, from 3 dba to 6 dba – the Inverse Sound Law, which is only (1.5 dba Less than NCH’s Noise report), Gun fire at 165 dba’s, which accounts for a majority of probable guns which will be used at the range is at 100.87 decibels at a MILE AWAY!**

The dashed circle reflects the area affected by noise - imagine a constant "Pop, Pop, Pop" as you enjoyed your meal, or yard with the kids, as 160 shooters are constantly pulling the trigger? The small boxes with a ? are the homes not included in the Noise Technical Report. This project MUST be denied.

LEGEND

- Range Property
- Shooting Direction
- ✕ Noise Measurement Loc (page 10 of Rpt)
- Spot Noise Measured from & Direction
- House Identified in Noise Report
- ? Houses NOT Identified

5,280 feet in 1 mile  
1,000 meters = 3,280 feet

Law Enforcement Range

Shotgun Range

High Power Range

Public Pistol and Rifle Range. Rifle Range has NO mitigation, with 60 shooters!!! 100 total on this end

Approximately a 1 mile radius: A 9mm handgun normally has a 1 mile noise radius but using the Inverse Law with an attenuation of 6 dba it can be heard up to 2 miles away! A shotgun/rifle up to 2 miles. This rezoning destroys the area for residential and recreational use

Dersch Rd

Dersch Rd

1,000 m

Google Earth

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Of further concern is the data in the applicants report has not reflected the full impact on the rights of the property owners that surround the proposed facility. Certainly, the property to the East and Northeast would be the most impacted, but muzzles brakes, a common device on many rifles re-direct the sound to the sides and result in almost the same impact. Property to the south will also be affected, though to a lesser degree, and no properties are immune from the lead dust, the effects of copper runoff from rains / flooding, and constant "pop, pop, pop" at levels double the required threshold.

As to the minor effects of the Proposed development (in relation to the effect upon our properties, compared to the Noise report), it should be noted the Vernal Pools and Vernal Swales, which make up approximately 15-20 percent of "Jones" property (see Exhibit 1). WILL be greatly affected by the development.

Further, despite the planning departments approval, evidence shows that birds, which will be void in an area with shooting from "8:00 AM until dark" for 5 days a week, will stay away from the area after use expands, and birds will eventually fully avoid an area if disturbance occurs regularly as it is suggest it will be. Birds are instrumental in keeping vernal pools healthy and alive as can be seen in Exhibit 2.

Further, as discussed in previous meetings, cows also play an important part of keeping vernal pools healthy. In fact, the "Jones" plan was amended by the Planning Department to allow the continuation of grazing cows on Jones' property, both to keep the fire hazard down, but also to keep the vernal pools and swales healthy. Unfortunately, the future of grazing cows will come to end if the project is built. As is my understanding, all current grazing cows that graze Mr. Jones' property come from across my property. My property has the only human and animal crossing of bear creek, and the only accessible natural water source on the 3,000 plus acres the cows graze on (with the only natural bear creek crossing and accessible water for cows from HWY 44 to Dersch RD.) If the project is approved, I will have to fence off access to the water for liability reasons, and to keep out trespassers. Further, in a conversation on 5/3/2023 with the individual who places the cows on the properties, he said he will cease to place his cows there if the range is approved. Hence, it is doubtful there will be any grazing to help the vernal pools or fire mitigation if the project is approved.

In summary, without birds, or cattle, it is doubtful the vernal pools inhabitants will survive, and the pools and swales life will be probably be cease to exist. Therefore, the CEQA checklist above should be marked "Potentially Significant Impact" on all items, and the proposal should be denied on this alone – but there's more.

The cessation of grazing cows will also change the fire mitigation issue. Currently, the cows eat the grass down from about 3 feet (if it's let to grow), to a level of an inch or two, in an area that covers about 3,000 acres, including Mr. Jones property. Without them, the grasses from Jones' property to properties to the West and North, and approximately 2,000 Acres of other grazing areas to the east and north east will cease to be maintained by grazing and will grow to the three-foot level, a 3,000% increase of highly combustible material covering at a minimum of the 2,000 acres to the East, and most likely 3,000 plus acres if you include property West of Bear Creek. How this got overlooked is beyond me (see page 29 of the Jones Amendment".)

Further, and of the greatest importance as it is a "**sure, consistent and invasive issue**" is the NOISE from the site, to which I have fully debunked. Such noise will be extremely detrimental to our property rights, property values, and will basically make at least 300 acres of our property unusable, which would affect our property even though rights were guaranteed to us under a General Plan when we bought the properties. That is not to say that the parcels alone do not have rights. Each parcel owns the air space above it, and noise pollution of that area by the gun range would infringe on that right, causing great harm, which would likely lead to a civil suit against all parties that participated in approving the project, knowing that such noise would create massive nuisance.



Why are our property rights so important? Because as shown below, if the rezoning is approved, all properties owners affected by the noise would have to provide mitigation at their own expense. It basically is designed to get Jones out from any addition or future mitigation necessities, as shown by RDC and allowed via the Shasta County General Plan as seen on page 9 of the Impact Report (Exhibit 4 N-i). Here what it says:

N-i Where noise mitigation measures are required to achieve the standards of Tables N-IV , the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving compliance with the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project. Note: Existing dwellings and new single-family dwellings are not subject to County review with respect to satisfaction of the standards of the Noise Element. As a consequence, such dwellings may be constructed in areas where noise levels exceed the standards of the Noise Element. It is not the responsibility of the County to ensure that such dwellings meet the noise standards of the Noise Element, or the noise standards imposed by lending agencies such as HUD, FHA and Cal Vet. If homes are located and constructed in accordance with the Noise Element, it is expected that the resulting exterior and interior noise levels will conform to the HUD/FHA/Cal Vet noise standards

In other words, if you as supervisors approve this Re-Zoning request, knowing the RDC report is completely faulty, and it is found later to be erroneous, Mr. Jones does NOT have to provide or correct those mitigation plans already in place, and the homeowners and other property owners are on the hook for the bill. Wow! In other words, if this report is even off by 1.5 Decibels, which significantly increase its noise level, he, Jones does not have to do anything about it because you approved it. Under Just this premise, the Board should vote NO, but there's more, else our only mitigation factor is court:

## Conclusion

### **Expanded Details on why the Rezoning should NOT be allowed:**

1. Rezoning is not in alignment with the general plan that has been carefully crafted over an extended period of time with significant community input.
  - 1.1. The general plan recognized this area as being in the path of future development to support growth of city residents. We have already seen new homes being developed, and it represents the largest expanse of undeveloped land outside the city, ripe for developing major home sites, recreational facilities, and other uses that are NOT in alignment with an outdoor gun range. See General Plan
  - 1.2. Currently large areas of the land are used for cattle grazing, bird migration, and the protecting of environmental pools on our properties. This is not to mean that that is all the property is used for, nor intended to be used for in the future. In addition to natural preservation, We camp, hike ride horses and do an addition of other recreation uses, which, under counties that have adopted a comprehensive noise resolution, would immediately deny the re-zoning.
2. Rezoning does not align with actual neighboring uses related to residential use, personal recreation, cattle crazing, bird migration, and protecting environmental ponds.
  - 2.1. Currently this land is used for residential homes (of which there are at least 5 homes well within the distance of creating a significant noise nuisance). There are significant amounts of neighboring land that would be

- precluded from ongoing development for homes as currently zoned, as they would also be within a distance of the proposed range resulting in such future homes being significantly impacted with a noise nuisance.
- 2.2. Surrounding land would no longer be fit for personal recreation such as horseback riding, camping, hiking. The constant distraction and noise from the shooting range would be detrimental to all such uses.
  - 2.3. Noise from the range would drive away cattle and migratory birds that use and support the surrounding environmental pond, which are protected natural resources.
3. Rezoning will curtail the trend to develop the area for needed expansion of residential use, resulting in a negative impact to current and future growth.
    - 3.1. IF the rezoning was approved, the use of the surrounding land would be greatly limited. This in turn would curtail future development, negatively impact neighboring land values that relied on the general plan, and effectively would represent a theft from the current land owners.
  4. Rezoning will result in residents experiencing a substantial noise nuisance and both a real and perceived danger from stray bullets in what will eventually become a residential neighborhood.
    - 4.1. The applicant uses a noise analysis that draws erroneous conclusions based on false logarithmic equations, that omits key data, and by assuming not only soil Attenuation, but all factors to determine Attenuation from all sources. The reports' conclusion is not consistent with the noise a gun range will produce, a quick search of gun reports on your phone will bring up comprehensive data from other ranges that proves my conclusions to be correct.
      - 4.1.1. The frequency of the shots used was 20 shots over 2 minutes. In reality, there can be hundreds of shots per minute, especially during Jones events, which compounds the noise nuisance.
      - 4.1.2. The distance this noise travels was concluded to diminish within 2,000 meters to below the level of being a nuisance. In fact, the noise, especially when amplified to tens of thousands of shots PER DAY, will extend well beyond this distance per the detailed analysis of the noise report. Effectively, neighboring land, even beyond 2 miles, will be affected by this gun range. Just imagine enjoying a family BBQ in your backyard in the late afternoon while you hear the constant "pop, pop, pop" of guns going off in the distance, at a level above the allowed thresholds.
      - 4.1.3. The guns used in the test must have held a very low level of gun powder that assisted in a false report; there is no data of the sound levels from the test done, and the resulting increase in sound, as shown in my analysis, supports this theory.
      - 4.1.4. Too many assumptions were made by the creator of the report, bringing into question their expertise. With all the gun ranges across the country, this is an easily accessible fact to show my analysis is true, and can be obtained given the request to change an important aspect of the county's General Plan.
  5. Rezoning will result in contaminating the land, and possibly the groundwater with lead.
    - 5.1. As referenced in the attached report, lead contamination of both the land and the possible of the ground water and water sheds is a critical issue that has not been addressed. Major amounts of lead dust result from these gun ranges, which is then carried by the wind and rain runoff into neighboring properties. It is also possible that such lead could contaminate groundwater.

With all of these negative effects on the surrounding land, to what advantage is it for the county to approve a use that would limit the ability to use the great neighborhood as a place for long term development for homes, recreation and wildlife. Why would the county punish existing neighbors by allowing a use that is NOT consistent with the general plan? Why would the county run the risk of poisoning this ecological area?

Dwight DeMers  
6116 Walnut Ave, Orangevale, CA 95662  
[demersrealty@comcast.net](mailto:demersrealty@comcast.net)

I support the idea of gun ranges; they provide a place we can train and practice in the smart and responsible use of guns. But similar to the 2<sup>nd</sup> amendments right to bear arms, the 5<sup>th</sup> and 14<sup>th</sup> amendments protect property rights and prevent the taking of private property – rezoning this property would equate to the taking of my property, negatively impact existing owners, and all of our futures.

Wildland Resource

8/21/2023

Winford Sample  
6950 Hyrax Rd.  
Anderson, Ca. 96007

RE: Zone Amendment 13-007

I would like to take issue with your conclusions in your article to Mr. Mooney. RE; MND. It was concluded that nesting birds, those identified, would not have an issue with noise, but it says nothing about ``impulse`` noise. Talks about ambient noise only. There has been no noise measurement from our property. It is next to the Jones property and is above his proposed facility and shows know barrier able to protect our home from intrusive IMPULSE noise.

The failure to identify the wildlife that is home to so many others, it would wreck that balance of nature and eventually destroy any natural conditions. Some of the animals that are affected by just noise and not identified are: wild turkeys, dove, quail, and woodpeckers etc. Then you have the many deer, Fox`s, cougar, racoons, coyotes. All these animals and the ones you mention are subject to and have an ingrained fear of IMPULSE noise.

NOISE:

The facts of continuous noise vs. impulse noise is dramatic. A small indication is the continuous noise is identified by your coverage of the eagle nesting at Turtle Bay. That area has a continuous noise from car traffic from hwy 44. I do not believe the nesting would continue with a shooting range in the vicinity, and there is no evidence nesting would continue. As of fact there is evidence that it would impact that area. As evidence is CHAPA 1992 and all its reference material. One reference is the equipment used to measure IMPULSE noise. It is pointed out that the current noise measurements are inadequate as referred to in the NIOSH SCIENCE BLOG and its reference material.

One last note is there has been no noise measurement near us and we are situated ``above`` the proposed shooting range. Our properties lines are very close to each other. It has talked about mitigation barriers but I have yet to see any indication of one protecting us.

Winford Sample 530 586-2878

Winford Sample  
6950 Hyrax Rd.  
Anderson, Ca. 96007  
530 586-2878

9/2/2023

David Slagel  
Planning Commission

RE: Zone Amendment 13-007

Dear David,

Based on our Telephone call I am including some of the material from Niosh Science Blog in conjunction with the CDC. This is what I was referring to in a letter sent Wildland Resource. It was generally based on the proper measurements for noise, or to be accurate impulse noise. Impulse noise is the correct description for a Shooting Range activity. It was also referencing the nesting of particular birds which is of no consequence. But it does not make any reference to this area as their feeding area. We do have many Eagles, Hawks and such which are plentiful. We have had people getting camera shots of the Bald Eagle feeding in this area (ground squirrels, woodpeckers and others) They don't discriminate.

One item that has not been addressed enough is the contamination of our lands and streams. I have heard nothing about the small fragments that saturate the ground by clay targets. Then during the storms, leach into the streams. Seems the clay targets have a composition that will cause acidity in our watershed. I would believe this would be of consequence to the fish and reptiles.

Lastly I have terrible feelings a few of the supervisors have lost why they are there in the first place. What is the purpose of Zoning. Residential zoning to protect home owners from indiscriminate building and their homes. Not anymore.

I have just submitted some of the reasons why this zoning amendment would harm the dwindling of wildlife in Shasta County.

Sincerely Winford Sample 530 586-2878



## How Can we Measure Impulse Noise Properly?

July 18, 2018 by CAPT Chucru (Chuck) A. Kardous, MSEE, PE, and CAPT William J. Murphy, PhD

Impulsive noise is typically generated by the rapid release of compressed gases (impulse) or the collision of solid objects (impact) and is defined as the instantaneous change in sound pressure over a short period of time. Considerable research has shown that impulsive noise is more likely to cause noise-induced hearing loss (NIHL) than continuous noise of equal energy. Exposure to high-intensity impulses can cause acoustic trauma and instant mechanical damage to the inner ear. Exposure to impulsive noise is common among law enforcement and military personnel (e.g. firearms) and in construction (e.g. nail guns), manufacturing (e.g. forging, stamping), and mining sectors (e.g. roof bolting).

At NIOSH, we often get questions about impulsive noise and the proper techniques for measuring high-level impulses. This blog is the first of a series that we intend to publish on impulse noise measurement, risk characterization, and the best way to protect workers against such exposures. This blog gives background information about impulse noise measurement and guidance based on NIOSH studies and current best practices.

Impulse sound levels, especially those generated by firearms or fireworks, can reach peaks of 170-180 dB Sound Pressure Level (SPL) or higher. Many sound measurement instruments are not capable of accurately capturing such intense sound levels. Type 2 noise dosimeters and sound level meters tend to max out around 140-146 dB SPL. These limitations are highlighted in the article *Limitations of Using Dosimeters in Impulse Noise Environments* [Kardous and Willson 2004]. Below is an image from that publication using a noise dosimeter taken at a firing range; the green line shows the clipping of peak sound pressure levels above 146 dB SPL. If the peak levels are clipped, then the entire measurement – and metrics such as TWA and Dose – are likely to be compromised.

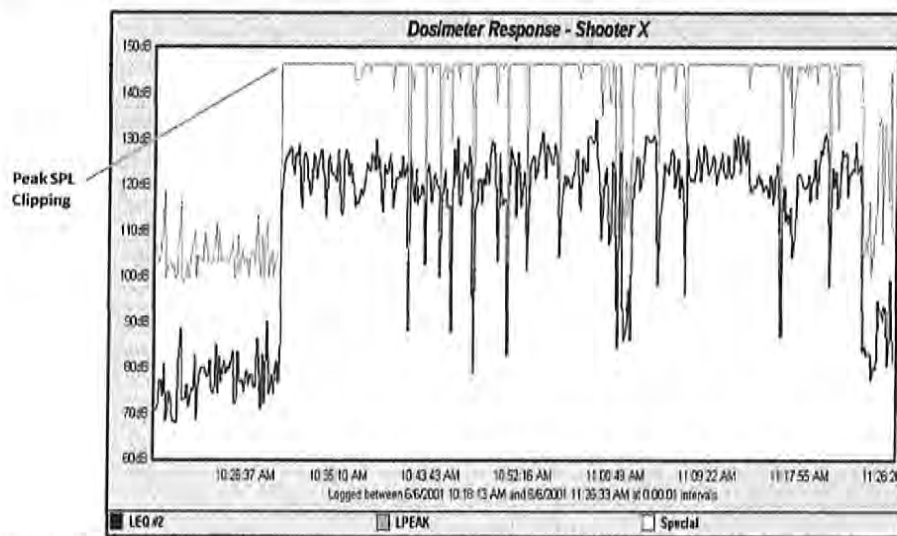


Figure 1: Peak sound pressure level “clipping” of a Class 2 noise dosimeter [Kardous and Willson 2004].

Some manufacturers offer high-end, Type 1, sound level meters equipped with ¼-inch microphones that can measure impulses up to 160+ dB SPL. But even if a peak sound pressure level can be accurately captured (without clipping), peak level is not even the main metric used to characterize hearing risk from impulsive noise!

Researchers have identified several other metrics that are more closely associated with characterizing the risk of exposure to impulsive noise and have been cited as important factors in determining risk from exposure to impulsive noise [CHABA 1992], they include:

- Total energy in an impulsive waveform
- Initial duration of an impulse, often referred to as A-duration
- The reverberation following the initial impulse such as B, C or D-durations
- The relative high or low-frequency content in an impulse
- The number and temporal spacing of impulses in an entire exposure
- The kurtosis of an impulsive event (a statistical metric that is sensitive to the peak and temporal characteristics of a noise)

Another approach that was recently adopted by the U.S. Department of Defense is the Auditory Hazard Assessment Algorithm for Humans (AHAH), an electro-acoustic model of the ear that assigns "Auditory Hazard Units" to an impulsive exposure [DOD 2015]. One of the main things we can say at this point is that methods for estimating damage risk criteria from exposure to impulsive noise is an active area for ongoing research.

NIOSH has been investigating the effects of impulsive noise for quite some time now. In 2003, we convened a Best Practices workshop on impulsive noise and published the findings from the various working groups in the Noise Control Engineering Journal under the title *NIOSH/NHCA Best-Practices Workshops on Impulse Noise* [Kardous et al., 2005].

To address the need for making accurate worksite impulsive noise measurements, NIOSH engineers developed and patented a portable, self-contained impulse noise measurement system. The laptop/tablet based system can be acquired commercially as a self-contained kit in a single case (shown below).



Figure 2: NIOSH Impulse Noise Measurement System Kit – consisting of a laptop running NIOSH Impulse Software, a National-Instruments (NI-4432) USB data acquisition board, and high-intensity microphones.

The system can measure impulses up to 186 dB SPL (192 dB SPL using very low sensitivity polarized microphones) in real time; it can be manually or automatically triggered and supports up to 5 acquisition channels with a sampling rate of 102 kHz

B duration, frequency spectrum as FFT and octave band, temporal spacing, number of impulses, kurtosis, and Leq). The system also calculates several damage-risk criteria currently in use: LeqA8hr, MIL-STD-1474D/E, and AHAH (as shown in Figure 3). A detailed description of the system, its setup and operation, as well as its intended uses are described in the report *Development and Validation Testing of an Impulse Noise Meter*.

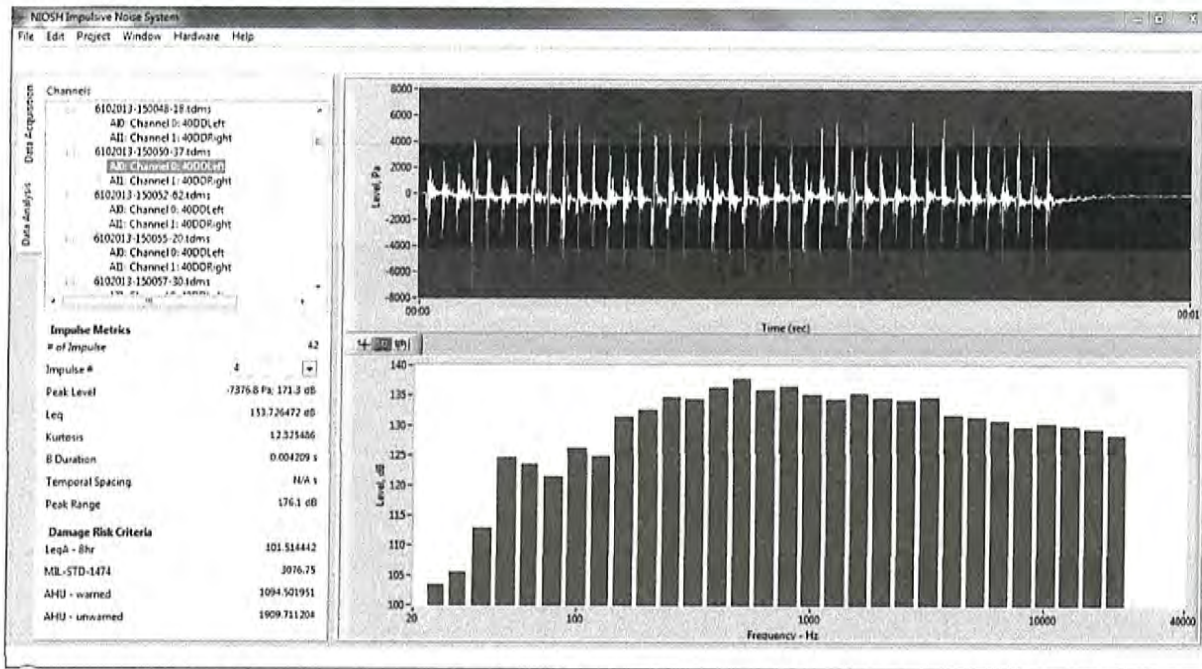


Figure 3: A screenshot of the data analysis window of the NIOSH impulsive noise system. The main screens can display the time and frequency domains of the waveform (i.e., impulses, 1/3 octave band, Fast Fourier Transforms) and on the left side the various impulse metrics and associated damage risk criteria are calculated and shown.

The system has been deployed by NIOSH researchers on several recent surveys and health hazard evaluations to measure law enforcement and military personnel exposures to impulse noise from firearms: *Development and Validation Testing of an Impulse Noise Meter* and *Measurement of Exposure to Impulsive Noise at Indoor and Outdoor Firing Ranges during Tactical Training Exercises*. Figures 4 and 5 show photographs from those surveys to give the reader an idea about field implementation.



Figure 4: The NIOSH impulse noise measurement system being used at a military firing range. Microphones are positioned on



Figure 5: NIOSH researcher running the NIOSH impulse noise measurement system during live-fire training exercise (shown in the background are microphones positioned on tripods at ear level and prone positions).



tripods throughout the range to calculate overall impulse noise exposure

Such surveys and detailed noise impulse assessments are not possible by simply using a sound level meter and that is why a dedicated impulse noise measurement system is needed. Knowing the characteristics of the impulse waveform is critical to understanding the risk of any high-level impulse noise exposure. Using the NIOSH impulse noise system allows our researchers to capture impulses and calculate risk metrics, in real-time, and provide appropriate recommendations to reduce the risk of hearing loss. As data acquisition, digital signal processing, and storage capabilities continue to improve, it is crucial for sound measurement instruments targeted at measuring impulsive noise to:

- be redesigned to capture high-level impulses,
- have the capability to store the entire impulse waveform or impulsive event, and
- incorporate appropriate impulse-specific metrics into their capabilities.

We are currently wrapping up a study to develop new guidelines for exposure to impulsive noise, which will be used to update our occupational noise exposure criteria document. NIOSH hearing loss prevention researchers have also conducted studies on the performance of hearing protection devices in impulse noise environments; a follow-up blog on that subject will be published soon. For more information about impulsive noise research and hearing loss prevention in general, check out our topic page and follow us on Twitter at @NIOSHNoise.

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July 18, 2018 by CAPT Chucri (Chuck) A. Kardous, MSEE, PE, and CAPT William J. Murphy, PhD  
Hearing Loss

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# Understanding Noise Exposure Limits: Occupational vs. General Environmental Noise

February 8, 2016 by Chuck Kardous, MS, PE; Christa L. Themann, MA, CCC-A; Thais C. Morata, Ph.D. and W. Gregory Lotz, Ph.D.

Noise-induced hearing loss (NIHL) is 100% preventable; however, once acquired, it is permanent and irreversible [NIOSH 1998]. Understanding and minimizing the risks associated with noise exposures are the keys to preventing noise-related hearing loss.

NIOSH has a long history of leadership in conducting research, advancing control measures, and recommending noise-exposure limits to prevent job-related hearing loss. Sometimes, observers ask whether our recommended limits for occupational exposure can be applied to exposures in the general environment from sources such as street noise, consumer appliances, and recreational pastimes.

The answer, as we'll explain below, is not exactly.

## What is the NIOSH Recommended Exposure Limit?

NIOSH establishes recommended exposure limits (RELs) to protect workers against the health effects of exposure to hazardous substances and agents encountered in the workplace. These NIOSH limits are based on the best available science and practices. In 1998, NIOSH established the REL for occupational noise exposures to be 85 decibels, A-weighted (dB[A]) as an 8-hour time-weighted average. Exposures at or above this level are considered hazardous. The REL is based on exposures at work 5 days per week and assumes that the individual spends the other 16 hours in the day, as well as weekends, in quieter conditions. Importantly, the NIOSH REL is not a recommendation for noise exposures outside of the workplace in the general environment.

NIOSH also specifies a maximum allowable daily noise dose, expressed in percentages. For example, a person continuously exposed to 85 dB(A) over an 8-hour work shift will reach 100% of their daily noise dose. This dose limit uses a 3-dB time-intensity tradeoff commonly referred to as the exchange rate or equal-energy rule: for every 3-dB increase in noise level, the allowable exposure time is reduced by half. For example, if the exposure level increases to 88 dB(A), workers should only be exposed for four hours. Alternatively, for every 3-dB decrease in noise level, the allowable exposure time is doubled, as shown in the table below.

### Average Sound Exposure Levels Needed to Reach the

#### Maximum Allowable Daily Dose of 100%

Time to reach 100% noise dose	Exposure level per NIOSH REL
8 hours	85 dB(A)
4 hours	88 dB(A)
2 hours	91 dB(A)
60 minutes	94 dB(A)
30 minutes	97 dB(A)
15 minutes	100 dB(A)

## When to Apply the NIOSH REL

The NIOSH REL is an *occupational* exposure limit, and was set to protect workers from developing hearing loss –substantial enough to make it difficult to hear or understand speech – over the course of a forty-year working career. Risk of hearing loss from noise exposure is a complex issue. Some single, brief intense exposures (such as a gunshot going off near your ear) can cause immediate hearing loss; however, these cases are rare. Most noise-induced hearing loss is a result of accumulated damage from repeated exposures to hazardous noise. In addition, the risk of noise damage depends on several factors: how loud the noise is, how long you listen to it, how much rest your ears get between exposures, and your individual susceptibility to noise.

Occupational noise exposure limits are established to simplify the complex question of risk and protect as many workers as possible from the effects of noise. The NIOSH REL is not designed to protect all workers from all hearing damage. When setting this limit, NIOSH acknowledged that approximately 8% of workers could still develop hearing loss. In order to protect the most sensitive 8% of the population, NIOSH recommends that hearing protection be worn whenever noise levels exceed 85 dB(A) regardless of duration.

## The Relationship between Occupational and General Environmental Noise Exposures

Noise can be found everywhere – restaurants, music and sporting venues, movie theaters, hospitals, and schools. Can the same occupational noise exposure guidelines that apply to workers also apply for assessment of risk to the general public? The NIOSH REL is not meant to be used to protect against general environmental or recreational noise; it does not account for noisy activities or hobbies outside the workplace (such as hunting, power tool use, listening to music with ear buds, playing music, or attending sporting events, movies and concerts) which may increase the overall risk for hearing loss.

What noise recommendations exist for the general public? A 1974 U.S. Environmental Protection Agency report [EPA 1974] recommended a 70 dB(A) over 24-hour (75 dB(A) over 8-hour) average exposure limit for environmental noise (note that the 1974 report was explicit to state that it should not be constituted as a standard, specification, or regulation). The EPA document also specified two other limits for speech interference and annoyance (55 dBA for outdoors activities and 45 dBA for indoor activities)\*. The EPA limits were chosen to protect 96% of the general population from developing hearing loss as well as to protect “public health and welfare” (defined as personal comfort and well-being and absence of mental anguish and annoyance).

Both the NIOSH and EPA limits are based on the same scientific evidence and the equal-energy rule (i.e., 3-dB time-intensity tradeoff). However, the NIOSH REL and the EPA limit are designed to protect against different problems – the EPA limits are set to prevent noise that is annoying as well as hearing loss, whereas the NIOSH limit is set solely to protect against hearing loss. The limit values (85 vs. 70) also differ because the EPA limit is averaged over 24 hours with no rest period while the NIOSH limit is averaged for just 8 hours and includes a rest period between exposures. In addition, the EPA limit includes a 1.6 dB(A)\*\* allowance to protect against exposures for 365 days a year while the NIOSH REL is calculated to protect against work place exposures for 250 working days a year. Finally, the EPA limit does not consider cost or feasibility of implementation as the Occupational Safety and Health Administration (OSHA), in accepting a NIOSH REL as the basis for a mandatory standard, is required to do under the Occupational Safety and Health Act of 1970.

## Noise Level versus Time-Weighted Average Noise Exposure

It is important to differentiate between noise *level* and time-weighted average noise *exposure*. While noise *levels* describe the intensity of sounds at a given *point in time*, the NIOSH and EPA exposure limits are set as *time-weighted average exposures* over *periods of time*. While few people are able to measure their *average noise exposures outside of work*, sound *levels* can be measured with a sound level meter or a smartphone sound measurement app. Suppose you are at a restaurant, a concert hall, or a sporting event and you are able to measure the sound levels... how do you know whether your hearing is at risk? The sound *level* at a given *point in time* can be higher than the exposure limit without creating risk, provided it is balanced out by enough time at lower levels during the day. Even without knowing your time-weighted average, if the readout shows a level of 85 dB(A) or higher, NIOSH recommends that you take precautions to protect your hearing by reducing the noise when possible, limiting your exposure time, and/or using appropriate hearing protection.

Hopefully, the many considerations involved in setting and using noise exposure limits are clearer now. In a nutshell, while the NIOSH REL only applies to the workplace, protecting your hearing whenever sounds reach 85 dB(A) or more is a good health practice no matter where your ears are!

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***W. Gregory Lotz, Ph.D., Captain, USPHS; is the Division Director of the Division of Applied Research and Technology (DART) and the manager of the NORA Manufacturing Sector Council.***

For more information on about protecting your hearing and noise at work, including free materials, videos and tools, please visit the Noise and Hearing Loss Prevention Topic Page or send us your comments or questions in the comments section below.

\* Text added to include additional EPA limits per reader comments.

\*\* Typo corrected changing 1.4 to 1.6 dB (A).

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February 8, 2016 by Chuck Kardous, MS, PE; Christa L. Themann, MA, CCC-A; Thais C. Morata, Ph.D. and W. Gregory Lotz, Ph.D.  
Hearing Loss

## 50 comments on “Understanding Noise Exposure Limits: Occupational vs. General Environmental Noise”

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This blog post points out an important difference between a recommended occupational noise exposure level and what constitutes a safe noise exposure level for the general public. Noise levels appropriate for truck drivers, miners, or construction workers are too loud for children’s tender ears, which have to last them a lifetime, and their parents and grandparents. As society has gotten louder- with noise levels of 80-100 dB being reported in restaurants, bars, clubs, gym,

movie theaters (100-125 dB in action movies), and sports events (world record stadium noise level 142.2 dB set in 2014 at Kansas City's Arrowhead Stadium, exceeding the OSHA maximum noise exposure level of 140 dB), with elimination of the nighttime quiet period in many American cities, we are all at risk of hearing loss. Daniel Fink MD

Reply

Dr. Fink, Thank you for your comments and commitment to hearing loss prevention in the general environment.

Great explanation. I'm still curious, however, whether there is any legitimate scientific reason for OSHA's 5-dB exchange rate for its PEL as opposed to the 3-dB exchange rate used by NIOSH for its REL? Or, is OSHA's PEL exchange rate based also on "cost and feasibility"? Thanks.

Reply

Thank you for your comment, Dr. Landsbergis. After the OSH Act passed, OSHA had the authority to adopt existing standards as PELs under the new OSH Act for 24-months after passage. The OSHA PEL was set in a Federal Register notice (39 FR 23502) based on prevailing consensus standards at that time, mainly the 1966 CHABA and 1968 Walsh-Haley noise standards. Although those noise standards had varying exchange rates (2-3 dB for long durations of noises of moderate levels and 6-7 dB for short duration of noise, high intensity bursts), it is understood that the final regulation adopted a 5-dB exchange rate for simplification purposes.

And yes, OSHA must consider technical and economic feasibility under the OSH Act.

I would appreciate clarification regarding this blog's reference to the consideration of "annoyance" in the EPA noise exposure limits related to noise-induced hearing loss. I am aware of "annoyance" as a factor which was integrated as part of the EPA community noise standards that were designed to consider the non-auditory effects of noise. However, aren't the EPA 24 hour noise exposure limits referenced in this blog specifically related to the risk of auditory damage and not annoyance?

Reply

Thank you for your excellent question, Dr. Meinke. The Noise Control Act of 1972 was established "to promote an environment for all Americans free from noise that jeopardizes their public health and welfare." In the 1974 EPA document that we reference in the blog, they define public health and welfare as "complete physical, mental and social well-being and not merely the absence of disease and infirmity." This definition would take into account sub-clinical and subjective responses (e.g., annoyance and other adverse psychological reactions) of the individual and the public. The phrase "health and welfare" also includes personal comfort and well-being and the absence of mental anguish and annoyance."

So while the EPA limit of 70 dBA over 24 hours referenced in the blog does specifically relate to the risk of auditory damage, there are 2 other limits that the EPA specified in the document (55 dBA for outdoor interference and annoyance and 45 dBA for indoor interference and annoyance) that we didn't include to keep the blog clear and simple. We are simply trying to draw a distinction between occupational standards (that protect workers against material hearing impairment) and the EPA limit(s) that protect against hearing loss as well as to protect "public health and welfare" (which include personal comfort, absence of mental anguish, and annoyance).

I can't speak for OSHA, but I believe their use of a 5dB exchange rate is based on the practicalities of calculating time-weighted averages in the days before integrating sound level meters and hand-held computing devices. When all you could do was take spot sound level measurements and manually integrate them into an estimated average, a 5 dB exchange was easier to calculate with, and was thought (or hoped) to incorporate lunch and other break periods that were without significant sound exposure but were not generally measured – because the person taking the measurements was also taking lunch, etc. (At least, that is what I remember being told in graduate school in the mid-1970s.)

Reply

Just adding a note for clarification. Annoyance does \*not\* factor in to the EPA's 70 dBA 24-hour recommended exposure limit – that applies for the other limits recommended by the EPA (i.e., 55 dBA outdoors, 45 dBA indoors), but not the 70 dBA recommendation, which is focused solely on preventing any measurable NIHL (i.e., <5 dB among even the most susceptible individuals). The EPA recommended limit does indeed average over 24 hours, while the NIOSH recommended limit is averaged over 8 and assumes effective quiet (i.e., below 70 dBA) for the other 16 hours in a workday. It might be useful to amend the blog post to note that EPA has several recommended limits, not just the 70 dBA limit designed to prevent any noise-induced hearing loss, and that the growing body of evidence with regards to non-auditory health effects from noise exposure <70 dBA makes the 55 and 45 dBA limits important enough to explain.

Reply

Thank you for the clarification, Dr. Neitzel. Our main intent in relation to the issue of annoyance was to explain the rationale that lead to our REL (hearing loss) vs. the EPA limit(s) (hearing loss + public health and welfare). We thought introducing the two other EPA limits (interference and annoyance limits for indoor and outdoor activities) would distract our readers from the main point of the blog, but since it has been brought up by you and Dr. Meinke above, we made the appropriate changes to the blog.

Good article, but you made a mistake in transcribing. You quoted an adjustment for weekends, etc. as follows: "In addition, the EPA limit includes a 1.4 dB(A) allowance to protect against exposures for 365 days a year while the NIOSH REL is calculated to protect against work place exposures for 250 working days a year." However if you look in the EPA levels document they actually used 1.6 dB, which is simply  $10 \log(365/250)$ .

Reply

You are correct. The text should read 1.6 dB (A). Thank you for pointing out the typo. We have fixed it in the blog text above.

Awesome question, this is the major these day in many parts of the world, for all occassions folks use dj with high volume which lead to total deaf. UNO has to take a step to stop this. thanks

Reply

The I for Really Never Thought the About Loud Noise Exposure in at The First Long Time to have have AN Impact like that . Because Sound IS One Essential Part of Life , SO that We See IT AS Self-Evident . Thanks for at The Reminder of the this .

Reply

I really enjoyed reading your blog, you have lots of great content. I look forward to reading more posts from you.

Reply

Thanks for the excellent article and discussion. I am currently working on research which sets out to examine the differences between European and USA legislation and procedures in workplace noise assessment.

My data concludes that the exchange rate issue has far reaching consequences and it means that workers in the US can be exposed to much higher levels of noise for much longer periods than their European counterparts. Furthermore in Europe statutory obligations on employers to protect workers' hearing are triggered at an LEX, 8h (equivalent to the USA's 8 hour TWA) of 80 dBA .

I am finding it particularly difficult to source suitable peer-reviewed publications (other than Alice H. Suter's ) which address the key issues of my research – i.e. the 5 dB exchange rate and the 85 dBA PEL and how they can be detrimental to US workers' hearing.

Could you please let me know of any relevant publications I may have overlooked. Alternatively would it be possible to copy this email to any of your colleagues who in turn may be able to direct me to some suitable publications.

I would be pleased to issue the findings of my research to anyone who may have an interest.

Thanking you in anticipation.

Kind regards,

Dermot Moloney, MSc, BSc, MIOA, MIEEnvSc, CSci.

Reply

Thank you for your comment and email, Dermot. We agree that the different exchange rates used in the U.S. have far reaching consequences on the hearing health of the American worker and that is why NIOSH has advocated for a recommended exposure limit (REL) of 85 dBA and the use of the 3-dB exchange rate since 1998. The present OSHA permissible exposure limit (PEL) is 90 dBA for an 8 hour day. The OSHA standard uses a 5 dBA exchange rate. We present the rationale for using the 3-dB exchange rate in chapter 3 of our criteria document <https://www.cdc.gov/niosh/docs/98-126/pdfs/98-126.pdf>. We have additional information in a white paper we published in Seminars in Hearing ["National Research Agenda for the Prevention of Occupational Hearing Loss – Parts 1 & 2" Sem. Hear. 34(3):141-251 (2013)]. Dr. Suter has in fact led most of the efforts jointly with NIOSH to make the case for the 3-dB exchange rate. We are also in the process of publishing additional information on this specific subject, possibly in the form of another white paper, we'll keep you updated. Hopefully others reading the blog could chime in as well if they know of other efforts on the subject. Please follow us on @NIOSHNoise on twitter for the latest updates.

I just moved to my new house and there are two water fountains in the middle of the apartments which is operating from 8.30am to 9.30pm, 13 hours continuous. When I measure it with an industry sound meter, it is showing 75dbA at the balcony, and around 68dbA inside my living room. Do you have any international guide for acceptable residential noise level relating to my situation? Is there any articles you could point me to suggest the risk of long-term exposure to such unhealthy environmental noise, especially to children? I just looked at WHO guide which is quite general and does not specifically address the readings recorded.

Thank you for your kind reply as I am really concern about long term exposure of 68-75dbA noise.

Dickson

Reply

Hi Dickson. NIOSH does not provide guidance on environmental or non-occupational noise exposures. However, you can consult the EPA reference that we cited in the blog for the information you're looking for, or for a quick summary, this link <https://www.epa.gov/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfare> which states that 70 dBA measured over 24 hours as the noise exposure level that would prevent any measurable hearing loss over a lifetime, 55 dBA for outdoor noise exposure levels to prevent interference and annoyance. The link above indicates that the EPA has transferred the primary responsibility of regulating noise to state and local governments.

A couple of questions: when you discuss 45dB interior and 55dB exterior is that measured from the source of the sound? And about OSHA accepting a NIOSH finding, am I correct that a private individual not part of a business can not make a complaint? Thanks.

Reply

Thanks for your questions, Mark. In the EPA's noise levels document we cited above, it states that annoyance due to noise (the 45 dB for indoors and 55 dB for outdoors you mentioned) is measured by community surveys.

As for your second question, any worker can file a complaint with OSHA if they believe their working conditions are unsafe or unhealthful (<https://www.osha.gov/workers/index.html>), but if you're talking about a private individual experiencing noise annoyance problems, then that individual must check with his local community to see if there are any specific noise ordinances in place.

Hey panel of experts,

How does NIOSH chart of Permissible Noise Exposures (PNE) go hand in hand with hearing protecting companies' unwavering claim that they manufactured products, that protect your hearing in loud environments, for example night clubs with probably music louder than 100dB, while still allowing you to make conversations without too much muffling? Their NRR is not fit, according to this chart, but rather slightly attenuate the noise.

Known products include: Eytmotic, Downbeats, Eargasms and many more...

What are your thoughts on this ?

Best regards,

Ariel

Reply

Hello, I would be interested to know the upper frequency that the limits in your blog apply for? 8 kHz? 10 kHz?

Thanks

Reply

Thank you for your question and hope we understood it correctly. NIOSH's recommended exposure limit of 85 dBA over 8 hours is based on the A-weighting frequency response, and thus the use of the term dBA. Both OSHA and NIOSH state that noise should be measured with a Type 2 (or better) sound level meter. The different types are described in the American National Standard Specification for Sound Level Meters (ANSI S1.4). A Type 2 sound level meter will only measure accurately up to 8000 Hz, so that is essentially the upper frequency limit. However, it should be noted that hearing protection devices are typically far more effective in the high frequencies than they are at lower frequencies. Thus, the protection achieved at 8000 Hz can be assumed to be as much — if not more — when extended to higher frequencies.

I am not an engineer or a physician, i was an air traffic controller for 36 yrs. I was exposed to acoustic shock trauma from a

increased up to 103db. It felt like a needle was jammed in my ear.

I suffered hearing loss at 4000 hz. Follow on diagnosis includes, bruxism, TMD, hyperacusis. According to my audiogram 3 weeks prior to my injury, I had normal hearing.

With so much data on TWA free field noise levels, why is there so little compared to headsets/earbuds? With the NIHL in the younger generation, using earbuds, growing at an alarming rate, you would think more would be done to prevent hearing loss.

NIOSH recommends peak audio not to exceed 85db(headset), yet OSHA does not address this in 29 cfr 1910.95?

Most all headsets( call centers, dispatchers, ATC etc) have some type of limiter, so the expense is already there.

Standard MP3 and smart phone type ear buds generally allow up to 105db.

Why is money more valuable than health?

Reply

I am interested in any available data on Emergency Medical Technicians noise exposure due to sirens and helicopter noise.

Reply

Hello Ellen and thanks for your question. The only information NIOSH collected on siren noise inside medical emergency vehicles was through a health hazard evaluation (HHE) back in the 1980's that found noise levels exceeded our recommended exposure limit for drivers and patients <https://www.cdc.gov/niosh/nioshtic-2/00130563.html>. In that report, NIOSH made some recommendations about placement of the siren that reduced noise levels. NIOSH also conducted several assessments on firefighters' exposure to siren noise that offer additional (and somewhat similar exposure information) that could be of interest. Those studies can be accessed through a search of terms such as "Firefighter and Noise" on our website: <https://www2a.cdc.gov/nioshtic-2/advsearch2.asp>. There are several studies and published reports from non-NIOSH researchers available, but most of those are also dated back to the 80's and 90's and before advances to reduce noise levels inside the cabins of emergency vehicles and before optimal siren placement.

As far as occupational noise exposure to helicopter noise, we do not have any specific information on medical helicopters but we have conducted an HHE to measure noise levels for helicopter pilots used in law enforcement <https://www.cdc.gov/niosh/nioshtic-2/20044072.html> that can also offer a glimpse of the levels inside the cabin of a helicopter, though medical helicopter may be better equipped to block unwanted noise. If you have a specific concern about your hearing, we recommend you contact the NIOSH Health Hazard Evaluation program <https://www.cdc.gov/niosh/hhe/request.html> and request that NIOSH conduct an evaluation in your workplace.

I am an Occupational (Industrial) Hygienist in the UK. Congratulations on an outstanding piece of work.

Firstly, where can external microphones be obtained and secondly is the app now available for android phones?

I would like to make a couple of comments; measuring noise is easy – but measuring noise exposures is difficult! You must ensure that all noise exposures are captured in your assessment. Because of the logarithmic nature of noise, short duration exposures to high levels of noise can have a very significant effect. Remember to consider not only normal operations such as setup, routine running and end of shift activities, but also unplanned events such as blockages, stoppages and breakdowns; machine adjustments, tool change-overs, machine malfunction, maintenance and cleaning; and air and steam leaks or venting, and use of air lines for cleaning and drying activities. A noise level of 105 dBA for 1% of the day, could double the noise exposure from 85 to 88 dBA as an 8-hr Leq. In essence consider the routine planned and unplanned events that take place each and every day.

With regard to 3, 4 or 5 dB exchange rates; all are approximations – The 3 dB exchange rate is based on the use of a simple equal energy principle whilst the 4 and 5 dB exchange rates assume that there is some recovery in the hearing system between exposures. Whilst, all have some merits the general consensus is now that the simple equal energy principle is preferred as it is the most protective.

However, it should be remembered that it is an approximation and that where noise is presented as an impact or as an impulse the 3 dB exchange rate appears to under-estimate the risk of hearing loss. It should be further noted that chemical exposures can have an additive or synergistic affect so if the noise risk is from impact noise or from combined chemical and noise exposures you should obtain specialist advise.

Reply



Hello Adrian and thanks for the comments, very well-thought through. It's always wonderful to hear from a practicing professional, thank you for taking the time to share your thoughts. We think our readers will find them valuable. In response to your comment about the exchange rate and impulse noise, you may be interested in a recent science blog we posted on this specific subject: How can we measure impulse noise correctly?

As for the NIOSH SLM app, your questions (and our response) may be more helpful to our readers on the NIOSH SLM blog. External microphones are available from several online outlets or directly from the manufacturers. We tested the MicW i436 and Dayton Audio IMM6 in our study <https://asa.scitation.org/doi/full/10.1121/1.4964639>, both performed well, though only MicW now offers external microphones that can directly connect to the lightning port (MicW i437L).

We get the question about the Android version a lot. We addressed it on the NIOSH SLM blog above and we go through the challenges we faced during our studies on Android apps, and more specifically with our app, under the section "Why is the app only available on iOS devices?" here: <https://www.cdc.gov/niosh/topics/noise/app.html> – It basically has to do with the fragmented Android marketplace and the lack of standardized audio tools and hardware used by the many different manufacturers. For us to release an Android version, we will have to guarantee that the Android version will perform uniformly (and within our accuracy criterion of  $\pm 2$  dBA) across ALL Android devices and models, and there are hundreds (if not thousands) of different Android devices out there from 400 different manufacturers. Another challenge is that unlike Apple devices that often run the latest OS (~86% of Apple devices run the latest iOS), only 11.5% of Android devices run the latest Android OS so even if we develop and guarantee that an Android version of the app will perform according to our criteria on an Android device, the likelihood that the a user is running the same OS is small and that can create all sorts of unintended consequences. These are really the main reasons that we couldn't identify a single Android app that met our criteria in our initial studies on smartphone apps, and why the marketplace for Android sound measurement apps is so underdeveloped compared to the iOS marketplace. All these issues may be resolved with the use of an external microphone that can be calibrated with an acoustical calibrator.

awesome article and helpful

Reply

Many cities and jet combat training Military Operations Areas are experiencing 115+ dBA low altitude overflights, with multiple passes over the same location, by F-16s and the new F-35 (117 dBA at 500 feet). Lately, the Air Force and Air National Guard seem to have dropped Lmax data by aircraft, by altitude in their Environmental Assessments and Environmental Impact Statements and replaced it with Sound Exposure Level (SEL). I am unable to find regulations or recommended limits based on SEL. Are there any?

The EAs and EISs rely on DNL which does not account for cumulative exposure times of multiple individual overflights per 24 hours at well over 100 dBA Lmax.

In addition, Air Force Instruction 48-127, signed by the Secretary of the Air Force, expressly forbids unprotected hearing exposure above 115 dBA for Air Force personnel, on or off base. Yet the population enduring the noise levels around the air bases and the MOAs have no protection and are clearly having their hearing degraded as well experiencing Speech Interference Levels (SIL) above 103 dBA, where communication is impossible even by shouting to someone 3 feet away from you, multiple times per 24 hours.

Does the CDC have a position on this?

Does the medical community have a position on this?

Reply

Thank you for your questions. Please see responses below.

Are there any regulations based on SEL?

We are not aware of any "regulations" using SEL. We do recognize the limitations of the continued use of dBA-based metrics in the literature and regulations, and we are trying to move the science towards more appropriate metrics especially when dealing with non-gaussian type of noise (e.g., impulse noise).

Does the CDC have a position on this?

NIOSH, as part of the CDC, has an occupational noise criteria document, but CDC as a whole does not have criteria for community noise exposure. These issues were handled by the EPA's Office of Noise Abatement and Control but that office has been closed since the early 1980's. The National Center for Environmental Health at CDC is starting a new

Does the medical community have a position on this?

Please consult the American Medical Association (AMA) with your question. We are not aware of any guidance from the AMA or the Association of Occupational and Environmental Clinics.

Please reply to Mr. Stuehmer's questions above. We live in Michigan's thumb and the military is proposing making this area a permanent training area for low altitude jet training putting all of our health and hearing in jeopardy.

Reply

As being a USAF flightline worker back in the late 60's early 70's I now have hearing loss. Being turned down by VA stating the hearing loss does not happen years later. If I had a problem it would have developed at the time I was on the flight line not years later. I'm now appealing the case, but was told not to hold my breath on it

Reply

Thank you for your comment – we sincerely appreciate and understand the difficulties you've encountered. Research on noise-induced hearing loss is ongoing, but currently we have no evidence that noise will cause continued changes to an individual's hearing test results after the noise exposure ends. In addition to occupational noise exposure, many other factors (i.e., genetics, age, ototoxic agents, etc.) can contribute to hearing loss.

Hopefully your comment will raise awareness among others, including future USAF airmen, about the importance of hearing loss prevention.

Dear NIOSH colleagues: Thank you again for this bulletin board! Do you know if the EPA, various Acoustic societies, AIHA, ANSI, ASTM, or other organizations have best practice guidance policies for outdoor noise sources that municipalities could refer to? I will of course check with the EPA but you may be aware of consensus bodies that design recommended standards. I'm trying to study what metropolitan areas are doing in 2020 regarding noise and addressing thresholds for compliance.

Reply

The EPA's Office of Noise Abatement and Control has been unfunded since 1981. Here's the exact language from their website:

"In the 1970s, EPA coordinated all federal noise control activities through its Office of Noise Abatement and Control. EPA phased out the office's funding in 1982 as part of a shift in federal noise control policy to transfer the primary responsibility of regulating noise to state and local governments. However, the Noise Control Act of 1972 and the Quiet Communities Act of 1978 were never rescinded by Congress and remain in effect today, although they are essentially unfunded."

<https://www.epa.gov/history/epa-history-noise-and-noise-control-act>

The responsibility for outdoor noise abatement and control today has fallen to local governments. The World Health Organization published some guidelines in the late 1990's regarding community noise that include information on outdoor noise: <https://apps.who.int/iris/handle/10665/66217>.

Also on the EPA's website, they refer citizens to the Noise Pollution Clearinghouse <https://www.epa.gov/clean-air-act-overview/clean-air-act-title-iv-noise-pollution>. The Noise Pollution Clearinghouse ([www.nonoise.org](http://www.nonoise.org)) has the most updated information regarding laws and ordinances across the United States.

I spent 12 months (6 months in 1967 and 6 months in 1971) on an east coast lighthouse while serving in the Coast Guard. What would be the decibels of the fog horns and could it cause hearing loss.

Reply

NIOSH has not conducted any assessments of sound levels generated by fog horns. A report by the Navy measured sound level from foghorns at 130 decibels, A-weighted (dBA) at the location of the foghorn. The CDC's National Center for Environmental Health published the following infographic showing "air horns" can reach 129 dB, a level that can cause immediate hearing damage. However, risk to the individual depends on where the exposed person is in relation to the foghorn (someone standing in the direct path of the horn several feet away may be at more risk than someone standing behind or in an enclosed space 30 feet away). It also depends on how often a person is exposed, once a day, several times a day, how long the foghorn was on when it's activated. This is also assuming the person is not wearing hearing protection at the time the foghorn is activated.

Dear experts team; I am looking into noise from multiple gas powered leafblowers being operated at the same time in close proximity and have not found an authoritative source for how to calculate how the noise level increases as more and more leafblowers are operated. As the number of operating leafblowers doubles (from 1 to 2 or 2 to 4 several websites suggests

Is that right? Is there empirical evidence in support of such a generalization?

Is there an authoritative source for such an estimate?

Randall

Reply

Hi Randall, thanks for the great question. Manufacturers labels are also not always clear, and some "rules of thumb" may be confusing to some, so we thought we'd take the opportunity to provide a detailed explanation, and hopefully it addresses your question(s) and many other similar questions that we often get.

Decibels (dB) are useful units for talking about sound levels, but are not the most intuitive when it comes to doing math with them because of their logarithmic nature. Most tool manufacturers are likely to report noise generated from their equipment using the term Sound Power Level (dB referencing Watts, sometimes written as dB SWL or Lw).

The specific empirical evidence you're searching is governed by the mathematical addition of decibel quantities as described in this common acoustical equation:

$$L_{total} (dB) = 10 \log_{10} (10^{L_1/10} + 10^{L_2/10} + 10^{L_3/10} + \dots + 10^{L_n/10})$$

If you have two leaf blowers that the manufacturer lists as having  $L_w = 85$  dB, running both of them close together would raise the sound power level output by around 3 dB, here's how the math works:

$$L_{total} (dB) = 10 \log_{10} (10^{85/10} + 10^{85/10}) \text{ or } 10 \log_{10} (10^{8.5} + 10^{8.5}) = 88 \text{ dB (3 dB higher than a single blower).}$$

Three blowers would generate 89.8 dB; four blowers ~ 91 dB, eight blowers ~ 94 dB and so on...

This decibel calculator (<https://www.noisemeters.com/apps/db-calculator/>) can help you test this concept for adding sound power levels.

Now, if someone standing several feet away and is interested in what his or her ears are exposed to so they can protect their hearing, that quantity is termed Sound Pressure Level (dB referencing Pascals, sometimes written as dB SPL or Lp) and is usually measured using sound level meters or noise dosimeters. The distinction between sound power levels (what the tool generates) and sound pressure levels (what our ears hear) is critical to understanding the effect of a noise source on hearing since this is what's we're more concerned about here at NIOSH – protecting workers against the effects of noise on their hearing health. In the above example, if someone measures the sound level from one leaf blower, say from 10 feet away, and gets a readout of 75 dB SPL on their sound level meter, if you were to add another (exact leaf blower), then the sound level meter is likely to read around 6 dB higher or 81 dB SPL. The same equation above applies but instead of using  $10 \log_{10}$  we use  $20 \log_{10}$  to calculate sound pressure levels. This has been a great source of confusion for many over the years. For more information about how sound pressure level and sound power level are different, see <http://www.sengpielaudio.com/calculator-soundpower.htm>.

For those interested in protecting their hearing from leaf blowers and other landscaping tools, NIOSH recommends: 1) Using quieter equipment, 2) increasing the distance others are positioned from the leaf blowers and 3) Using appropriate hearing protection. We actually have a specific science blog for landscapers that some may find useful: <https://blogs.cdc.gov/niosh-science-blog/2018/08/01/landscape2/>.

Do you have a specific science blog for handgun noise with and without sound suppressors?

Reply

We have a blog on preventing hearing loss at firing ranges

Take Aim at Protecting Yourself <https://blogs.cdc.gov/niosh-science-blog/2009/05/18/firingrange/>

More specific information on firearm noise can be found on our firing range topic page.

<https://www.cdc.gov/niosh/topics/ranges/default.html>

I am working on my PhD thesis on this topic. I learned a lot in your article.

Thank you for your knowledge.

Reply

thanks for this link i learned things that i ignored

I recently attended an historic motorsport event in the UK where F1 cars from the 80s and 90s raced. I was close to the start grid and the noise was so extreme I experienced pain in my right ear. I covered my ears at this point. 10 days later I developed tinnitus, which my GP informs me will not heal. Do you have any research on hearing damage caused at motorsport events? I am putting a web site together to highlight the dangers. There was no warning of any kind on the event literature. In the UK there is no legal requirement to even do a risk assessment of noise induced hearing damage for entertainment events.

Reply

Thank you for your comment. Testimonials like yours can contribute to an understanding of the risks. In 2010, NIOSH researchers published "Occupational and recreational noise exposures at stock car racing circuits: An exploratory survey of three professional race tracks" in the Noise Control Engineering Journal

<https://www.ingentaconnect.com/content/ince/ncej/2010/00000058/00000001/art00007>

See also the NIOSH Health Hazard Evaluation on noise in racing, <https://www.cdc.gov/niosh/hhe/reports/pdfs/2000-0110-2849.pdf>

We also posted a related blog on noise exposure to workers.  
High Speeds, Higher Decibels

I want to ask the basic question, that where is the cornerstone ,85dB 8hours per day ,from? could you recommend some published articles about that?

Thanks a ton!

Reply

Thanks for asking about the basis of the NIOSH Recommended Exposure Limit of 85 dBA averaged over an 8-hour day (85 dBA TWA). NIOSH made this recommendation on the basis of data collected in its Occupational Noise and Hearing Survey, conducted from 1968-1972. Those data aligned well with data previously collected in other studies. A full discussion of the rationale for setting the 85 dBA TWA limit, along with references to earlier studies which were considered, is provided in the original NIOSH criteria document for noise, available here:

<https://www.cdc.gov/niosh/docs/73-11001/>

NIOSH re-analyzed the Occupational Noise and Hearing Survey data using more modern statistical techniques when the noise criteria document was revised in 1998. An explanation of that analysis and the rationale for retaining the 85 dBA limit (and the change to using a 3 dB exchange rate) can be found in the 1998 criteria document, available here:

<https://www.cdc.gov/niosh/docs/98-126/>

Can sustained high frequency tonal noise cause hearing damage at "low" or "safe" decibel levels? An example would be an electric motor or inverter.

Reply

Thank you for your question. More details on the exposure would be needed for anyone to give you a definite answer, such as: how low the exposure really is and how long and how often a person is exposed to it. Also, individuals differ in their susceptibility to noise. It is possible for one individual to have a negative effect from an exposure that would be considered safe for most people, but today we cannot identify with certainty who are the more susceptible individuals. This recent paper expands on the issues on risk and different exposure scenarios and limits:

[https://journals.lww.com/thehearingjournal/Fulltext/2022/10000/Why\\_Are\\_Noise\\_Exposure\\_Guidelines\\_So\\_Complex\\_2.aspx](https://journals.lww.com/thehearingjournal/Fulltext/2022/10000/Why_Are_Noise_Exposure_Guidelines_So_Complex_2.aspx)

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