

Draft Environmental Assessment

Hill Country Shooting Sports Center, Inc. Kerrville, Texas

CHAPTER 1: PROJECT SUMMARY, PURPOSE AND NEED

1.1 Project Summary

Location: County: Kerr City/Town/Village: Kerrville, Texas,
60 Miles west of San Antonio on Interstate 10.

Hill Country Shooting Sports Center, Inc. (HCSSC) seeks \$300,000 from Texas Parks and Wildlife Department (TPWD) to partially fund the development of a 50-acre Olympic shooting range in Kerr County, Texas. (Figure 1: Location Map). The funds would be provided in the form of a federal grant to TPWD through the Wildlife Restoration Act (WRA), also known as the Pittman-Robertson Act of 1937 (16 U.S.C.669). The WRA grant program is administered by the U.S. Fish and Wildlife Service (USFWS) and the purpose of the program is, in part, to provide for the education of hunters and development of shooting ranges. Grant funds will be matched with \$100,000 (three to one) from a non-federal source. Non-federal contributions for the development would be provided by a combination of private funding, economic development sales tax funds, and in-kind property and improvements. The total cost for the expansion of this facility is estimated at \$2.5 - \$3 million. The WRA grant comprises about 10 to 12 per cent of the total funding of the shooting range.

Presently HCSSC is a 20-acre target-shooting venue. The owners of HCSSC propose to expand this facility on 30 more acres of the 140-acre property. The approximately 30 acres that will be used for expansion are a former limestone and building stone quarry located 3.5 miles east of Kerrville on FM 1341.

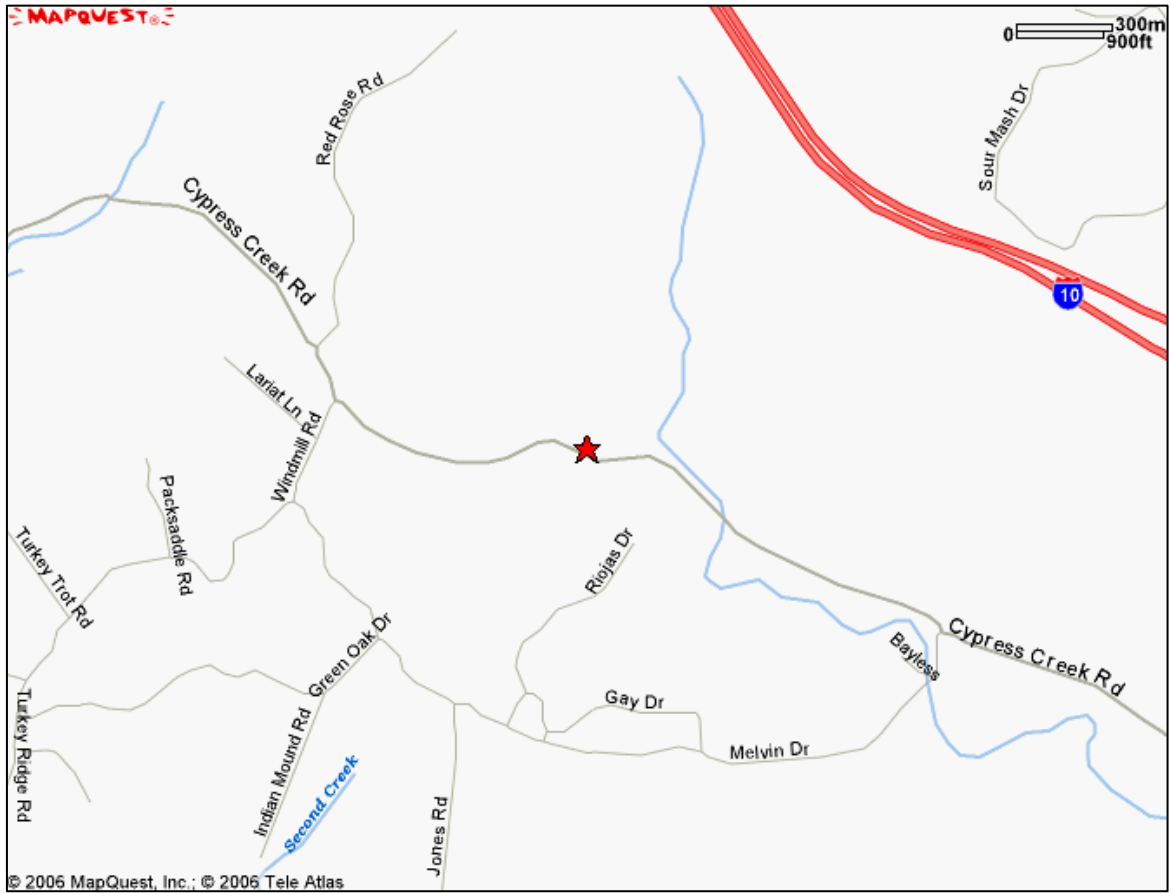
The property owners, Rose M. Burch, Margaret D. Mills and HCSSC, have entered into a land use agreement to make the property available to the public as a sport shooting range for the next 50 years. Additionally, a contract has been signed between HCSSC and USA Shooting (USAS), the national governing body for Olympic shooting sports in the United States, for HCSSC to host many of the Olympic shooting events in the United States for the next seven years.

The HCSSC seeks to complete a shooting sports facility for the public to practice shooting sports in a safe, organized environment. Currently the range has a rifle and pistol range, five skeet fields, two American trap fields, five international trap fields, a practice sporting clays field, a clubhouse and several parking areas (Figure 2: Site Map).

Figure 1: Location Map



Figure 2: Site Map



1.2 Purpose

The purposes of the project are to; 1) develop a safe and accessible public shooting range facility from which to enjoy shooting sports, 2) promote safe, responsible, knowledgeable and involved action by shooters and hunters, and 3) provide accessible hunter education opportunities to the public in Kerr County.

1.3 Need

Over a million hunters are licensed in Texas each year.. More than 30,000 students are trained each year in the mandatory hunter education program. Additionally, shooting sports represent some of America's fastest growing competitive activities. These numbers point to the need to develop safe, accessible sites from which to enjoy shooting sports and to educate hunters. In Texas, safe shooting facilities are too few to support existing public demand for recreational shooting sports. Texas is the second fastest growing state in the country. As the increasing population pushes housing and commercial development outward from city centers, this development encroaches on older outdoor shooting ranges, driving the need for additional indoor and rural shooting ranges.

Education need to be provided to hunters in order to; 1) teach basic hunter knowledge, skills and attitudes, 2) reinforce messages received elsewhere about shooter and hunter responsibilities, 3) build a curriculum structure which promotes positive, lifetime learning processes, and 4) provide information and opportunities to enhance the public benefits of recreational hunting and shooting sports.

This project will address the following needs in Texas for;

- additional shooting ranges,
- improved gun safety training,
- improved hours and days of access to shooting facilities by the public,
- increased numbers and locations of shooting facilities that are accessible for users with disabilities, and
- additional hunter safety education opportunities/facilities

In addition, this project will address the national need for an advanced level Olympic-quality shooting range.

1.4 Background

The Hunter Education Program of TPWD promotes the development of new and upgraded shooting ranges to meet shooter demand and to expand hunter skills, safety and education opportunities. To this end, TPWD is partnering with user groups, local governments and others to expand funding opportunities. The HCSSC is also interested in increasing shooting opportunities to enhance hunter skills and safety. The expanded HCSSC facility would address the need for additional public shooting ranges for training and practice. In addition, this facility would provide an Olympic practice facility and

event venue. In July 2005, HCSSC applied for WRA funding through the Texas Target Range Program. The TPWD Commission approved the application on August 25, 2005.

Following the Commission's approval, TPWD approached the USFWS to include the expansion under an existing WRA grant. In order to be approved for federal funding, an applicant, in this case TPWD, must submit the proposed project to USFWS with documentation of environmental compliance and other assurances. One part of the grant process entails compliance with the National Environmental Policy Act of 1969 (NEPA), which requires federal agencies to examine the environmental impacts of their actions, incorporate environmental information, and include public participation in the project planning. The USFWS decided that an Environmental Assessment (EA) was needed to meet the requirements of NEPA because of initial concerns that species listed as threatened or endangered might be adversely affected and because of the possibility of local public controversy.

CHAPTER 2: ALTERNATIVES

2.1 Alternative A - Proposed Action

This alternative would provide federal WRA funding to TPWD in the amount of \$300,000 to be used, along with the required local match in the amount of \$100,000, to expand the HCSSC facility. The expansion plans include an Olympic air hall housing an air rifle /air pistol range, a 50-meter rifle/pistol range, a 25-meter pistol range, and associated parking lots. Detailed plans have been developed based on National Rifle Association shooting range design standards, International Shooting Sports Federation (ISSF) design standards, EPA's Best Management Plans for Outdoor Ranges, and National Shooting Sports Foundation range design standards. Engineered designs will be used for all buildings constructed under this project. The facility will comply with the standards of the American Disabilities Act (ADA) for public access.

The HCSSC developed a Best Management Plan (BMP) that is being used for the management of the expansion and that minimizes possible impacts to the environment. The BMP incorporates recommendations found in the Environmental Protection Agency guidelines for shooting ranges, the National Rifle Association Range Manual, National Shooting Sports Foundation Guidelines, ISSF Rule Book, and a study entitled, "Lead Study Clear Creek County Sportsman Club."

The first step in the federally funded expansion will be the grading of a previously cleared site and constructing an Olympic air hall. Then an 80 firing point Olympic rifle range and a 40-target Olympic Pistol range will be built. The rifle and pistol ranges will have 20-foot high back berms capped with on-site caliche topsoil. The addition of 10-foot side safety walls will complete the projectile containment system. Each Olympic shooting lane will be equipped with electronic scoring targets required by the ISSF.

Olympic Air Hall: Design plans for the Olympic Air Hall call for a 140 foot by 225 foot air rifle and air pistol venue. This structure will be a pre-engineered metal

building colored to match existing facilities and will have 80 firing points. Soft materials, including wood trim and gypsum wallboard, will be used to finish the inside of the building to lessen the possibility of ricochets. While this venue will be designed for 10-meter Olympic air gun shooting, accommodation for other air gun disciplines (e.g., 4-H, Civilian Marksmanship Program and National Rifle Association air rifle and air pistol events) will be incorporated as well. The building is also designed to accommodate other, non-shooting events such as hunter education classes and community gatherings.

Rifle/Pistol Range: This venue consists of a 70 foot by 360 foot pre-engineered metal building, a back berm with side berms, 10 foot side safety walls to divide the range into three firing areas, 80 international electronic firing points, granite ground covering on the range, and appropriate projectile catchments.

Pistol Range: Design plans call for a 25-meter pistol range. This consists of a 270 foot by 50 foot pre-engineered metal building, a back berm with side berms, 10 foot side safety walls to divide the range into 8 firing areas, 40 international electronic targets, granite ground covering on the range, and appropriate projectile catchments.

Other: Several paved parking lots with connecting handicapped accessible walkways will provide access to the shooting lanes. One or more directional road sign(s) for the shooting range will be posted within the HCSSC and at adjoining roads. The range will have an 8-foot high deer resistant fence surrounding the 140-acre area. Best management practices will be followed to control construction site erosion, storm water runoff, and lead contamination.

Operation and maintenance (O&M): O&M activities are not funded under the WRA grant, but will be provided by the professional management team from HCSSC. The O&M responsibilities include litter control, berm and shooting lane maintenance, periodic spent (lead) bullets and shot recovery and recycling, shooting bench and target support replacement, and other activities needed to keep the range in good condition.

2.2 Alternative B - No Action

This alternative entails no expansion of the range using WRA funds. The anticipated result of this alternative is that the project would go forward, as described in Alternative A, but on a slower schedule. Funding sources in this instance would come from state and local government, investors, and private individual.

2.3 Alternative C – Expansion with reduced Federal funding.

This alternative would provide WRA grant funds at a lower amount than requested (i.e., less than \$300,000) supplemented with non-federal, local and private funds. The result would likely be that the project would go forward as described in Alternative A but on a slower schedule.

2.4 Summary of Alternatives Action Table

Actions	Alternative A (Proposed action)	Alternative B (No action)	Alternative C (Reduced Federal funding)
Private land ownership	Yes	Yes	Yes
Public accessibility	Yes	Yes	Yes
Site development	Yes	Yes	Yes
Disturbance	30 acres	30 acres	30 acres
Utilities present	Yes	Yes	Yes
Habitat	Disturbed upland quarry	Disturbed upland quarry	Disturbed upland quarry
Risk of recreation use conflict	Low	Low	Low

CHAPTER 3 AFFECTED ENVIRONMENT

3.1 HCSSC in Kerr County

3.1.1 Physical Characteristics

Construction activities at the proposed site in Kerr County are mostly confined within a previously disturbed area formerly operated as a limestone quarry (Figure 3: aerial view of proposed site for WRA funded facilities). A narrow strip of oak and scrub trees are located at the outer top perimeter of the quarry faces. Wooded islands remain in the immediate area of the ranges. The nearest stream, Cypress Creek, is located about one mile southeast of the site. Surface water mainly seeps into porous rocky soils. During heavy run-off periods, water exits the property via two main drainages to the south.

3.1.2 Soils and Vegetation

The 1986 “Soil Survey of Kerr County, Texas” published by the United States Department of Agriculture (USDA 1966) defines the proposed range site soil type as Eckrant-Kerrville-Rock Outcrop. The soil is described as very shallow to moderately deep, gently undulating to hilly and steep, clayey and loamy, cobbled and gravelly soils and rock outcrop on uplands. Based on a review of nearest private well construction and maintenance logs, groundwater depth is typically found at the surface soil/bedrock interface about 180-400 feet below ground at the range site.

FIGURES 3-6: Aerial view of facility development





3.1.3 Wildlife Resources

Threatened and Endangered Species

Three endangered species, the black-capped vireo (*Vireo atricapilla*), golden-cheeked warbler (*Dendroica chrysoparia*), and the Tobusch fishhook cactus (*Ancistrocactus tobuschii*), are found in Kerr County. In addition the threatened bald eagle (*Haliaeetus leucocephalus*) and the candidate, Cagle's map turtle (*Graptemys caglei*), also reside in Kerr County. A retired TPWD wildlife biologist with 30 years of experience in the local area surveyed the property on February 8, 2006 and February 21, 2006, and found no habitat to support the black-capped vireo or the golden-cheeked warbler, either for nesting or foraging. (Armstrong 2006) The nearest sighting record occurred in 2001, when a singing male black-capped Vireo was heard approximately 3 miles east of the range's boundary.

Based on soil type and previous disturbance levels, there is no habitat on the range suitable for the fishhook cactus. Based on terrain, there is no eagle nesting habitat on the HCSSC. Migrating eagles might infrequently visit the general area. No sighting of eagles has been reported. The Cagle's map turtle is found only along the Guadalupe River and there is no suitable habitat on the gun range to support Cagle map turtles.

Game and Other Wildlife

Kerr County is home to diverse wildlife communities of at least 150 game and nongame species such as bobcats, rabbits, and turtles. A species list is included in Table 1.

However, wildlife density and species diversity are currently affected by surrounding land use and the fragmentation and development of large tracts of farms and ranches.

3.1.4 Land Use

The winter months bring numerous hunters to the Kerrville area. The Guadalupe River is a common recreation and vacation spot for many tourists. Nearly half a million dollars worth of hunting and fishing licenses are sold in Kerr County each year. The 6,493-acre Kerr Wildlife Management Area, operated by TPWD as a research facility, is located on the headwaters of the North Fork of the Guadalupe River and is visited by a large number of hunters and visitors every year.

While the proposed site is in the Kerrville extra-territorial jurisdiction, it is well outside the commercially developed areas of Kerrville. The site is bounded by Interstate 10 to the north and FM 1341 to the south. Surrounding land uses mainly involve raising livestock or practicing other forms of agriculture. The closest homes are 1.5 miles north of the site and 0.75 miles north of Interstate 10. The site currently is being used as a shooting range (approximately 20 acres) and the quarry is no longer in active operation. The remaining undeveloped 90 acres serve as a buffer to the existing and planned shooting range developments.

Table I: Flora and Fauna of Kerr County

Birds

American Avocet, *Recurvirostra Americana*
American Coot, *Fulica atra*
American Kestrel, *Falco sparverius*
American Robin, *Turdus migratorius*
American Wigeon, *Anas Americana*
Barn Swallow, *Hirundo rustica*
Belted Kingfisher, *Ceryle alcyon*
Bewick's Wren, *Thryomanes bewickii*
Black Vulture, *Coragyps atratus*
Black-and-white Warbler, *Mniotilta varia*
Black-bellied Whistling-Ducks, *Dendrocygna autumnalis*
Black-capped Vireo, *Vireo atricapillus*
Black-crested Titmouse, *Baeolophus atricristatus sennetti*
Blue Jay, *Cyanocitta cristata*
Blue-gray Gnatcatcher, *Poliophtila caerulea*
Blue-headed Vireo, *Vireo solitarius*
Bobwhite Quail, *Colinus virginianus*
Canada Goose, *Branta Canadensis*
Canyon Towhee, *Pipilo fuscus*
Carolina Wren, *Thryothorus carolinensis*
Cattle Egret, *Bubulcus ibis*
Cave Swallow, *Petrochelidon fulva*
Cedar Waxwing, *Bombycilla cedrorum*
Chimney Swift, *Chaetura pelagica*
Common Raven, *Corvus corax*
Cooper's Hawk, *Accipiter cooperii*
Double-crested Cormorant, *Phalacrocorax auritus*
Eastern Bluebird, *Sialia sialis*
Eastern Bluebird, *Sialia sialis*
Eastern Kingbird, *Tyrannus tyrannus*
Eastern Phoebe, *Sayornis phoebe*
Eastern Screech-Owl, *Otus asio hasbroucki*
Eastern Wood-Pewee, *Contopus virens*
Fuertes' Red-tailed Hawk, *Buteo jamaicensis fuertesi*
Golden-cheeked Warbler, *Dendroica chrysoparia*
Golden-crowned Kinglet, *Regulus regulus*
Golden-fronted Woodpecker, *Melanerpes aurifrons*
Great Horned Owl, *Bubo virginianus*
Greater Roadrunner, *Geococcyx californianus*
Great-tailed Grackle, *Quiscalus mexicanus*
Green Heron, *Butorides virescens*
Green Kingfisher, *Chloroceryle Americana*
House Finch, *Carpodacus mexicanus*
Inca Dove, *Columbina inca*
Indigo Bunting, *Passerina cyanea*
Killdeer, *Charadrius vociferous*
Ladder-backed Woodpecker *Picoides scalaris*
Lesser Goldfinch, *Carduelis psaltria*
Little, Blue Heron, *Egretta caerulea*
Long-billed Thrasher, *Toxostoma longirostre*

Merlin, *Falco columbarius*
Mississippi Kite, *Ictinia mississippiensis*
Mountain Bluebird, *Sialia currucoides*
Mourning Dove, *Zenaida macroura*
Nashville Warbler, *Vermivora ruficapilla*
Northern (Red-shafted) Flicker, *Colaptes auratus*
Northern Cardinal, *Cardinalis cardinalis*
Northern Mockingbird, *Mimus polyglottos*
Orange-crowned Warbler, *Vermivora celata*
Osprey, *Pandion haliaeetus*
Painted Bunting, *Passerina ciris*
Pied-billed Grebe, *Podilymbus podiceps*
Pine Siskin, *Carduelis pinus*
Purple Finch, *Carpodacus purpurea*
Reddish Egret, *Egretta rufescens*
Red-eyed Vireo, *Vireo olivaceus*
Red-shouldered Hawk, *Buteo lineatus*
Red-winged Blackbird, *Agelaius phoeniceus*
Ringed Kingfisher, *Ceryle torquata*
Rufous Hummingbird, *Selasphorus rufus*
Scissor-tailed Flycatcher, *Tyrannus forficatus*
Sharp-shinned Hawk, *Accipiter striatus*
Snowy Egret, *Egretta thula*
Spotted Sandpiper, *Actitis macularia*
Summer Tanager, *Piranga rubra*
Townsend's Solitaire, *Myadestes townsendi*
Turkey Vulture, *Cathartes aura*
Varied Bunting, *Passerina versicolor*
Western Bluebird, *Sialia mexicana*
Western Scrub-Jay, *Aphelocoma coerulescens*
White-winged Dove, *Zenaida asiatica*
Wild Turkey, *Meleagris gallopavo*
Wilson's Warbler, *Wilsonia pusilla*
Yellow Warbler, *Dendroica petechia*
Yellow-billed Cuckoo, *Coccyzus americanus*
Yellow-throated Warbler, *Dendroica dominica*
Zone-tailed Hawk, *Buteo albonotatus*

Mammals

Black-tailed Jackrabbit, *Lepus californicus*
Bobcat, *Felis rufus*
Coyote, *Canis latrans*,
Desert Cottontail, *Sylvilagus auduboni*
Desert Shrew, *Notiosorex crawfor*
Eastern Cottontail, *Sylvilagus floridanus*
Edwards Plateau Fox Squirrel, *Sciurus niger limitus*
Gray Fox, *Urocyon cinereoargenteus*
Hog-nosed Skunk, *Conepatus mesoleucus*
Mexican Free-tailed Bat, *Tadarida brasiliensis (mexicanus)*
Mexican Ground Squirrel, *Ammospermophilus mexicanus*

Nine-banded Armadillo, *Dasyopus novemcinctus*
Pecari, *Tayassu tajacu*
Raccoon, *Procyon lotor*
Ringtail, *Bassariscus astutus*
Rock Squirrel, *Ammospermophilus variegates*
Striped Skunk, *Mephitis mephitis*
Swamp Rabbit, *Sylvilagus aquaticus*
Western Spotted Skunk, *Spilogale gracilis*
White-tailed Deer, *Odocoileus virginianus cf. texanus*

Reptiles and Amphibians

Barred Tiger Salamander, *Ambystoma tigrinum mavortium*
Blanchard's Cricket Frog, *Acris crepitans blanchardi*
Blotched Water Snake, *Nerodea erythrogaster transversa*
Broad banded copperhead, *Agkistrodon contortrix laticinctus*
Bullsnake, *Pituophis melanoleucus sayi*
Cagle's Map Turtle *Graptemys caglei*
Common Musk Turtle, *Sternotherus odoratus*
Common Snapping Turtle, *Chelydra serpentina serpentine*
Couch's spadefoot, *Scaphiopus couchii*
Crevice Spiny Lizard, *Sceloporus poinsettia*
Diamond-backed Water Snake, *Nerodea rhombifera rhombifera*
Eastern Green Toad, *Bufo debilis debilis*
Eastern Hognose Snake, *Heterodon platyrhinos*
Eastern tree Lizard, *Urosaurus ornatus*
Eastern Yellowbelly racer, *Coluber constrictor flaviventris*
Flathead snake, *Tantilla gracilis*
Great Plains Rat Snake, *Elaphe guttata emoryi*
Ground skink, *Scincella lateralis*
Ground Snake, *Senora semiannulata*
Guadalupe Softshell Turtle, *Apalone spiniferus guadalupensis*
Gulf Coast Toad, *Bufo valliceps*
Mexican Milk Snake, *Lampropeltis triangulum annulata*
Narrowmouth Toad, *Gastrophryne olivacea*
Ornate Box Turtle, *Terrapene ornate*
Plains blind snake, *Leptotyphlops dulcis dulcis*
Prairie Ringneck Snake, *Diadophis arnyi*
Red-eared Slider, *Trachemys scripta elegans*
Rio Grande Leopard Frog, *Rana berlandieri*
Rough Earth Snake, *Virginia striatula*
Rough Green Snake, *Opheodrys aestivus*
Six-lined Racerunner, *Aspidoscelis sexlineatus sexlineatus*
Smallmouth Salamander, *Ambystoma texanum*
Smooth Softshell, *Apalone muticus*
Southern Prairie Lizard, *Sceloporus consobrinus*

Spotted Chorus Frog, *Pseudacris clarkia*
Stinkpot, *Sternotherus odoratus*
Texas Alligator Lizard, *Gerrhonotus infernalis*
Texas Brown Snake, *Storeria dekayi texana*
Texas Cooter, *Pseudemys texana*
Texas coral Snake, *Micrurus fulvius tenere*
Texas earless lizard, *Cophosaurus texanus*
Texas Horned Lizard, *Phrynosoma cornutum*
Texas Lined Snake, *Tropidoclonion lineatum texanum*
Texas Patchnose Snake, *Salvadora grahamiae lineate*
Texas Rat Snake, *Elaphe obsoleta lindheimeri*
Texas Slider, *Pseudemys texana*
Texas Spiny Lizard, *Sceloporus olivaceus*
Texas Spotted Whiptail, *Aspidoscelis gularis*.
Texas Toad, *Bufo speciosus*
Timber Rattlesnake, *Crotalus horridus*
Western Coachwhip, *Masticophis flagellum testaceus*
Western Cottonmouth, *Agkistrodon piscivorus leucostoma*
Western Diamondback, *Crotalus atrox*
Woodhouse's Toad, *Bufo woddhouseii woodhouseii*
Yellow mud turtle, *Kinosternon flavescens*

3.1.5 Cultural Resources

Kerr County has numerous archeological sites some with artifacts that date back 6,000 years. The county has numerous historical cemeteries, historical sites, and buildings. No cultural or historic properties have been identified on the 140-acre tract where the HCSSC is located.

3.1.6 Local Socio-economic Conditions

Kerr County is located 50 miles northwest of San Antonio, Texas, in the Edwards Plateau region. Kerr County encompasses 1,106 square miles in the heart of the Texas Hill Country. Kerrville, the county seat, and Ingram are the only incorporated communities. According to the U.S. Census Bureau, the county population grew from 36,304 in 1990 to an estimated 46,496 in 2005.

The county population density is 39.5 persons per square mile, compared with a statewide average of 79.6 per square mile. In 2004, the population was characterized as predominately White and Hispanic/Latino (96 %). Of county residents over age 25, 81.2% graduated from high school and 23.3% have a bachelors degree or higher. In 2000, 73.3 % of the population owned their own homes. In 2003, the median Kerr County household income was \$35,871 compared to a statewide median of \$39,967.

3.1.7 Wetlands

There are no wetlands present at the proposed site.

3.1.8 Water Quality

The HCSSC is located in the Cypress Creek Watershed. The Upper Guadalupe River Authority (UGRA) took water samples to test for lead and arsenic levels at drainages leaving the range and at the spring on the site. All levels were reported for sites tested at the HCSSC were below any national or local standard or level of concern for sites tested at the HCSSC.

3.1.9 Air Quality

Kerr County is currently a full attainment area for all air quality criteria pollutants of the Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ). Based on data from the nearest monitoring station, ozone levels are currently below the 8-hour ozone standard (EPA Greenbook 2006).

3.1.10 Human Health and Safety

Health

The Texas Commission on Environmental Quality (TCEQ) took soil samples in connection with the development at the HCSSC. Testing included three different points, including two samples off site to determine if the levels of barium, lead, chromium, selenium, arsenic, cadmium mercury and silver were above the Texas State Background

Levels (TSBL) and to determine if they had migrated off-site. Arsenic, cadmium, mercury and silver were not detected in any of the samples. The concentrations levels of barium, chromium, and lead detected in each sample were below the TSBL. The selenium samples were elevated but selenium is not known to be associated with small arms ammunition. The investigator noted that elevated selenium is associated with certain agriculture practices. Also noted was that the background level in that particular area might be naturally elevated (Marten 2005).

Safety

An 8-foot fence will surround the facility and vehicle and pedestrian access will be controlled through a single entrance to the property. The 50-acre range development will be buffered by 90 acres of undeveloped land. Public access to shot fall zones is limited to supervised access only. Twenty foot high berms will capture projectiles.

3.1.11 Noise

On August 28, 2005, Live Oak Environmental Consultants conducted a noise survey (Marten 2005) to determine the noise level at locations on and around HCSSC resulting from activities at the Shooting Sports Center. Four dosimeters were placed around the property running continuously for 7 to 9 hours. The times of interest were between 11:45 am and 2:30 pm when most of the sporting clay shooting occurred. The equivalent continuous sound levels (LEQ) were as follows:

	Location 1	Location 2	Location 3	Location 4
Low LEQ	69 dB	69 dB	69.9 dB	69.9 dB
High LEQ	93.4 dB	89.7 dB	118.5 dB	116.8 dB
Average LEQ	69.9 dB	69.9 dB	81.7 dB	75.8 dB
% time > 69.9 dB	0.73	0.69	77.44	51.49

Locations 3 and 4 were close to the firearm discharge locations. At location 1, the investigator notes that the 93.4 dB reading was recorded at the end of the day and was likely attributable to the noise of the vehicle that was retrieving the dosimeter.

Location 1 was at the property boundary adjacent to and south of I-10. As reference points, a clothes dryer is approximately 60 dB and a subdivision at 3 am is approximately 52 dB. The Texas Department of Transportation has set noise abatement criteria for developed lands, properties, or activities, such as a rifle range, at 72 dB. (TDOT 1996).

3.1.12 Aesthetics and Visual Resources

The proposed site is located within an area referred to as the Texas Hill Country. Generally, the Kerr County rural area aesthetic and visual resources consist of pastoral views of low rolling hills covered with post, black jack and live oaks and juniper cedar. Although much of the land adjacent to the HCSSC retains the characteristic look of the native Texas Hill Country, the aesthetics and visual resources of the proposed site are negatively affected by past and present land uses. The privately owned land was used as a limestone quarry, which involved tree clearing, mining the rock, and road building suitable for heavy equipment. Since 2000, the site has been in the process of incremental

construction and development into a public shooting range. As shown in Figures 2 and 3, past activity and facility development have affected the visual and aesthetic qualities of the land. Presently, the property has diminished visual appeal compared to adjacent areas. Native trees and vegetation remain around the perimeter and in isolated stands between existing shooting venues, site-constructed and prefabricated buildings, connecting roadways and bare quarried limestone areas. The visual aspects of the site are expected to change as it is developed in concert with a master plan to provide Olympic-quality shooting ranges and related commercial public use. The property contains about a 90-acre buffer zone of native vegetation that serves to screen the shooting range facilities from the public roadways.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

4.1 Proposed Action

4.1.1 Physical characteristics

The basic physical characteristics of the site would not be substantially altered by the proposed construction. The range expansion is designed to leave the smallest possible foot print on the environment through use of similar types of shotgun shooting, proximity of the outdoor rifle and pistol venues to the shotgun venues and the use of indoor shooting for the air gun venue. In addition, these venues are overlaid on an abandoned quarry.

4.1.2 Soils and vegetation

Minor negative impacts would be expected to wooded islands in the immediate area of construction. The proposed construction site is a disturbed quarry that provides little habitat value for small mammals. The revegetation of shooting range side and back berms may provide some habitat value. However, the predominate soil at this site, caliche, does not promote suitable vegetative cover. Minor negative impacts would be expected on the remaining acreage due to the increased use for public events. The facility will leave a large portion of the total acreage undisturbed.

4.1.3 Wildlife resources

Endangered, threatened and candidate species

Resident and migrating bald eagles could fly over the site. However, the site is presently used as a shooting range, and it is unlikely that a bald eagle would be adversely affected, given the habitat and its existing use.

Game and other wildlife

Although not part of the WRA funding, the HCSSC will fence the entire 140 acres with an 8-foot deer resistant fence. Although this action would sequester the venues and protect the wildlife, it would also eliminate access by wildlife to approximately 90 acres of habitat. Minor negative biological impacts could be expected as a result of the proposed action because the range is already in use and the incremental increase in use is not likely to cause effects beyond those already occurring. The lead shot will be reclaimed and since there will be no shooting into or over water the concerns about lead poisoning of wildlife is not an issue except that some birds may ingest lead shot accidentally as they are seeking gravel. The long-range effect on wildlife is not expected to be significant as a result of this proposed expansion.

At the proposed expansion site, there is little current wildlife use. The quarry is already used as an improved shooting range and expansion would not greatly increase animal startle effect. Lead shot will be available to be ingested by birds that would use the area for its gravel. The shooting range sides and back berms will be seeded with non-palatable species of native plants and grasses such as buffalo grass and indian grass for erosion control and grass cover establishment. This may slightly increase habitat value and potential for use by rodents, moles and other small-sized species, but year-round shooting would limit suitability and access for most wildlife.

4.1.4 Land Use

No substantial change in the type of land use is expected. The site is already disturbed and used as an improved shooting range. Enhancements to the existing range proposed in Alternative A are a compatible reuse of the abandoned quarry site. Increased public use of the developed facilities is expected.

4.1.5 Cultural Resources

The State Historic Preservation Officer reviewed this project and made a determination that no historic properties or cultural resources would be affected by the proposed action.

4.1.6 Socio-economic conditions

The Kerrville Convention and Visitor Bureau completed an economic study to determine the expected total economic impact of the expanded range to Kerrville over the next seven years. The study concluded that the influx of tourism from the Olympic events alone would bring approximately \$120,000,000 into the county. (Burditt 2005)

4.1.7 Wetlands

There are no wetlands at the project site.

4.1.8 Water Quality

Little or no degradation of ground or surface water quality is expected either from runoff into Cypress Creek or pollution infiltration into groundwater. The HCSSC has developed a management plan and is putting into place a series of detention ponds, sediment barriers and dams that will limit stormwater exiting the property and reaching drainages that lead to Cypress Creek. The Upper Guadalupe River Authority (UGRA) will continue to monitor water and sediment for a suite of possible pollutants, including lead and cadmium, to assure that there is no migration of pollutants off site. The TCEQ issued a Texas Pollutant Discharge Elimination System Storm Water Construction General Permit (number TXR15Z307) to HCSSC (also known as Defensive Training Ranch LLC) effective September 8, 2005 through March 5, 2008.

4.1.9 Air Quality

Minor and temporary fugitive dust, noise and equipment exhaust emissions would be generated during range construction. These effects would not be significant because the nature of the fugitive dust would not appreciably affect the overall air quality either on a local or regional level.

4.1.10 Health and Human Safety

Health

During the term of the 50-year land use agreement, lead will accumulate in back berms and shotfall areas. When a facility is located in steep terrain, reclamation of the shot deposited is more difficult than on level terrain. EPA recommends a vacuuming technique for lead reclamation. A company called Waste Recycling Solutions was contacted to study the feasibility of reclamation by this method and they found it to be possible on this site (Rogers 2006). Lead shot is exempt from hazardous waste as long as it is recycled. The EPA recommends that reclamation of lead periodically occur in order to avoid lead accumulation on the property (EPA 2003). At the anticipated rate of use at this site, reclamation would occur every 8-10 years. No significant negative impact would be expected with this interval of reclamation.

The facility is using best management practices to prevent lead migration. Berms are constructed with a soil that has a neutral pH level of 8 and shot fall zones have the same soil. Steel traps contain 100 per cent of the bullets fired into them. The facility will test the soil annually and if the pH level becomes more acidic, phosphates or lime will be incorporated into the soil to adjust the pH.

Safety

The facility allows only supervised access to the live fire venues. Each of the shooting ranges conforms to standard safety practices, such as providing earthen berms and other safety measures governed by the facility's best management procedures. The HCSSC is instituting a vigorous hunter/shooter education program

that teaches safe shooting practices. Access to the facility is limited by an 8 foot fence around the property. There is one road to enter and exit the facility.

The facility has taken the steps summarized above to reduce the risk to human health and safety and, for that reason, the effects to human health and safety are considered negligible.

4.1.11 Noise

Minor and temporary fugitive dust, noise and equipment exhaust emissions would be generated during range construction. The expanded venue will bring in more events and shooters, and the increase in shooting may be heard by residents closest to the facility. There is no threat of noise at a level that would negatively affect human health (hearing impairment) off the range. Shooters are required to wear the proper equipment to prevent hearing damage. However, the increase in shooting will increase the annoyance factor to nearby landowners.

4.1.12 Aesthetic and Visual Impacts

There will be no discernable aesthetic or visual impacts from this project. Presently the view from the road consists of woodlands. After the shooting range is expanded, the view will remain the same. There are no unique natural or man-made features or nearby public lands, federally protected areas or other visually sensitive areas. There will be no violation of any local plans or policies regulating visual resources.

4.1.13 Cumulative Impacts

The cumulative impacts that would result from the expansion of an existing shooting range located on private property are difficult to determine or quantify. The federal WRA funding (\$300,000) is a relatively small portion (10-12 per cent) of the estimated HCSSC development costs (\$2.5-\$3 million). At the present time, there are no plans for new public road construction, adjacent land development or other known land use changes that would result from the federally-funded expansion of the shooting range facilities. The areas surrounding the HCSSC have no similar commercial development and private landowners on adjacent properties do not allow unrestricted public use. It is unlikely that expansion of the shooting range will directly promote substantial growth in the nearby community. However, a Kerrville Convention and Visitor Bureau study indicates that there would be an influx of tourism related to the full complement of shooting and educational opportunities proposed at the HCSSC that could bring \$120 million into the local economy over the next seven years (Burditt 2005). The economic benefits identified in this study could be expected to continue as a cumulative impact of sponsored events at the site provided participation in and viewing of shooting sports events remains at projected levels.

4.2 Alternative B -No Action Alternative

As described in Section 2.2 of this document, the project is expected to proceed with or without federal funding. Consequently, the environmental impacts analysis under the section 4.1, Alternative A, is identical to this alternative.

4.3 Alternative C -- Reduced Federal Grant Support (less than \$300,000)

As described in Section 2.3 of this document, the project could reasonably be expected to proceed as planned with reduced federal funding. Consequently, the environmental impact analysis under section 4.1, Alternative A, is identical to this alternative.

4.4 Comparison of Effects

	Alternative A	Alternative B	Alternative C
Physical Characteristics	No substantial alteration	No substantial alteration	No substantial alteration
Soils & Vegetation	Minor impacts to wooded islands	Minor impacts to wooded islands	Minor impacts to wooded islands
Wildlife	No T&E species or habitat on site, disturbance and possible lead shot ingestion to other wildlife, reduce access to 140 acres of habitat	No T&E species or habitat on site, disturbance and possible lead shot ingestion to other wildlife, reduce access to 140 acres of habitat	No T&E species or habitat on site, disturbance and possible lead shot ingestion to other wildlife, reduce access to 140 acres of habitat.
Land Use	No change	No change	No change
Cultural Resources	None	None	None
Socio-Economic Conditions	>\$120 million to County economy over 7 years	>\$120 million to County economy over 7 years	>\$120 million to County economy over 7 years
Wetlands	None	None	None
Water Quality	Stormwater permit TXR15Z307	Stormwater permit TXR15Z307	Stormwater permit TXR15Z307
Air Quality	Fugitive dust and equipment exhaust increased motor emissions.	Fugitive dust and equipment exhaust increased motor emissions.	Fugitive dust and equipment exhaust increased motor emissions.
Human Health and Safety	Some lead will mobilize in the soil: none is expected to reach surface or groundwater. Hunter/shooter education, supervised shooting, and controlled access will reduce safety risks.	Some lead will mobilize in the soil: none is expected to reach surface or groundwater. Hunter/shooter education, supervised shooting, and controlled access will reduce safety risks.	Some lead will mobilize in the soil; none is expected to reach surface or groundwater. Hunter/shooter education, supervised shooting, and controlled access will reduce safety risks.
Noise	Increase shooting and automobile traffic noise.	Increase shooting and automobile traffic noise.	Increase shooting and automobile traffic noise.
Aesthetics and Visual Resources	Negligible effects.	Negligible effects.	Negligible effects.

CHAPTER 5 LIST OF PREPARERS

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CHAPTER 6 PUBLIC AND AGENCY COORDINATION

The following agencies, organizations, and individuals were consulted or coordinated with during the process of planning the expansion of the UCSSC:

Texas Commission on Environmental Quality
Upper Guadalupe River Authority
U.S. Environmental Protection Agency, Region 2
Texas Parks and Wildlife Department
Live Oaks Environmental Consultants
Mr. Terry Kenny, range design expert
Mr. Mike Lindley, resident, Whiskey Canyon Subdivision
Mr. Keith Williams, past President, Homeowners Association, Whiskey Canyon Subdivision
Mr. John Schmidt, adjacent landowner
Dick Peddicord, PhD, BMPS for range development expert
Mr. Bill Armstrong, Wildlife Biologist
Gary W. Martins, Live Oak Environmental Consultants

CHAPTER 7 PUBLIC COMMENT

Many citizens and several organizations have expressed views in support or opposition of the project. Several news articles about the project were printed in the local newspaper and a number of public meetings in Kerrville addressed this project.

A group of citizens, known as “The Friends of Cypress Creek,” has voiced concerns on noise, water contamination, lead migration, silt migration, use of public funds and endangered species. The HCSSC has met with adjacent landowners to discuss their concerns and to allow them to review the Best Management Plans for the facility.

CHAPTER 8 REFERENCES CITED

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