

# Environmental Management Plan

High Plains Shooting Sports Center

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# Mission Statement

To implement Best Management Practices for the safe management of bullet and bullet fragments at High Plains Shooting Sports Center.

## *-Purpose:*

The Purpose of the Environmental Management Plan is to:

- Identify potential environmental concerns that may exist;
- Identify, evaluate and prioritize appropriate actions to manage shot and bullets safely, as well as identifying and addressing environmental concerns;
- Develop an implementation schedule;
- Identify ways to measure the Plans success;
- Evaluate annual progress made towards achieving environmental stewardship goals;

*-Goal:* To minimize potential impact on human health and the environment. Protect groundwater, surface water, wetlands and wildlife. Prevent subsurface soil contamination and erosion. Manage sound.

Activities to Reach Goal:

- Avoid shooting over and into water and wetlands.
- Prevent off-site migration of contaminants through groundwater and surface water runoff.
- Conduct contaminant recovery.
- Discourage ingestion of bullets by wildlife.
- Maintain soil pH between 6.5 and 8.5 in the shot-fall zone. ( currently pH 6.6 )

# Site Assessment

## Description of Range and Support Facilities

High Plains Shooting Sports Center is 150 total acres. At the entrance to the property will be an automated gate for entry into the range. On the south side of the property line, handgun and rifle shooting bays will be erected. Shooting is to the north with the sun at your back to ensure shooter safety. Both handgun and rifle bays meet all NRA range standards.

All handgun bays will have a crushed rock base for water drainage and fire safety. All rifle bays will be cleared of large vegetation to ensure fire safety. Vegetation will be planted on the side burms to reduce erosion. Located on the east side property will be a water hook-up system.

All public accommodations and commercial facilities will be designed and constructed in compliance with accessibility standards established by Title III of the Americans With Disability Act. With particular attention to restrooms, walkways, all shooting pads, and parking areas will be handicap and wheelchair accessible.

There will be a water quality control plan, necessary to achieve and maintain high water quality standards. The plan will reflect and incorporate applicable portions of a number of national and statewide water quality policies, including the California water code and Clean Water Act. We will not alter any existing drainage patterns onsite, with particular attention paid to erosion and runoff in a manner that would result in degraded water quality.

Several noise reduction methods will be used on the range consistent with the best practices described by NRA range standards. Determining the direction of fire is an important function of noise. The elevation of the shooting bays and earthen burms all help reduce the level

of noise. The planting of 100 trees around the perimeter of the property will also help reduce the perceived noise.

A backstop is the key component in terms of range safety. The backstops in High Plains will be constructed in order to contain shot rounds. The core material will be rocks and/or cement and then covered in an earthen material. The backstop will be 20 feet tall to ensure shot containment. The top of the backstops will be flattened. The backstops will be re-vegetated to prevent ongoing erosion problems. Periodic removal of bullets will prevent bullet deflection and splatter.

There will be three handgun bays 25 yards deep. The backstops will be 20 feet tall compacted earth. The tops of the backstops will be flattened. The core material will be rocks and/or cement and then covered in an earthen material. The sides will be 12 feet tall compacted earth. The backstops will be re-vegetated to prevent ongoing erosion problems. Periodic removal of bullets will prevent bullet deflection and splatter. These three handgun bays can accommodate 15 shooters each. Direction of fire is to the north. These handgun bays will have a covered area to protect the shooters from rain, wind, etc.

There will be one 50-yard handgun bay. The backstop will be 20 feet tall compacted earth and the sides will be 12 feet tall compacted earth. The top of the backstop will be flattened. The core material will be rocks and/or cement and then covered in an earthen material. The backstops will be re-vegetated to prevent ongoing erosion problems. Periodic removal of bullets will prevent bullet deflection and splatter. This handgun bay can accommodate 37 shooters at a time. Direction of fire is to the north. This handgun bay will have a covered area to protect the shooters from rain, wind, etc.

There will be one 300-yard backstop. The backstop will be 20 feet tall compacted earth and the west side berm will be 12 feet tall compacted earth. The top of the backstop will be flattened. The core material will be rocks and/or cement and then covered in an earthen material. The backstops will be re-vegetated to prevent ongoing erosion problems. Periodic removal of bullets will prevent bullet deflection and splatter. Direction of fire is to the north with the sun at your back. The rifle bay can accommodate 15 shooters at a time. This rifle bay will have a covered area to protect the shooters from rain, wind, etc.

There will be one 500-yard backstop. The backstop will be 20 feet tall compacted earth. The top of the backstop will be flattened. The core material will be rocks and/or cement and then covered in an earthen material. The backstops will be re-vegetated to prevent ongoing erosion problems. Periodic removal of bullets will prevent bullet deflection and splatter. Direction of fire is to the north with the sun at your back. The rifle bay can accommodate 15 shooters at a time. This rifle bay will have a covered area to protect the shooters from rain, wind, etc.

There will be one 600-yard rifle backstop. The backstop will be 20 feet tall compacted earth. The top of the backstop will be flattened. The core material will be rocks and/or cement and then covered in an earthen material. The backstops will be re-vegetated to prevent ongoing erosion problems. Periodic removal of bullets will prevent bullet deflection and splatter. Direction of fire is to the north with the sun at your back. The rifle bay can accommodate 15 shooters at a time. This rifle bay will have a covered area to protect the shooters from rain, wind, etc.

In addition, there is also a 1000-yard range that will be opened for shooting on a limited basis. The backstop is 20-foot tall compacted earth; the core will be rocks and/or cement. The top of the backstop will be flattened. The backstops will be re-vegetated to prevent ongoing erosion

problems. Periodic removal of bullets will prevent bullet deflection and splatter. Shooting will be to the northeast. The bay is capable of accommodating 10 shooters. This rifle bay will have a covered area to protect the shooters from rain, wind, etc.

There will be 9 trap fields and 3 skeet fields; all will shoot towards the east. Trap and skeet fields will be arranged on the west side of the property line, shooting to the east. Both trap and skeet fields will be constructed to meet NRA range standards.

Each trap field consists of 5 shooting positions ranging from 16-yards away to 27-yards away. Each trap pad consists of poured cement footings and is 3 yards wide. The shot fall zone is 300 yards down range and 400 yards wide.

A skeet field is similar to a trap field. The main difference is that skeet competitors are shooting at two targets. A high house and low house are present, at opposite sides of the field, and generally launch their targets one after the other. The competitors shoot when the two clays intersect paths.

There will be 3 skeet fields; each will be shooting east. There will be 8 positions to each field, where shooters will stand on poured cement. Each position will be a yard wide and 9 yards away from each other. The high house is on the left, and the low house is on the right, with the crossing point 6 yards in front of the field. Shooters will be about 10 yards away from the crossing point. All skeet fields will be compliant with NRA range standards.

There will be a secure law-enforcement only range on the north side of the property line. Securing the range there will be a 4-foot tall fence encircling the complex. The entrance will be secured with a keypad entry system. There will be parking to accommodate approximately 26 vehicles. Shooting will be to the east. There are two 25-yard bays, each capable of accommodating 15 shooters, and both equipped with a 20-foot backstop and a 12-foot sidewall.

The top of the backstop will be flattened. The backstops are constructed from rocks and/or cement, and covered thoroughly with earthen material. The backstops will be re-vegetated to prevent ongoing erosion problems. Periodic removal of bullets will prevent bullet deflection and splatter. There will be a 50-yard bay capable of accommodating 15 shooters. It will have a 20-foot tall backstop with 12-foot tall sidewalls constructed of rocks and/or cement thoroughly covered with earthen material. It will be re-vegetated to prevent ongoing erosion problems. The complex will have a covered area to protect the shooters from rain, wind, etc.

The law enforcement complex also houses a small clubhouse, with a classroom area, an office area, and two bathrooms.

There will be a 5000 square foot clubhouse located in the southwest corner of the property. The clubhouse will have several amenities available to shooters. There will be a large lounge area where shooters can relax and socialize. There will also be two bathrooms. The clubhouse has two office areas and a kitchen, in addition to a pro shop and classroom/meeting area. Attached to the clubhouse is a caretakers unit, which is equipped with a bathroom, bedroom, laundry room, and a kitchen. The clubhouse is also attached to an overflow parking lot.

There will be a 2-lane road along the north side of the property line with a cul de sac. There will be a 2-lane road on the entire western side of the property line, and a 2-lane road on the northern property line with a cul de sac. In addition, on the north side road will be the entrance to the law enforcement range.

On the southern property line in close proximity to the road there will be parking spaces spread out apportioned to the shooting bays to accommodate 109 vehicles. For the 300-600 yard shooting bays, there will be approximately 25 parking spots. On the 50-yard handgun bay there will be approximately 15 parking spots. On the 25-yard handgun bays( 3 in total), there will be

approximately 25 parking spots. On the western property line in close proximity to the road there will be parking spaces spread out apportioned to the trap and skeet fields to accommodate approximately 120 vehicles. Located behind the 3 skeet fields there will be approximately 25 parking spots. Located behind the 9 trap fields there will be approximately 100 parking spots.

Encircling the entire property and running on the property line, there will be a 4-foot hog-wire fence, with "Range Caution" signs every 100 yards.

On the north, west and south sides of the property line, approximately 100 shade trees will be planted along with landscaping shrubs, flowering plants etc. The trees will provide shade for shooters and spectators alike, and a defined property boundary line.

## **Existing Environmental Conditions**

( Refer to High Plains Shooting Center Project Pre-Jurisdictional Delineation Report and Biological Resource Survey)

## **Trap and Skeet Fields**

Management Examples Include:

- Vegetate grass area of trap/skeet fields.
- Orient trap and skeet fields to avoid shot entering wetlands.
- Apply lime to shot-fall zones if soil test results indicate this would be beneficial.
- Prepare fields for reclamation.
- Get bids for reclamation project.
- Change mowing frequency to closely mow grass in shot-fall zones.
- Construct a lime lined drainage swale for storm-water management.

In order to implement the options the following actions are necessary.



a) Management Actions: assign personnel responsible for initiating, conducting and completing the alternatives.

b) Operational Actions: collect soil samples for pH analysis, consult with USDA's Natural Resources Conservation Service regarding best suited vegetation management recommendations.

c) Construction Action: do site preparation work, get bids, institute mowing and vegetative management recommendations, orient shooting positions as appropriate.

## **Plan Implementation**

- Schedule for Implementation

Winter/Spring: pH survey, contact local officials for vegetation management recommendations, orient shooting positions as appropriate, align shooting positions as appropriate.

Summer/Fall: prepare site for reclamation project, apply lime/fertilizer/seed, get bids for reclamation. As a rule of thumb, 50 pounds of lime per 1,000 square feet should raise soil pH by 1, once the residual acidity is overcome.

## **Rifle and Handgun Ranges**

### **Sand Traps**

A variation of the earthen backstop is the sand trap. Sand traps ranges employ a system designed to contain, collect and control lead from contact with the environment. Sand traps use a grade of sand that is ballistically acceptable. Regular maintenance must be performed to remove larger particles (bullets) from the impact area. Traps are placed so the bullets fired across the range pass through the target and become embedded in the sand. This trap is typically 15 to 20 feet high

with a slope as steep as possible. The most important design criterion for this trap is that the uppermost layer (to a depth of 1 to 2 feet) be free of large rocks and other debris to reduce ricochet and bullet fragmentation, and facilitate reclamation efforts. There will also be an impermeable layer (liner) under the sand to prevent bullets from contacting groundwater and the soil underlying the trap.

## **Filter Beds**

Filter beds are engineering controls built into an outdoor range to collect and filter surface water runoff from the target range. The collected runoff water is routed to a filtering system, which screens out larger bullet particles, raises the pH of the water (thus reducing the potential for further bullet mobility) and drains the water from the range area. Filter beds should be established at the base of the backstop. In addition to mitigating off-site migration, the filter beds work to raise the pH of the rainwater, which has fallen on the target range, and to strain small particles out of the rainwater. The filters typically consist of two layers: a fine-grained sand bed underlain by limestone gravel or other neutralization material. By design, the backstops and berms direct the runoff so that it drains from range to the filters. The collected water then soaks through the top sand layer into the neutralization material, which raises the pH of the filtrate. The particles in the rainwater are collected on the sand, while the pH-adjusted water drains through the filter to a perforated drainage pipe located within the limestone gravel. Filter beds are designed to capture fine particles transported in surface water runoff. The use of filter beds is most effective on sites with open, rolling terrain where surface water runoff is directed to them.

Management Examples Include:

- Vegetate the backstop berms to minimize erosion.

- Construct a filter bed to contain particles at each of the burms.
- Construct a lime lined drainage swale for storm-water management.
- Apply lime to the burm and foreground if pH test determines it is necessary.
- Begin planning a reclamation project.

In order to implement the options the following actions are necessary.

- a) Management Actions: assign personnel responsible for initiating, conducting, and completing the alternatives.
- b) Operational Actions: collect soil samples for pH analysis, consult with USDA's Natural Resources Conservation Service regarding best suited vegetation management recommendations.
- c) Construction Actions: do site preparation work, get bids, institute mowing and vegetative management recommendations, orient shooting position as appropriate.

## **Plan Implementation**

- Schedule for Implementation

Winter/Spring: pH survey, contact local officials for vegetation management recommendations, orient shooting positions as appropriate, align shooting positions as appropriate.

Summer/Fall: prepare site for reclamation project, apply lime/fertilizer/seed, get bids for burm reclamation.

## **Measuring Success**

By monitoring the success of the Plan, the Range is best prepared to make whatever changes may be necessary to reinforce success and make the most of environmental stewardship efforts.

Below are some examples of areas to monitor:

## **Bullet Recovery**

- Document the quantity (pounds) of bullets recovered and recycled, along with the cost of conducting the activities.

## **Vegetation Control**

-The density of vegetation growth should be measured throughout the growing season, especially in areas of sparse growth where steps have been taken to increase the vegetative cover. This can be done by taking periodic photographs (e.g., once a month) from the same place to document the impact of the plan.

-Vegetative cover reduces erosion by slowing down water and wind and effectively holding the soil in place. This technique is natural, relatively inexpensive, and self-sustaining through production of seeds or roots by plants. Another benefit of vegetative cover is to filter nutrients and pollutants from runoff. Vegetative control requires that the community of plants such as grasses and shrubs be well delineated and located to facilitate erosion control.

## **Wildlife**

-Keep a log of visual observations made regarding the frequency of range usage by the variety of species in your area.

## **Soil and Runoff pH**

-Track soil and runoff pH through semiannual monitoring and adjust the amount of lime applied to different areas of the range to maintain a neutral pH level (i.e., a pH of 6.5-8.5).

## **Erosion**

-Keep a photographic record of problem areas. Prepare the range to document achievements and adjust the Plan as appropriate.

## **Plan Review and Revisions**

-Review the plan on an annual basis. Update the Plan as needed and schedule activities for subsequent years. Make recommendations for future range officers to consider when updating the Plan and designing future activities to be conducted.