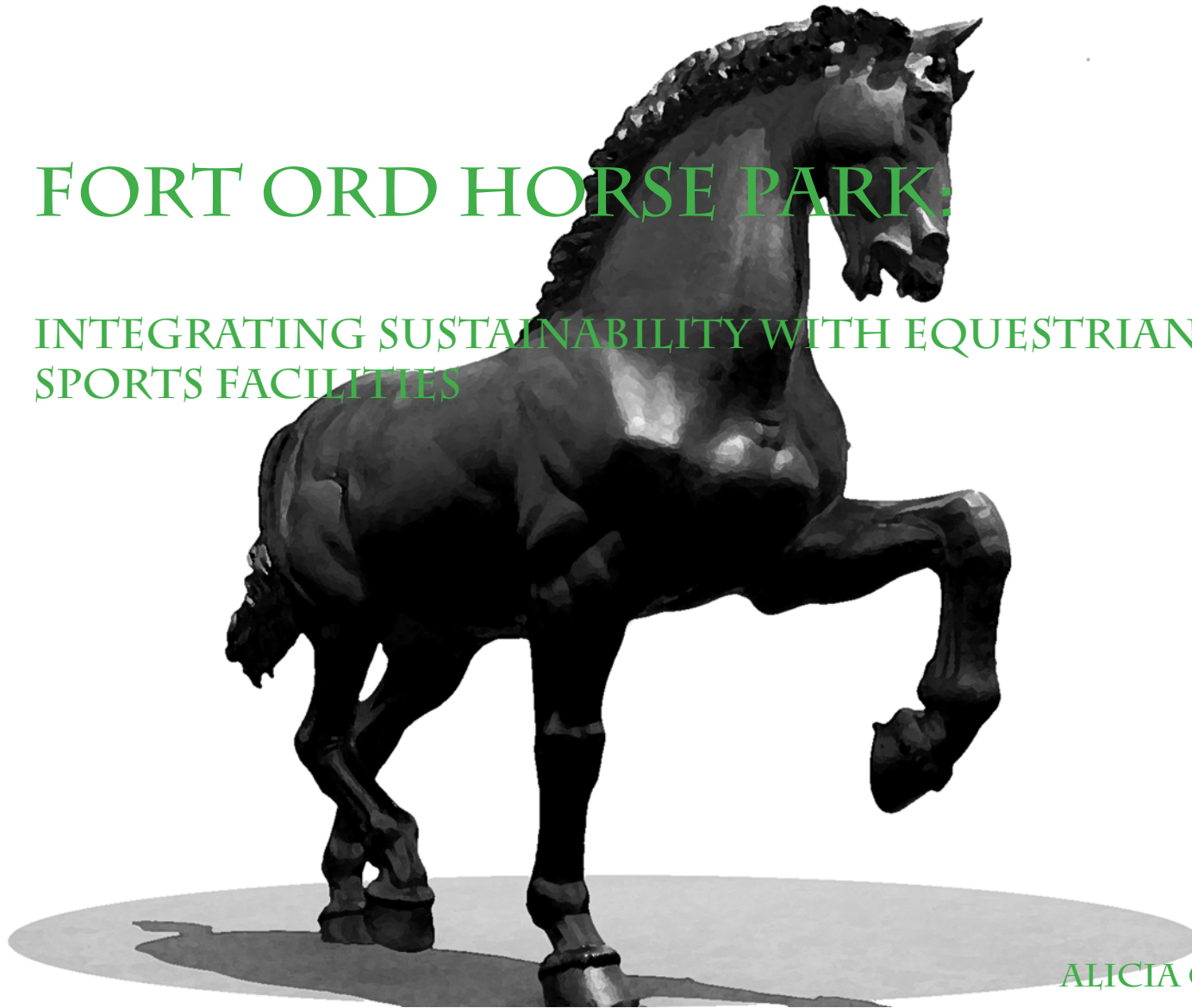


# FORT ORD HORSE PARK:

INTEGRATING SUSTAINABILITY WITH EQUESTRIAN  
SPORTS FACILITIES



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# FORT ORD HORSE PARK: INTEGRATING SUSTAINABILITY WITH EQUESTRIAN SPORTS FACILITIES

A senior project presented to the faculty of the University of California, Davis in partial fulfillment of the requirements for the degree of Bachelor of Science of Landscape Architecture.

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# ABSTRACT

Military base closures present a dilemma for city and regional planners as to what to do with the land. This project provides a potential reuse for a portion of the former military bases. The project is a design of a sustainable equestrian park on a portion of the former Fort Ord in Monterey County. Equestrian parks and sustainability are not terms often seen together so this posed another focus. After researching the history and the existing conditions of the site, the horse sports that could take place there, examples of California and International horse parks, and sustainable practices that could be implemented a design was developed.

This project displays the overall site design along with a focus design on the main competition facilities and focus areas within the facilities. The design preserves open space and habitat as well as minimizes the environmental impact by utilizing sustainable practices. This project could be an example of how horse parks in the future could become more sustainable.



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# TABLE OF CONTENTS

|                                |     |
|--------------------------------|-----|
| Acknowledgements .....         | i   |
| Image Index .....              | iii |
| Introduction .....             | 1   |
| Fort Ord History .....         | 4   |
| Site Analysis .....            | 6   |
| Equestrian Sports .....        | 10  |
| Sustainable Practices .....    | 18  |
| Equestrian Park Examples ..... | 22  |
| Site Design .....              | 26  |
| Conclusion .....               | 42  |
| References .....               | 43  |



# IMAGE INDEX

## Introduction

|                                                |   |
|------------------------------------------------|---|
| 1.1 Aerial view of Fort Ord (FORA, 1940) ..... | 2 |
|------------------------------------------------|---|

## Fort Ord History

|                                                   |   |
|---------------------------------------------------|---|
| 2.1 General Edward Cresap Ord (FORA, date?) ..... | 4 |
| 2.2 Army soldiers training (FORA, 1940) .....     | 5 |

## Site Analysis

|                                                             |   |
|-------------------------------------------------------------|---|
| 3.1 Bureau of Land Management open space (FORA, 2001) ..... | 6 |
| 3.2 Army combat training beach ranges (FORA, 1960) .....    | 7 |
| 3.3 Site analysis map .....                                 | 9 |

## Equestrian Sports

|                                                                        |    |
|------------------------------------------------------------------------|----|
| 4.1 Jumper rider (Legube Apartments, 2010) .....                       | 11 |
| 4.2 Dressage rider (Ken Braddick, 2009) .....                          | 12 |
| 4.3 Para-Equestrian Dressage rider (Hong Kong Jockey Club, 2008) ..... | 12 |
| 4.4 Cross-Country Eventer (Equestrian Clearance, 2010) .....           | 13 |
| 4.5 Driving team .....                                                 | 14 |
| 4.6 Endurance riders (Tutto Arabi, 2009) .....                         | 15 |
| 4.7 Vaulting performer (CatherineZ, 2010) .....                        | 16 |
| 4.8 Reining rider (Blood Horse Publications, 2010) .....               | 17 |

## Sustainable Practices

|                                                           |    |
|-----------------------------------------------------------|----|
| 5.1 Compost bin (Horse Manure Composting, date?) .....    | 18 |
| 5.2 Photovoltaic panels (Sustainable Stables, 2012) ..... | 19 |
| 5.3 Wind turbine (Cameron Scott, 2010) .....              | 19 |
| 5.4 Cistern (Sustainable Stables, 2012) .....             | 20 |
| 5.5 Bio-swale (Bluestream Landscapes, 2012) .....         | 21 |

## Equestrian Park Examples



|                                                             |    |
|-------------------------------------------------------------|----|
| 6.1 Horse Park Context Map .....                            | 22 |
| 6.2 Galway Downs aerial (Galway Downs, 2012) .....          | 23 |
| 6.3 Horse Park at Woodside aerial (Woodside, 2012) .....    | 23 |
| 6.4 Georgia International Horse Park map (GIHP, 2012) ..... | 24 |
| 6.5 Kentucky Horse Park tour map (KHP, 2012) .....          | 25 |
| <b>Site Design</b>                                          |    |
| 7.1 Opportunities and Constraints map .....                 | 30 |
| 7.2 Design Concept map .....                                | 31 |
| 7.3 Overall Site Design plan .....                          | 32 |
| 7.4 Facility Focus plan .....                               | 33 |
| 7.5 Entrance Focus plan .....                               | 34 |
| 7.6 Entrance perspective .....                              | 35 |
| 7.7 Main Arena Focus plan .....                             | 36 |
| 7.8 Main Arena section/elevation .....                      | 37 |
| 7.9 Main Arena perspective .....                            | 38 |
| 7.10 Barn Grouping Focus plan .....                         | 39 |
| 7.11 Barn Grouping section/elevation .....                  | 40 |
| 7.12 Barn Grouping perspective .....                        | 41 |
| <b>Conclusion</b>                                           |    |
| 8.1 Me eventing .....                                       | 42 |
| 8.2 Me again .....                                          | 42 |



# INTRODUCTION

Many equestrian parks span the United States and the world. The benefits of these parks range from preservation of open space and limiting the spread of development to providing a location for people to enjoy their horses and the equestrian sports they participate in. There is an ongoing need for open space for horse parks but space is difficult to come by. In recent years, with numerous military base closures; plans have been circulated to utilize the underutilized space. This underutilized space can be considered ideal for horse parks as the terrain that served well for military training can be translated to equestrian sports.

As a landscape architecture student, horse lover and Eventer it seemed obvious to design a horse park that minimizes environmental impacts. The proposed senior thesis is the sustainable design of an equestrian park on the former Fort Ord in the similar location as the existing design. The design will provide an alternative of reuse for the former military base by establishing an ideal location for equestrian sports to take place along with implementing sustainable practices and re-establishing natural systems.

The California military base in Monterey County has become the location for an equestrian park, Monterey Horse Park. The plan is to use the Parker Flats area of former Fort Ord in Monterey County for the park. The vision of Monterey Horse Park is to “construct and operate a multi-discipline equestrian park, located on approximately 210 acres of land (including habitat reserve) in Parker Flats, on the decommissioned military base, Ft.

Ord, in Monterey County, California. The facility is designed to promote the training of amateur equestrians and to host breed shows and competition in all eight Federation Equestre Internationale (“FEI”) disciplines. MHP’s facility will provide California with a major equestrian center which, in time, is expected to attract prestigious international events of the caliber of The Rolex Three-Day Event at the Kentucky Horse Park” (Monterey Horse Park official website). The designers for Monterey Horse Park are Urban Community Partners, LLC and Monterey Downs, LLC. The design focuses on the equestrian sports and the built structures relating to the equestrian needs and less on utilizing sustainable practices and protecting natural systems.

The former Fort Ord is close to Monterey Bay and is bounded by Toro County Park, Jacks Peak County Park and the agricultural land of Salinas. In terms of relation to other horse parks in California the location will be ideal. In California the large horse parks are Woodside, Ram Tap, Twin Rivers Ranch, Galway Downs, Shepard Ranch, Copper Meadows, and Murrieta Equestrian Park.

Choosing a former military base for a horse park will provide an opportunity to use an underutilized area for mostly open space and not development. Closed military bases can provide large areas for multiple uses including parks, infill housing and commercial buildings and as well as wildlife preserves. Unfortunately the previous use of these spaces as military bases can leave behind harmful contaminants. The contaminants can include munitions, chemicals, fuels and the like. One of the im-







1.1 Aerial of Fort Ord including Seaside and Del Rey Oaks.

pacts of these is contamination of soil and water systems. There are solutions to soil and water contamination, one of them being bio-remediation. Bio-remediation is the use of plants and micro-organisms to filter out chemicals and toxins in the soil and water. The filtration process typically takes about three to five years or possibly longer depending on how deep the contamination has infiltrated the soil. Bio-remediation has limitations with the depth of contamination but soil can be overturned or tilled to bring the contaminated soils to the surface to continue the process.

One aspect of the proposed design is to implement sustainable practices. One sustainable practice that could be used is solar orientation for the buildings and show barns. On the building roofs and parking areas solar panels could be used when possible. Another practice could be on site water management such as bio-swales,

greywater reuse systems, and rainwater capture and reuse. This practice will be vital due to the salt water intrusion in the Salinas River that lies close to Fort Ord and the growing demand for water for agriculture. Since the site will be used as a horse park and manure is natural product of horses, the manure can be used as on site fertilizer. Re-vegetation with 'native to Monterey County' plants can ensure the overall natural systems sustainability.

Equestrian sports are to be the main focus of the park. The proposed design will follow the FEI sports including Jumping, Eventing, Dressage/Para-equestrian Dressage, Driving/Para-equestrian Driving, Endurance, Vaulting, and Reining. The mission statement of FEI is "to advance the orderly growth of equestrian sport worldwide by promoting, regulating and administering humane and sportsmanlike international competition in the traditional equestrian disciplines" (FEI Profile, FEI.org). FEI is the "only Olympic sport that involves an animal, and mainly performed in the countryside, equestrian sport is obviously linked to nature. The FEI is very much concerned with the conservation the environment and was one of the first international sports federation to establish a Code of Conduct toward Environment" (FEI Standards, FEI.org). The equestrian sports of Jumping, Eventing and Dressage are considered English disciplines. Reining is considered a Western discipline. Driving, Vaulting and Endurance are disciplines that do not fall into either English or Western. Para-equestrian Dressage and Driving includes equestrians with disabilities so that everyone has an equal opportunity to compete.

Some potential outcomes of the design could be an economic boost for the local area, restoration of natural systems, an international horse park to bring other



countries and horse competitors together, and a location for community members to utilize the area for recreation such as hiking, dog walking, and the like.



# FORT ORD HISTORY

Fort Ord was where more than 1.5 million soldiers served and protecting this land from housing development will honor the distinctive history that the soldiers, families, and civilians of Fort Ord contributed to the region, state and nation. From World War I to the end of the Cold War, Fort Ord was a U.S. Army installation that trained soldiers and symbolizes the last stand of U.S. Army war horses. Fort Ord was the prominent training center and staging ground for deployment to Southeast Asia during the Vietnam War. By the end of the Cold War, Fort Ord reduced training activities, and in 1994 the base officially closed and became a significant slice of U.S. military history (Protect Fort Ord).

Fort Ord's beginnings can be traced back to Commodore John Drake. On July 1846 the Frigate Savannah, commanded by Commodore John Drake, entered the harbor of the Mexican port of Monterey. Five days later the area was proclaimed as territory of the United States and the flag was flown at the Customs House. The Customs House remains and the American flag, with the addition of stars representing states of the nation, still flies. From that day the United States Army has greatly influenced the development of the Monterey Bay area. The name of the fort came from a young officer of initial era. He was Edward Cresap Ord and served with Fremont's Army. At the time the adjacent Presidio of Monterey was developed he was a lieutenant. Lieutenant Ord distinguished himself in numerous vicious Civil War battles which led to his ultimate rise to the rank of Major General.



2.1 General Edward Cresap Ord

Fort Ord arose from the need for a military reservation to be stationed at the Presidio of Monterey for the prominent 11th Cavalry and the 76th Field Artillery. The topography in this area was ideally suited for the military exercises of the equestrian riders and the horse-drawn caissons. It also was expansive enough for a field artillery impact range. Eventually in 1917 the government bought about 15,000 acres that comprises of the area where the post's present East Garrison resides. The present-day post, original land included; contains more than 28,600 acres. The terrain is comparable to the wide-ranging types that the American Servicemen have fought on around the world. The diversity makes it ideal Infantry-training grounds.

The transformation of the reservation from



that of an exercise area to a permanent post happened within a short time and was considered a near miracle of construction. In August, 1940, as World War II approached America, the first building contract was developed. It was \$3,000,000 to build barracks for the recently activated 7th Division. By the end of 1941 an additional \$13,000,000 had been spent on construction and the main garrison functioned as training grounds and staging areas for multitudes of American troops. It was at Fort Ord where here soldiers practiced jungle warfare, hand-to-hand combat, and the most of the same maneuvers that present-day soldiers experience before the closure.

During World War II Fort Ord stationed more than 50,000 troops at one time. After World War II, activity centered around the Infantry training of soldiers for the Korean conflict. By 1940 Fort Ord was named a permanent Army post. Its western border is the Pacific Ocean's Monterey Bay. It is close to the historically rich Monterey Peninsula, along with Salinas, the hub of one of the America's most fruitful agricultural valleys. The entire garrison was composed of the permanent-type, concrete barracks in which many troops were quartered. There also will be additional permanent administrative, supply and recreational buildings (Base Reuse).



2.2 Army soldiers training





# SITE ANALYSIS

Fort Ord's current conditions will affect the design of the horse park. The county of Monterey has a fairly mild climate with the temperatures ranging between 60 to about 75 degrees Fahrenheit on average and the majority of the rainfall occurring during the fall and winter months. The winds are primarily controlled by the ocean and on average blow in a North-North-westerly direction at about 9 to 10 miles per hour. This



3.1 Bureau of Land Management open space

climate is common with the close proximity to the Pacific Ocean that lies on the westerly border of Fort Ord along with the city of Seaside. The northern boundary includes the city of Marina. On the Northeastern boundary of Fort Ord is the Salinas River and fertile agricultur-

al land. Toro Regional Park lies to the East and below lies residential and Laguna Seca Raceway and Golf Course. The primary noise pollution that affects Fort Ord is the Municipal Airport located at the Northern most portion of Fort Ord and Laguna Seca Raceway. The topography of the design site is ideal for multiple horse sports including Eventing, Driving, Para-equestrian Driving, and Endurance. The lowest elevation of the site is about 50 feet above sea level and the highest being about 450 feet above sea level.

According to the Fort Ord Reuse Authority the majority of Fort Ord would have habitat management land use mostly due to extensive munitions cleanup and habitat preservation. FORA has recognized the value of the Oak Woodlands within Fort Ord and mapped out the extent. The area that the design will be implemented is located in an area designated golf course and equestrian center opportunity sites along with portions of the habitat management land use and open space or recreation land use. The design will respect the Oak Woodland habitat recognized by FORA. FORA has also proposed new circulation that is intended to be an improvement to the existing. One of the circulation routes provides nearly half of the perimeter of the design site and also gives multiple opportunities for an entrance. The majority of the perimeter is related to the habitat management land use portion of Fort Ord.

Currently Fort Ord Public Lands offer 86 miles of trails open for biking, hiking, running, horseback



riding, wildlife and wildflower photography, nature enthusiasts and search and rescue training. The Fort Ord Public Lands support a diverse group of plant and animal communities. The Central Coast Maritime chaparral ecosystem is home to numerous plant and wildlife species that depend largely on the land of Fort Ord for their survival. Some of the plants that thrive at Fort Ord are found virtually nowhere else, such as the Toro Manzanita, the state-threatened Sand gilia and the federally threatened Monterey spine-flower. For many of the uncommon plants, 50-90% of their prime habitat occurs in Fort Ord. The public lands also support a blend of other habitats including coast live oak, coastal scrub, mixed annual grassland and native perennial grassland. These expansive landscapes are home to a range of wildlife including mountain lions, black-tailed deer, bobcats, coyotes, golden eagles, red tailed hawks, California quail, coast horned lizards, and the federally endangered Smith's blue butterfly (Protect Fort ord).

One factor that greatly influences the design is the locations of munitions. Several areas of the base had been used for ordnance training. The Department of Defense Ammunition and Explosive Safety Standard states that physical property that is recognized to be contaminated with ammunition, explosives or chemical agents must be decontaminated with the most suitable technology to guarantee the protection of the public consistent with the proposed end use of the property. After base closure in 1994, public access to Fort Ord lands amplified radically. The Army is currently leading various actions to clean up the identified and suspected Munitions Response sites to ensure the safety of the public.

The MR Remedial Investigation/Feasibility Study (MR RI/FS) program plans to investigate various cleanup alternatives and recommend counteractive actions that would ensure ultimate safe reuse of MEC sites. The Army is organizing these Munitions Response programs with the Fort Ord Base Realignment and Closure (BRAC) Cleanup Team, which consists of the Army, U.S. Environmental Protection Agency (EPA), and California-EPA Department of Toxic Substances Control (DTSC). The EE/CA recognizes removal intentions and evaluates and compares removal alternatives. The efficiency, achievability and cost of the solutions are considered, and only the most suitable technologies are considered. The designated EE/CA removal alternatives are either a surface removal or removals down to a depth of 4 feet but each must remove the impending explosive threat. All unexploded ordnance found during the cleanup processes is



3.2 Army combat training beach ranges



destroyed by detonation.

In 1993 an archival analysis was conducted to pinpoint areas where Munitions and Explosives of Concern (MEC) could have been used. Ultimately, after research and visual inspections since 1993, nearly 12,000 acres are identified or assumed to contain MEC. The areas range in size from less than one acre to more than 1,000 acres. As of today around 3,000 acres have been examined and/or received response actions intended to minimize the explosive safety hazard to the public. The removal process used at Fort Ord is acknowledged in the EE/CAs which were arranged in agreement with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Types of MEC found at Fort Ord include artillery projectiles, rockets, hand grenades, land mines, pyrotechnics, bombs, demolition materials and other items. Recognized Munitions Response sites are displayed with warning signs and are off-limits to unauthorized people.

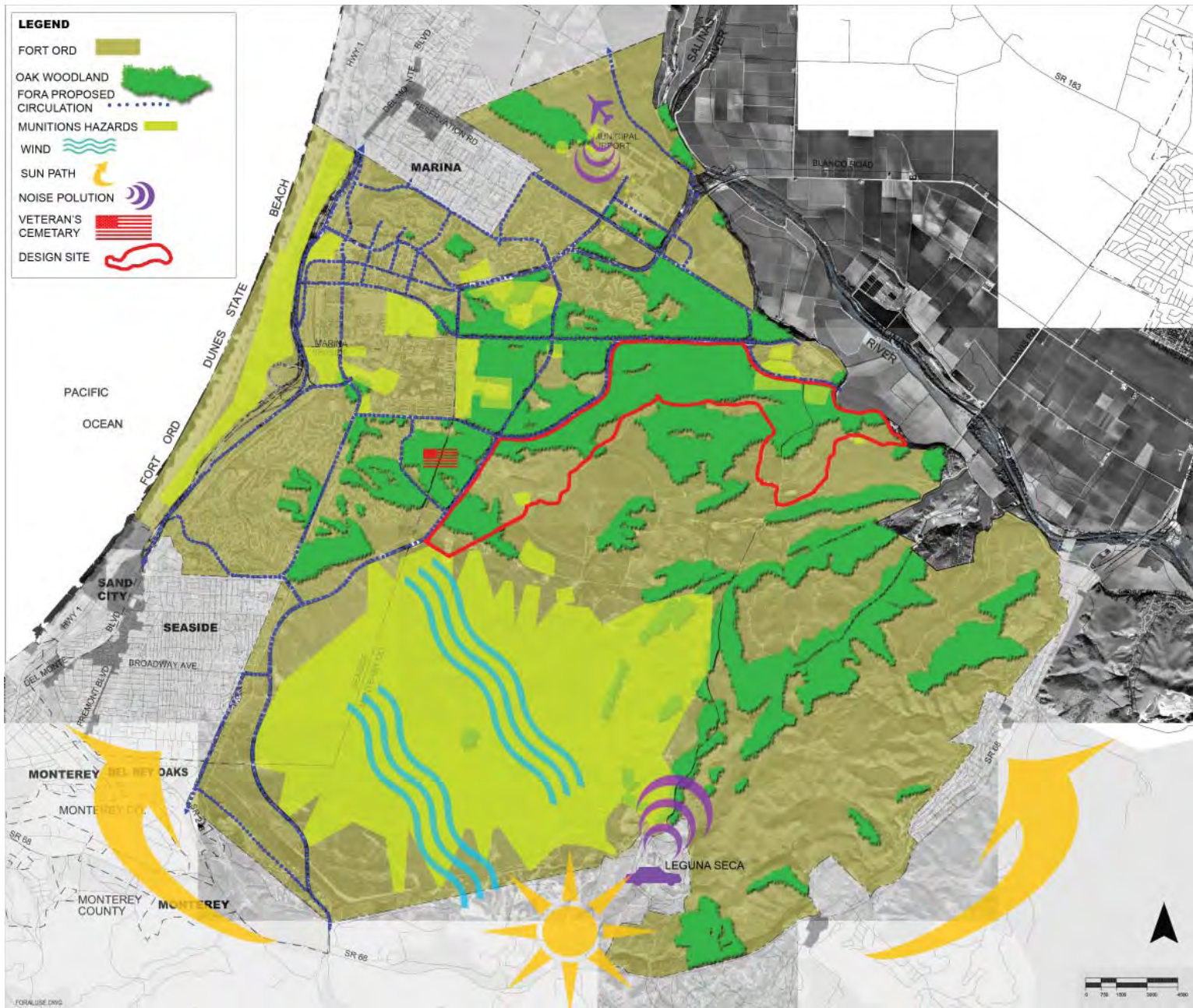
One method of cleanup is called grid sampling and this method divides the area into grid squares about 100 feet by 100 feet and selects a minimum of 10% of the grid squares which are examined, using magnetometers, to a depth of four feet. Every piece of metal discovered by the magnetometers gets excavated to determine if it is MEC. The other method of sampling is completed using a computer program called SiteStats/ GridStats. This program utilizes a statistical method to define the existence or lack of MEC at a site. The affected area is subjected to a removal action if the program finds if there is MEC on the site. All found unexploded ordnance is detonated on the former Fort Ord. The design site has three areas that are scheduled for muni-

tions cleanup and will be closed off until the areas are deemed safe. The largest of the cleanup areas is located close to the East Garrison (Fort Ord Cleanup).

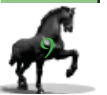
The culmination of the site analysis will greatly influence the design of the horse park. The horse park will preserve a portion of open space on Fort Ord and will likely prevent development in areas where habitat exists. These findings also influence the use of sustainable practices in the design.







3.3 Site analysis map





# EQUESTRIAN SPORTS

## Equestrian Sports

Fort Ord Horse Park will provide a venue for Fédération Equestre Internationale equestrian sports, also referred to as FEI. The mission of FEI is “to advance the orderly growth of equestrian sport worldwide by promoting, regulating and administering humane and sportsmanlike international competition in the traditional equestrian disciplines” (FEI.org). FEI was founded in 1921, is the international body governing equestrian sports accepted by the International Olympic Committee (IOC). Equestrian sports have been a part of the Olympic Games since 1912 with three disciplines: Jumping, Dressage and Eventing.

The FEI is built on the principle of equality and shared respect between all “133 affiliated National Federations, without prejudice to race, religion or internal politics” (FEI.org). FEI is the sole regulatory authority for all international events in Dressage & Para-Equestrian Dressage, Jumping, Eventing, Driving & Para-Equestrian Driving, Endurance, Vaulting, and Reining. The governing body establishes the guidelines and supports equestrian programs at Championships, Continental and Regional Games as well as the Olympic Games. FEI encourages equestrianism in all forms and supports the improvement of the FEI equestrian disciplines throughout the world, keeping the wellbeing of the horse at the core of all activities.

The values of FEI include fairness and equality, collaboration with the horse, respect for the environ-

ment, and respect for the horse. Equestrianism is one of the very few sports where men and women compete equally up to and including the Olympic level. It is also the only sport that comprises of two athletes, the horse and rider. This successful partnership between horse and rider is based upon a relationship of confidence and respect. Equestrianism is also conscious with the conservation of the environment. It was one of the “first international sports federations to establish a Code of Conduct towards the Environment” (FEI.org). Since the FEI’s formation, it has concerned itself persistently with the welfare of the horse. In 1991, the FEI implemented a Code of Conduct, which emphasizes that “in all equestrian sports, the welfare of the horse must be considered paramount” (FEI.org). The FEI recognizes the following equestrian sports that are nationally and internationally recognized.

## Jumping

Jumping is probably the most widely known of the equestrian disciplines recognized by the FEI where men and women compete equally in both individual and team events. In modern Jumping competitions, horse and rider are required to complete a course of 10 to 13 obstacles and the objective is to test the partner’s skill, accuracy and training. The goal is to jump the course in the planned sequence with no mistakes also known as a clear round. If any part of an obstacle is knocked down or if the horse refuses a jump, faults are accumulated. The winner of the competition is the horse and rider combination that acquires the least number of penalties





4.1. Competitor attempting a 'triple bar'

and finishes the course in the fastest time or achieves the highest number of points depending on the type of competition.

For most competitions two styles of scoring table are utilized: Table A and Table C. The most commonly used scoring table is Table A. Each fault is penalized with a certain number of penalties. Each bar knocked down adds 4 penalty points, as well as the initial refusal. A refusal is when the horse stops short in front of the jump or goes around it. The second refusal, as well as any fall of horse and/or rider, will eliminate the horse and rider.

The ordering is established according to the penalties obtained. Commonly, numerous riders successfully jump a clear round. If this occurs, there are two options: if the competition does not include a Jump-off, the competitor with the quickest time wins. If the competition includes a Jump-off, those tied for lead position will jump a new shorter round as quickly as possible and without

faults. The winner is the one with the fewest penalties collected in the Jump-off and with the fastest time.

Competitions judged in accordance to Table C are called speed competitions as the classification is based only on time. Faults earned are converted into seconds and added the time taken to finish the round. In Table A competitions, there is a time allowed; competitors who do not complete their round in the time allowed are penalized by 1 fault per four seconds of additional time. Time is important to either Table and ultimately exceeding the time limit can result in elimination.

Jumping requires an arena large enough to hold a course of 10 to 13 obstacles. The sizes tend to vary depending on the location. In the case of the Georgia International Horse Park the stadium arena is 143,175 feet squared. This example is on the larger end of typical Jumping arenas but greatly influenced the proposed design. In addition to the competition arena there must be at least one warm up arena for the competitors to prepare for the course.

### Dressage

In current Dressage competitions, the horse and rider are expected to complete from memory a sequence of programmed movements, known as 'figures.' The competitor performs these movements in an entirely flat, rectangular arena, measuring 197 x 66 feet. The arena is bordered by a low rail along which 12 lettered signs are placed symmetrically designating where movements are to begin and end and where alterations of pace or lead are to happen. Upon entering the arena, each competitor continues down a marked center line and halts to salute. The horse is required to stand four-square and immobile.





4.2 Dressage rider performing in the court

In all competitions, the horse must show the paces: walk, trot and canter along with smooth transitions within and between the paces.

The tests differ in levels of difficulty concerning seniors, young riders, pony riders and children. The in accordance to FEI World and national championships and the Olympic Games comprises of Grand Prix, Grand Prix Special and Grand Prix Freestyle tests; the premier level of tests. In a Freestyle test, the competitor is able to choose his or her own form and routine of performance, however; certain required movements must be incorporated. In all other tests the competitors follow a set program.

A panel of five judges evaluates the figures

performed, and awards each a mark from 0 to 10. Once summed, these scores yield a percentage and the rider or team with the highest total score is acknowledged the victor.

#### Para-Equestrian Dressage

Para-Equestrian Dressage essentially follows the same rules and regulations as traditional Dressage competitions but takes into consideration the rider's disability. The "competitor's mobility, strength and coordination" are evaluated in order to determine their Classification Profile (FEI.org). Individuals with related functional capability Profiles are grouped into competition Grades. The Grades range from for the "most severely impaired, to Grade IV for the least impaired" (FEI.org). The competition within each Grade can be judged fairly on the talent of the individual competitor on their horse, regardless of the competitor's disability. Competitors are required to wear the proper equipment as specified in the classification manual, and are only allowed the use of special equipment when this has been properly documented and accepted.

#### Eventing

Eventing demands significant experience of the competitor in all



4.3 Para-Equestrian Dressage rider competing without the use of her arms





branches of equitation and an accurate understanding of the horse's talent and level of competence resulting from smart and sensible training. It combines all round riding ability and horsemanship. Eventing involves the harmony between horse and rider that typify Dressage; the interaction with landscape, specific knowledge of the horse's skill and general experience necessary for the Cross Country; the accuracy, agility and skill involved in Jumping. Eventing is one of the three disciplines that compete at the Olympic Games, the others being Jumping and Dressage.

Current competitions comprise of three distinct phases: Dressage, Cross-Country and Jumping. They occur on separate consecutive days and the competitor is required to ride the same horse for the duration of the Event. There are 6 levels in Eventing based on the difficulty. The United States Eventing Association recognizes these levels but FEI only recognizes the upper levels. The levels are: Beginner Novice, Novice, Training, Preliminary, Intermediate and Advanced. The first three are considered the lower levels and the last three are the upper levels. The levels of international Events are recognized by the number of stars next to the classification of International Three-day event; there are four levels in total. A CCI\*(Concours Complet International); is for horses that are starting to compete in international competitions. A CCI\*\* is the next step for horses that have some experience of international competition. CCI\*\*\* is the advanced level of

competition. The very highest level of competition is the CCI\*\*\*\* and there are only six competitions in the world that hold this level. The proposed design will accommodate all levels to appeal to more competitors.

The first phase of the Event is Dressage. Prior to the test a horse inspection is required to determine that the horse is fit and healthy enough for the competition. The purpose of the Dressage phase is to test the harmonious development of the build and talent of the horse. The test involves of a series of required movements at walk, trot and canter gaits, inside a 66 by 197 foot rectangular arena. A strong Dressage test sets the foundation for the remainder of the competition and horses that receive a poor score in this phase face a difficult struggle to get up amongst the prize-winners.



4.4 An Event rider executing an obstacle into water

The second phase of Eventing is Cross-Country. The emphasis of the whole event is on the Cross-Country phase, the purpose of which is to test the skill of competitors and horses to adjust to diverse and variable conditions; and jumping talent of the horse, while at the simultaneously showcasing the rider's understanding of pace and the use of his or her horse. The course itself is typically 2 ¾ to 4 miles long and is comprised of 12 to 20 obstacles for the lower levels and 30 to 40 for the upper levels. The obstacles consist of firmly built natural objects



including logs, telephone poles, stone walls, and the like, numerous obstacles such as ponds and streams, ditches, drops and banks, and combinations involving several jumping efforts grounded on objects that would usually occur in the landscape. Surpassing the time allowed and refusals result in faults. All faults are added together and documented for inclusion in the final score. Fall of a horse and/or of a rider results in immediate elimination.

The international levels have a long, and in recent years; a short format. The long format has 4 phases, A, B, C, and D; during the Cross-Country day. Phase A is called roads and tracks that functions as a medium paced warm-up for the following phase. The horse and rider must travel  $1\frac{3}{4}$  to  $2\frac{1}{2}$  miles at a trot, canter and/or gallop. Phase B is the steeplechase and typically takes place on a track. The competitor must gallop and jump 5 to 7 brush jumps over a distance of 1 to  $1\frac{3}{8}$  miles. Phase C is another roads and tracks at a slower pace to allow for recovery before the final phase. This phase is performed at a trot or slow canter for  $2\frac{1}{2}$  to 4 miles. Phase D is the Cross-Country phase. The short format does not include phase A, B and C. This usually occurs due to lack of space, time, or money.

The final phase in Eventing is Jumping. The Jumping phase takes place on the last day after a second horse inspection. Competitors may willingly retire their horses if they seem unfit to finish the Event. The main objective is to demonstrate that the “horses have retained their suppleness, energy and obedience in order to jump a course of 11 to 15 obstacles” (FEI. org). The winning horse and rider has the lowest total of penalty points.

## Driving

Driving, which developed as an “FEI discipline in 1970, is the oldest competitive equestrian sport” (FEI. org). It is a discipline in which there are no riders but drivers that sit on a cart drawn by a single horse or pony, a pair or a team of four. Current Driving competitions consist of three phases.



4.5 A Driving team maneuvering Cross-Country obstacles

The first phase is the Dressage phase. For Driving, Dressage is a series of required figures completed within a 328 by 131 foot rectangular arena. The ease of the movements, the submission of the horse, impulsion and positioning are judged. The second phase is the Marathon phase. The marathon is a course over a maximum of 11 miles, which comprises of natural hazards such as



sharp turns, water and steep hills as well as built obstacles. The last phase is Obstacle Driving or “Cones” (FEI.org). This tests the fitness and suppleness of the horses after the second phase. To effectively negotiate the cones course, drivers must weave cleanly through a narrow track bounded by cones with balls balanced on top.

### Para-Equestrian Driving

Para-Equestrian Driving has been overseen by the FEI since 2006 and competes at national and international competitions in Driving for individuals with a disability. This led to the FEI becoming the first and only International Federation to manage and regulate a sport for both the able bodied and disabled athletes. The requirements for the competitions are the same as for standard Driving phases. The Classification Profile used in Para-Equestrian Dressage is also used for Para-Equestrian Driving along with the special equipment considerations.

### Endurance

In modern day Endurance competitions, the importance is placed on the horse completing in good condition, instead of who finishes first. This is confirmed by the strict rules with concerns to veterinary checks during the race. Current competitions comprise of a number of phases. At the finish of each phase, there is a required halt for veterinary inspection. Each horse, which is carefully inspected before it is permitted to begin the ride, must be presented for inspection within a fixed time of reaching each vet gate. The time expended at each vet gate before to inspection by the vets is counted as part of the total competition time and the aim is to regulate whether the horse is fit to continue the ride. Any unnecessary over-riding of an exhausted horse or any other act that can be

defined as cruelty is penalized by disqualification.

It can take years for a combination

to be ready to compete in a 100 mile ride. Endurance involves extensive preparation and a deep familiarity and understanding between horse and rider, and ultimately, the welfare of the horse can be kept at all times. An important part of Endurance riding is the support crew. Riders are aided by a team of helpers who meet them numerous times over the course, providing bottles of water to pour over the horse to help cool it down, and hydration for the rider. Crews bring spare equipment in the event something breaks or needs substituting.

### Vaulting

Vaulting became a recognized discipline of FEI in 1983 and is practiced by men and women, competing together on teams or individually. This competitive discipline is where both “dynamic and static gymnastic elements” are united and performed on a cantering horse (FEI.org). It involves both exceptional physical condition from the vaulter and a harmonious connection with the horse if the best “display of strength, coordination,



4.6 Endurance riders pacing each other





rhythm, suppleness and balance is to be achieved” (FEI.org).

Vaulting drills include “artistic mounts and dismounts, shoulder stands and handstands on the horse, carrying or lifting another vaulter, kneeling

and standing exercises” (FEI.org). The horse is steered on a long rein by a ‘lunger’ standing on the ground, who makes sure that the steady canter is kept on a circle with a minimum diameter of 49 feet. Judging is based on “technique, form, difficulty, balance, security and consideration of the horse” (FEI.org).

All competitions involve two rounds composed of either one or two tests. During required tests, vaulters must complete a number of particular maneuvers. Freestyle tests executed to music allow vaulters the artistic freedom of developing both dynamic and static movements around the required exercises. The horse, lunger and vaulter are seen as a competitive unit, and the presentation of each is reflected in the final score.



4.7 A vaulter performing a routine

## Reining

Reining is intended to show the athletic skill of the ‘ranch type’ horse in the confines of a show arena. Competitors are required to ride one of ten accepted patterns, separated into seven or eight movements, including “small slow circles, large fast circles, flying lead changes, 360 degree spins done in place, and the thrilling sliding stops” that are the trademark of the Reining horse (FEI.org). Reining competitions are held within an arena where indicators are used to aid riders to better follow pattern extents. To allow best performance and safeguard soundness, special footing is necessary.

The required movements of reining competitions include: walk-in, stop, spin, rollback, circle, hesitate, lead changes, run-down and run-around. The walk-in is when the rider guides the horse from the gate to the center of the arena to begin the pattern. The stop is when the horse slows from a lope to a stop by “bringing the hind legs under the horse in a locked position sliding on the hind feet” (FEI.org). The spin is a series of 360-degree turns, executed over a fixed inside hind leg; position of hind quarters should be static at the start and sustained during the spin. The rollback is a “180-degree reversal of forward motion completed by running to a stop, turning the shoulders back to the opposite direction and departing at a canter, as a continuous motion” (FEI.org). The circle is completed at the lope, of designated size and speed; exhibiting control, willingness to guide and amount of difficulty in speed and speed changes. The ‘hesitate’ demonstrates the horse’s ability to stand in a calm manner at a designated time in the pattern. The lead change is the act of “changing the leading legs of the front and rear pairs, at a lope, while changing direction”



(FEI.org). The run-down and run-around demonstrates the control and steady increase of speed to the stop.

In addition to the required movements, Freestyle Reining offers the chance to use movements creatively in a choreographed way with the use of music that can show the horse's athletic talent in a crowd-pleasing manner. Reining horses are judged separately. Each competitor starts out with a score of 70. One or half points are awarded or taken away for each movement. Recognition is given for "smoothness, finesse, attitude, quickness and authority" (FEI.org). Controlled speed in the pattern increases the level of difficulty and makes Reining exciting to watch.

These equestrian sports will be accommodated in the proposed design. Fort Ord Horse Park will also be available for schooling or practice to help in preparation for competitions. The size of the horse park will allow for multiple competitions to take place simultaneously with the exception of Eventing that requires the greatest use of the facilities.



*4.8 A Reining competitor completing the stop*





# SUSTAINABLE PRACTICES

Sustainable practices are a vital component to the design of Fort Ord Horse Park. Horse parks can generally be seen as sustainable to a degree. They preserve open space and habitat and typically utilize permeable surfaces. Some reuse the manure to soften the footing on Cross-Country courses and to fertilize vegetation. This is essentially a good thing, but most horse parks miss certain aspects. Mainly water; whether it's excessive bathing or rain water run-off from the barns and other structures simply going to waste. There are many opportunities for horse parks to become more sustainable. The following are sustainable practices that the proposed design will utilize.

## Composting

A horse can create about 50 pounds of manure each day. A years-worth would take up about 144 square feet of space. This waste often goes in "the pile out back" to be spread on fields or simply allowed to amass. Both choices can influence horse, human and environmental health in several ways. Parasite breeding is common in unmanaged manure. Worm larva can crawl from the manure onto the grass that the horse is grazing and ultimately the horse ingests them. Runoff from the manure piles, called leachate, can contaminate nearby water bodies. Lastly the aesthetic and odor issues of unmanaged manure can aggravate neighbors and discourage visitors (Sustainable Stables).

Good manure management can be attained by composting. Composting is the "process whereby microorganisms break down manure into a nutrient-rich,

earthy-smelling product" (Sustainable Stables). Composting condenses the volume of manure considerably and also inhibits the health, environmental, and aesthetic



5.1 An example of compost bins

problems. Composting provides a valuable resource in the form of safe fertilizer for vegetation. The type of composting that will be used in the design is called aerated composting. Aerated composting is a term used for injecting air into the manure pile by way of a perforated pipe system. This accelerates the composting process to from one to three months (Sustainable Stables).

The setup of the manure storage area is important in protecting groundwater. The base should be concrete or other non-permeable paving to prevent infiltration and have three sides to control runoff. Successful compost systems have several bins, bays, or piles so rotation can occur. The proposed design has two bays for



each barn grouping. Each bay is 22 by 48 feet and has three walls that are one foot thick. The walls are five feet tall on the sides and seven feet at the back where the bay abuts the wash rack area.

In order for the compost to work successfully, important ingredients are needed including oxygen, moisture, heat, time, and the correct mixture of materials. Composting is an aerobic process and thus oxygen is required. In order for the microorganisms to get oxygen the pile needs to be manually turned regularly or have air injected as previously mentioned. Moisture is also needed for the microbes in the compost. In Monterey County's climate moisture is not an issue but if water is needed rainwater reuse is a sustainable option. Heat plays a role in the microbes' efficiency. Compost temperatures "range from 60-110 degrees at the beginning of the compost process, and from 110-160 degrees at the end of the process" (Sustainable Stables). Heat usually is not an issue because the decomposition process creates this heat on its own. Composting takes time but if there is sufficient airflow, moisture, and temperature it can take as little as a month. The right mixture of materials means the balance of the amount of manure, bedding, yard waste and the like in order to achieve a good carbon to nitrogen ratio.

### Solar & Wind Energy

Solar and Wind energy are sustainable practices that can be implemented at virtually any horse park. The renewable energy can power the lighting on the site and heat water for human and horse use. There are several ways that the energy from the sun can be harnessed to



5.2 Photovoltaic panels on the roof of a barn

supply electricity and heat. The solar technologies that will be used in the proposed design are Photovoltaic panels and solar hot water systems. The Photovoltaic panels will be used on the roofs of the barns, the stadium arena,



5.3 Vertical-axis wind turbine

the indoor arena, and support buildings. PV panels are comprised of solar cells packaged together in arrays. The cells convert energy from the sun into electricity. The solar hot water systems will be used on the roofs of the bathrooms that are located near the wash racks and are centrally located in the barn groupings. The sun "heats fluid-filled tubes that run through a roof-mounted collector" (Sustainable Stables). The hot water is then stored in a tank.

Wind technologies can be used in the design to provide another source of energy. Wind "turbines convert the movement of the wind into energy" (Sustainable



Stables). The wind turns the turbines' blade, which powers a generator. The type of turbine used in the design will be the vertical-axis that can generate electricity at lower wind speeds and wind direction is not as important as the horizontal-axis turbine.

#### Water Use and Storm Water Runoff

In recent years there has been salt water infiltration in the groundwater along the Salinas River that is affecting the local agriculture. The Salinas River and the Pacific Ocean partially bound Fort Ord and there is a strong possibility that the water on the site could be contaminated by salt water. Collecting and using rainwater and selectively reusing greywater are going to be used in the design.



5.4 Cistern for storing rainwater runoff from the roof

Rainwater harvesting systems can provide beneficial effects by reducing peak storm water runoff and processing costs. Rainwater harvesting systems are simple and they provide water at the point of consumption. Rainwater from roofs can contain contaminants but there are methods that can filter out those in order to make the water safe for human and horse use. The rainwater is collected from the gutters of the roofs and stored in either tanks or in an unlined surface reservoir so the water can get filtered through before entering the ground also known as groundwater recharge. Metal roofs are desirable for the best runoff. The rainwater can be used to irrigate the vegetation, water the arenas, fill the water obstacles on the Cross-Country course, or water the compost pile.

Greywater reuse will be used in the design for

vegetation irrigation and for the bathroom toilets. Greywater is the recycling of 'waste' water generated in homes and commercial through the use of water from sinks, showers, bathtubs, washing machines, and dishwashers. The greywater treatment system that will be utilized is the diversion system. This system reuses the greywater immediately. Diversion systems divert greywater into toilet tanks, landscape irrigation, and to treatment wetlands. This system usually involves filtration to capture lint, hair, fats, grease, and so on and a means of disinfection to kill bacteria. Diversion systems essentially re-plumb drain water directly into a toilet tank for flushing or into a small storage container that ultimately pumped into a toilet tank. An alternate use of the diversion system is for outdoor irrigation, which often requires additional plumbing, irrigation tubing, and an electrical pump to move the water outdoors.

#### Building Orientation

Orientation of the building generally used to refer to "solar orientation which is the siting of building with respect to solar access" (wiki.aia). The building orientation can impact heating, lighting and cooling costs. Maximizing southern exposure can take best advantage of the sun for daylight and passive solar heating. This will influence the Photovoltaic panels of the roofs if the greatest area is south-facing. The barns will be solar oriented and the stadium arena as well.

#### Bio-swales

The design will utilize bio-swales for onsite surface runoff management. Bio-swales are "landscape elements designed to remove silt and pollution from surface runoff water" (Loechl, 2003). A bio-swale is a





swaled drainage course with gently sloped sides, less than six percent; and filled with vegetation, compost and/or riprap (Loechl, 2003). The water's flow direction, along with the wide and shallow ditch, is designed to take full advantage of the time water spends in the swale, which aids the catching of pollutants and silt. The bio-swales will be constructed on the uphill and the downhill side of the barns in the design. The native grasses that can be used in bio-swales in Monterey County are *Bromus cilantrus* (Fringed brome), *Juncus torreyi* (Torrey's rush), *Muhlenbergia richardonis* (Mat muhly), *Nassella viridula* (Green needle-grass), *Phragmites australis* (Common reed), *Schoenoplectus tabernaemontai* (Soft bulrush), and *Andropogon glomeratus* (Bushy bluestem). Bio-swales can filter out many contaminants and in the case of equine dominated areas pathogens as well. Pathogens normally originate from surface runoff containing animal wastes and can lead to a variety of diseases in humans and aquatic organisms. The filtration of these can help to create a healthier environment for the competitors, horses, and the local habitat.

These sustainable practices will hopefully make Fort Ord Horse Park self-sustaining and have a smaller environmental impact. These practices can be implemented at virtually any horse park depending on the climate and finances.



5.5 An example of a bio-swale with a variety of grasses



# EQUESTRIAN PARK EXAMPLES

## California Horse Park Examples

Fort Ord Horse Park will pull inspiration from California's nationally and internationally recognized horse parks as well as the Georgia International Horse Park and Kentucky Horse Park. The California horse parks show what can be done with the varied terrain of the state. The use or lack of use of sustainable practices will also be reviewed to determine how horse parks in California are advancing or negatively impacting the environment. The latter two horse parks provide examples of what amenities are typically available at international scale horse parks. Unfortunately the California horse parks had virtually no literature regarding any sustainable practices utilized. Personal experience at visiting the California horse parks has shown water waste as being the obvious negative impact. The positive influences of the horse parks is the respect and preservation of open space and habitat.

### Twin Rivers Ranch

Twin Rivers Ranch is considered a California central coast premier equestrian facility. This horse park has similar terrain to that of the proposed Fort Ord Horse Park as well as respecting the existing vegetation. The



6.1 California horse park context map

horse park is not as large as the proposed horse park but has the capacity to hold international equestrian shows in the future. This horse park specializes in Eventing, and provides one of only three Advanced-level cross country courses in California. The park also offers options for beginners with elemental logs and a recognized Beginner Novice course. Twin Rivers is considering expanding to

include all equestrian disciplines such as dressage, show jumping, hunters, driving, and western events. The facility has large and small dressage courts set up year round, complete cross country course for all levels containing two giant water jumps, a 300' x 400' fenced stadium arena, several warm up arenas, all with sandy-loam footing. Other amenities consist of a separate lunging arena, wash racks, 68 permanent stalls, numerous trails, easy vehicular access off the 101 freeways, and adequate



space for parking large vans and trailers. The park has a central vendor area that is near lawns, trees, and gardens.

### Galway Downs

Galway Downs is also known as the Southern California Equestrian Center. It holds a variety of horse events including jumping, dressage and Eventing, with significant events

such as Galway Downs International Three-Day Event. The grounds hold numerous permanent barns for competition

and boarding along with several arenas for a variety of equestrian disciplines. The cross country course is of an international scale and there is a mile long steeplechase track both influencing the Fort Ord Horse Park design. The horse park has permanent barns and large vending areas. The terrain is not as varied as other horse parks in California which is considered to be easier to ride. It can



6.2 Galway Downs aerial of the track

also be seen as less interesting for competitors.

### The Horse Park at Woodside

The Horse Park at Woodside is situated on 272 gradually rolling, oak-studded acres on the border of Menlo Park and Woodside, California. This example is similar to Fort Ord Horse Park terrain. The Horse Park's facilities, landscape and attractive scenery have made it the ideal location for equestrian sports including Eventing, Pony Club Ratings, Dressage, Arena Polo, Hunter/Jumper Shows and Western Reining. The horse park amenities include eight arenas incorporating more than 4 acres of sand footing, a full-size dressage court, 110'x225' covered arena with large overhang and spectator seating, cross country course for Beginner Novice through Intermediate levels that includes 2 water complexes, and an exercise track. There are twelve 20 stall portable/temporary barns (240 stalls) for competitions along



6.3 The Horse Park at Woodside aerial view





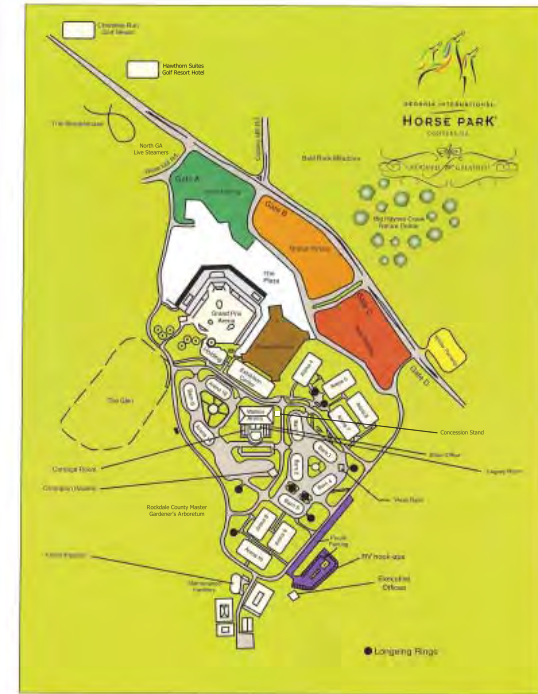
with 150 acres of open pasture. The horse park also has widespread trails joining the region-wide Woodside Trail Club network. Show office with a large porch and seating is located at the entrance to the park. Grassy vendor and event viewing areas are located near the arenas for convenience. Multiple wash racks are available around the facility for boarders, show competitors and day-haul in users. The horse park also provides boarding with a 52 stall main barn with center breezeway. This horse park respects the terrain and the amenities influenced the proposed design.

### International Horse Park Examples

#### Georgia International Horse Park

The Georgia International Horse Park has been open since September of 1995. This horse park hosted one of the most prestigious of equestrian sporting in the world: The 1996 Centennial Olympic Games. The park held all of the equestrian events, as well as the first ever mountain bike competition and the final two events of the modern pentathlon of the 1996 Centennial Olympic Games. Currently the horse park provides a venue for equestrian competitions, festivals, concerts, wedding receptions, family reunions or sports competitions. The 1,400 acres can accommodate events of all scales. The scale of this horse park provides an idea of the special needs of an international horse park. Georgia International Horse Park combines equestrian facilities and public recreational facilities. This aspect could be implemented in the proposed design in the future to integrate the horse park into the community. The facilities include museums, a restaurant, gift shop, indoor show arena, dressage arena, show-jumping arena, stables and warm

up areas, steeplechase track, a three-quarter mile track, a golf course and a campground. The horse park's goal is to offer a permanent equestrian compound that will meet the requirements of all equestrians, while also providing recreational prospects for the community.



6.4 Georgia International Horse Park site map

In addition, the horse park includes a “160-acre nature preserve called the Big Haynes Creek Nature Center and an apartment complex called Keswick Village.” This relates to the proposed design’s goal of preserving habitat. The Nature Center contains a canoe launch, observation pavilion overlooking the wetlands and a 4/10 mile walking trail. The Georgia International Horse Park continues to grow by adding new developments to the park including a 30,000 square foot Exhibition Center that opened in the spring of 2007 and an additional



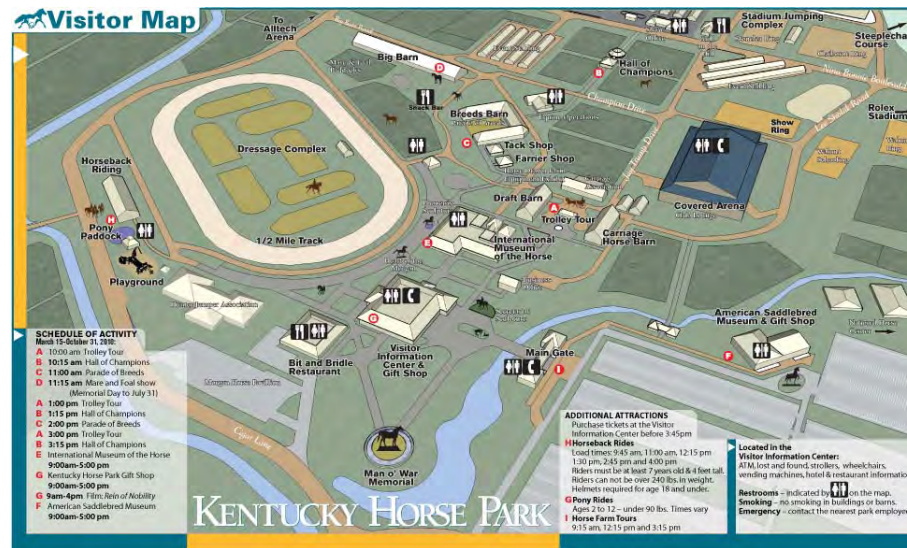
barn offering 100 10x10 foot stalls (Georgia International Horse Park).

### Kentucky Horse Park

Kentucky Horse Park is currently a working horse farm and an educational theme park that opened in 1978 in Lexington, Kentucky. The equestrian facility is a 1,224-acre park dedicated to “man’s relationship with the horse.” Open to the public, the Park has a twice daily

event held was the 2010 FEI World Equestrian Games in September and October. The 2010 games was the first time the games had been held outside of Europe. The games included eight Olympic-level world championships that had never been held together in a single location outside of Europe. This example influences the size consideration and international scale of the proposed design (Wiki, Kentucky Horse Park).

Examining these horse parks has provided an influential perspective on how the Fort Ord Horse Park will ultimately function and what requirements are needed for the horse park to qualify internationally. It would be interesting to see how these horse parks will evolve with the consideration of sustainability.



6.5 Kentucky Horse Park tour map

Parade of Breeds, exhibiting both common and rare horses from around the world. The park is host to a number of special events and horse shows annually. In the 1970s, the Kentucky Horse Park became a retirement home for some of the world’s greatest competition horses. The internationally recognized Rolex Three Day Event is one of the largest competitions the horse park hosts as well as Pony Club Championships, USEF Pony Finals, and pony hunter/jumper national championships. The most recent





# SITE DESIGN

Fort Ord Horse Park will be an international venue for equestrians to enjoy and compete their horses. The design accommodates the FEI recognized sports while preserving local habitat and utilizing sustainable practices to minimizing the environmental impact of the park. The overall site is approximately 2,000 acres, with the majority designated for the Cross-Country course and the habitat buffer areas. The facilities take up the eastern portion in close proximity to an existing road that travels through that area. The facilities are located in this area based upon the constraints of the existing oak woodlands and the topography. The facilities include a main stadium arena, an all-weather indoor arena, competition barns, competition and auxiliary arenas, a steeplechase track, support buildings, and parking.

**1** The entrance to the site will be off of Watkins Gate Road. This entrance point was chosen because of

the existing Barloy Canyon Road-Watkins Gate Road intersection. Barloy Canyon Road travels through the Eastern portion of the design site making it ideal for reuse as oppose to construction of a new road. The entrance will have signage indicating the name of the park and will be constructed of reclaimed steel and stone from nearby construction sites. Flanking the entrance will be sculptures of horses potentially designed by local artists. Surrounding these sculptures and the signage will be a variety of native vegetation such as Monterey manzanita, Dwarf ceanothus, Coast silk tassel, and Sierra plum; grown in an organic manner. As one travels down the Barloy Canyon Road to the facilities; existing native oak woodlands flank on both sides of the majority of the entrance road. The oak woodlands consist of several native oak species as well as perennial grasses, shrubs and other native trees to Monterey County such as the Monterey cypress. Once the oak woodlands begin to thin out, na-



tive trees such as Coast live oaks and/or Big leaf maples; will be planted as an alleé to shade the road along with mid-level shrubs such as Monterey ceanothus, so views will not be inhibited. The road will terminate close to the southern portion of the site where RV, trailer, and visitor overflow parking will be below the steeplechase track to the south-west side and barn access and continued trailer parking on the south-east side.

**2** The main arena, also referred to as the stadium arena, is the largest structure at the horse park. The location of this arena will be the first structure seen while driving down the entrance road. It has an approximately 140,000 square foot sand arena with an island of native oak trees and various other plantings such as Valley oaks, perennial grasses and California poppy; to maintain the natural feel of the park. The arena will be contained by recycled PVC or reclaimed timber fencing. On the southern side of the arena will be the covered stadium seating holding approximately 8,000 spectators and below the seating will be a spacious semi-open air vending area

for equestrian products, food, and local vendors to sell during competitions. The main source of power for the structure will be photovoltaic by the use of solar panels on the roof. Surrounding the southern side of the structure will be an open plaza with permeable paving, multiple options for seating and naturalistic planting arrangements. The permeable paving will be stone or concrete pavers with gravel or vegetation in between to allow for water infiltration. The vegetation will be native shade trees such as California sycamore and Coast live oak along with multi-leveled plants such as Monterey manzanita, Dwarf ceanothus, and Red fescue for interest. The seating will be a variety of singular benches, grouped benches, and benches with tables. Some of the seating will be movable for the food vending area and will only be available during competitions. The permanent seating will be constructed of reclaimed materials such as timber and recycled steel. The stadium arena will have two warm up or auxiliary arenas, 300 by 150 feet each; close for convenience. The stadium arena will primarily hold the



equestrian sports of Jumping, Dressage, Para-Equestrian Dressage, Driving, Para-Equestrian Driving, the Stadium phase of Eventing, Vaulting, and Reining. The arena can also be utilized as a space for local community events, concerts, and festivals.

**3** In close proximity to the stadium arena will be a structure housing the main office and competition support. Also close by will be site maintenance buildings housing tractors, tools, and supplies for the park. Another competition arena will be covered for all weather riding. The arena will be approximately 120 feet by 280 feet and will have bleacher seating for about 2,000 spectators. The structure will be partially enclosed to allow for mild wind circulation. The interior lighting will be powered by solar panels on the roof. There will be spectator parking within walking distance to the stadium arena, main office, and the indoor arena.

**4** The steeplechase track will be in a non-traditional form. It will be in the shape of a figure eight instead of

the traditional elongated oval and the track itself will be 1 3/8 mile in length. The footing will be composed of sand and bounded by PVC fencing. In the center of one side of the figure eight style course will be an announcers' tower surrounded by native vegetation that will blend in with nearby oak woodlands. Close to the steeplechase track will be another support and maintenance building and an auxiliary sand arena, 300 by 150 feet.

**5** The horse park will have enough stalls to hold 640 horses. The arrangement of the stalls will be 16 stalls per barn. The stalls will be 12 by 12 feet. The barns will be constructed of reclaimed timber, steel and plastics. There will be 40 barns total and they will be divided into 4 barn groupings. Each group will have a central wash rack, compost and bathroom area. The barns will have solar panels on the south facing side of the roof for powering the lighting and heat the water for the wash rack and bathroom. The barns will be solar oriented where topography allows and they will have an extended overhang for better sun protection and rain. Flanking the barns



will be bio-swales for excess runoff to infiltrate. The bio-swales will have a variety of vegetation the can tolerate Monterey's climate. There will be a rainwater collection system for each barn and an above ground storage tank. In the wash rack and bathroom (sinks) area there will be a grey water collection, filtration and storage system for reuse in toilets and irrigation for plants on site. There will be gravel or rubberized bricks for the pathways and the plantings surrounding the pathways will be a variety of native vegetation previously stated. Auxiliary arenas, 300 by 150 feet; will be placed in close proximity to 2 or 3 of the barn groupings for convenience. Parking for trailers will be in close proximity to the barn groupings. There will also be room for RV parking and camping located just south of the steeplechase track.

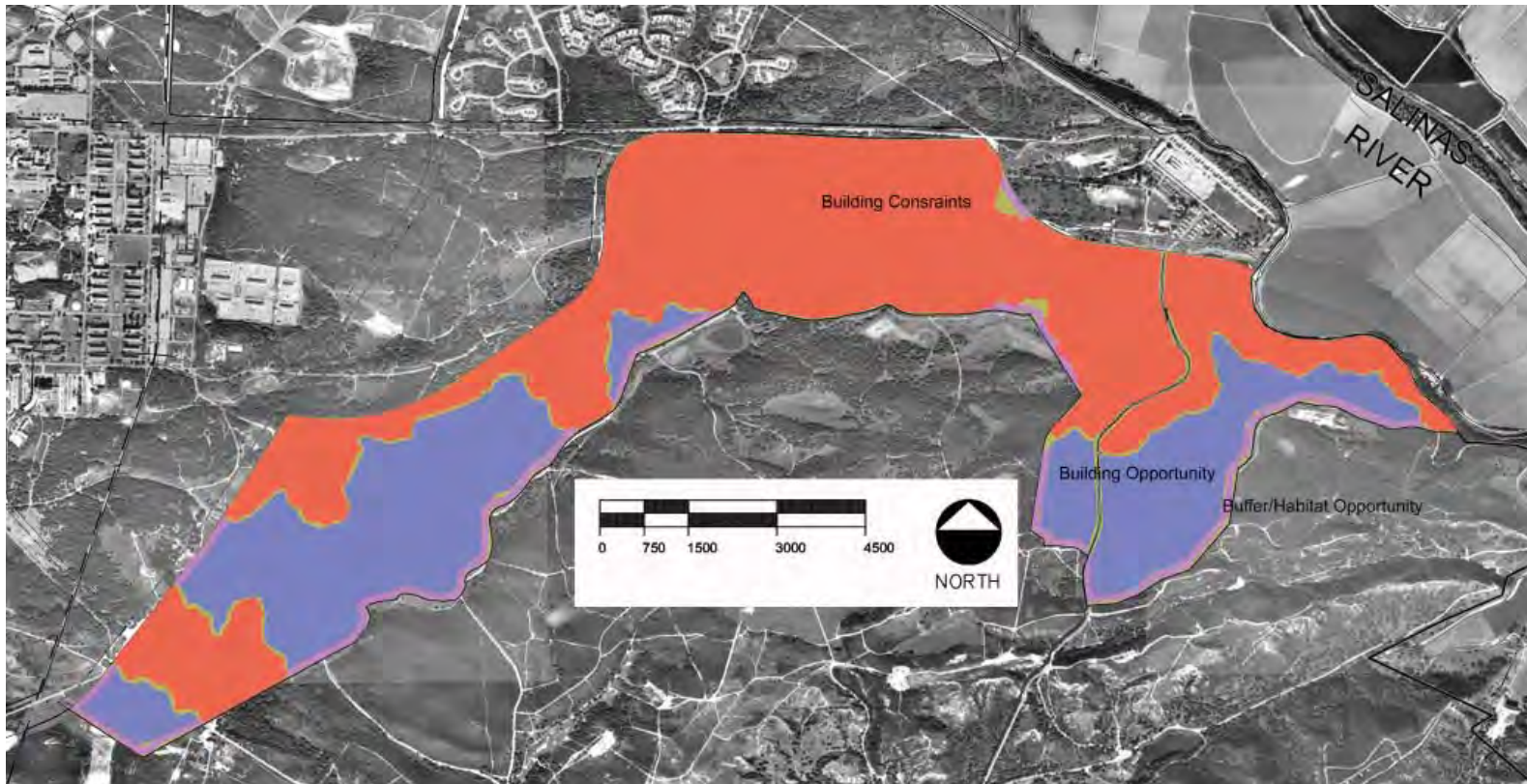
**6** The largest portion of the park will be dedicated to the cross country course. This area will be mostly open space with the existing oak woodlands preserved. For soil stability and invasive species management, native perennial grasses and shrubs will be planted where needed.

The cross country obstacles will be spread throughout and the courses will be designed by various Eventing course designers and the course will undergo changes regularly, either annually or every other year; to make sure the soil where the horses' travel on the course does not get overly compacted or degraded. The course will also provide obstacles for the Driving course as well. The obstacles will be constructed of existing materials, as in fallen trees and recycled wood from local construction sites. The water obstacles will be located in the areas of low elevation on the Cross-Country course.

**7** Around the perimeter of the entire site a habitat buffer will be established. This buffer will include existing vegetation and new plantings to increase the vegetation density to provide adequate coverage for local fauna. On the other side of the buffer will be a constructed steel pipe fencing to enclose the site for safety and to delineate the perimeter.



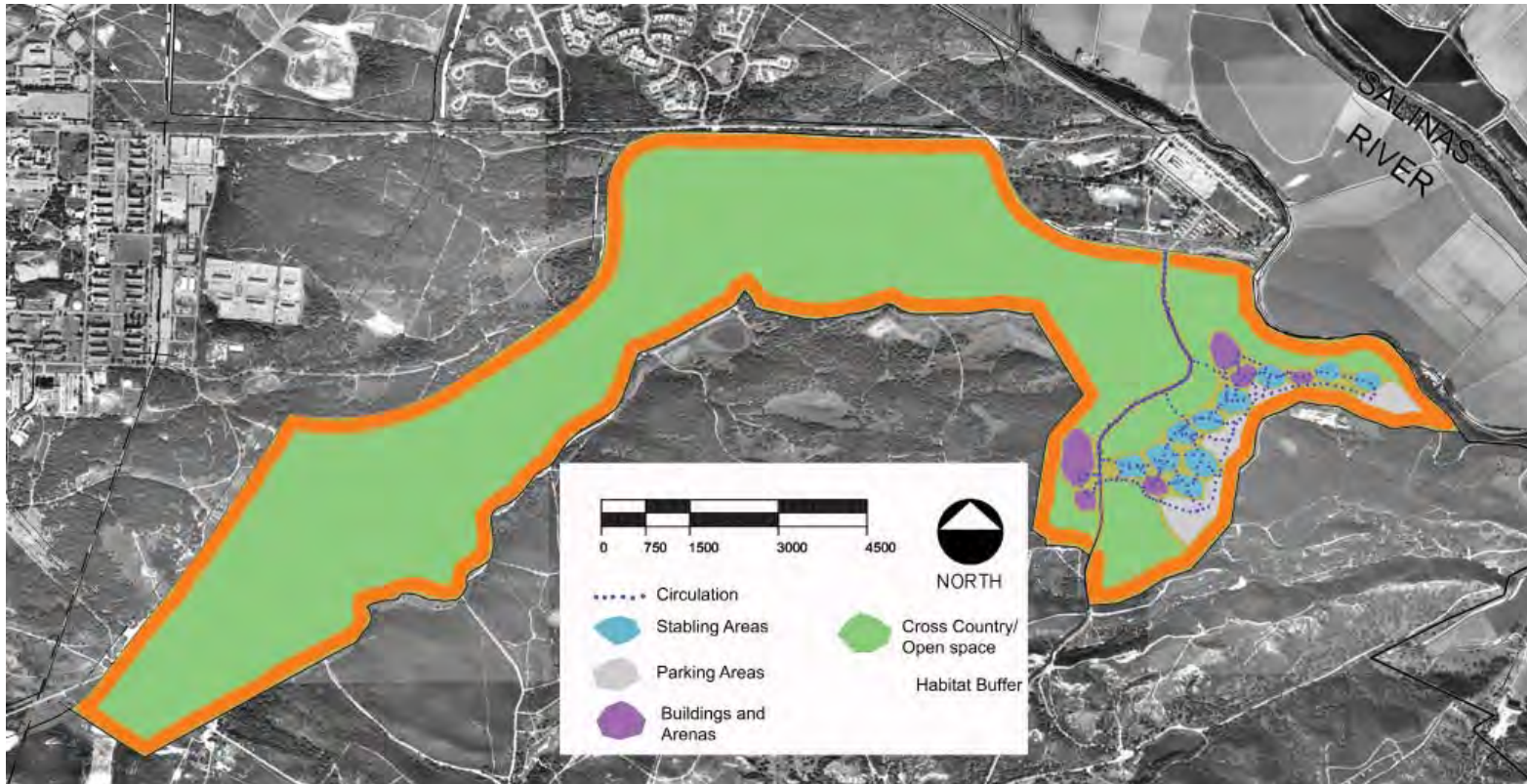
# OPPORTUNITIES AND CONSTRAINTS



7.1 Opportunities and Constraints map



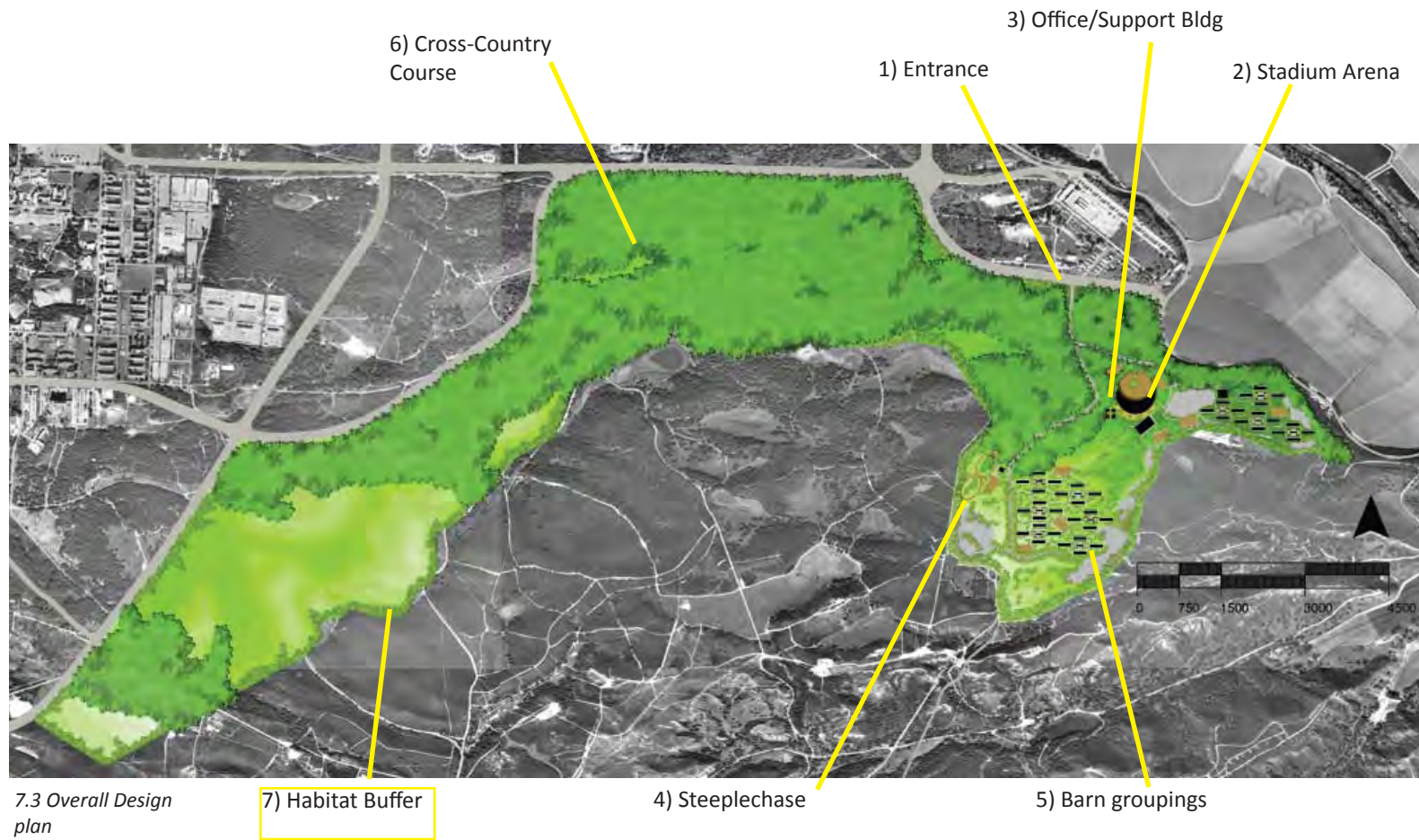
# DESIGN CONCEPT



7.2 Design Concept map



# OVERALL SITE DESIGN

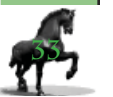




# FACILITY FOCUS

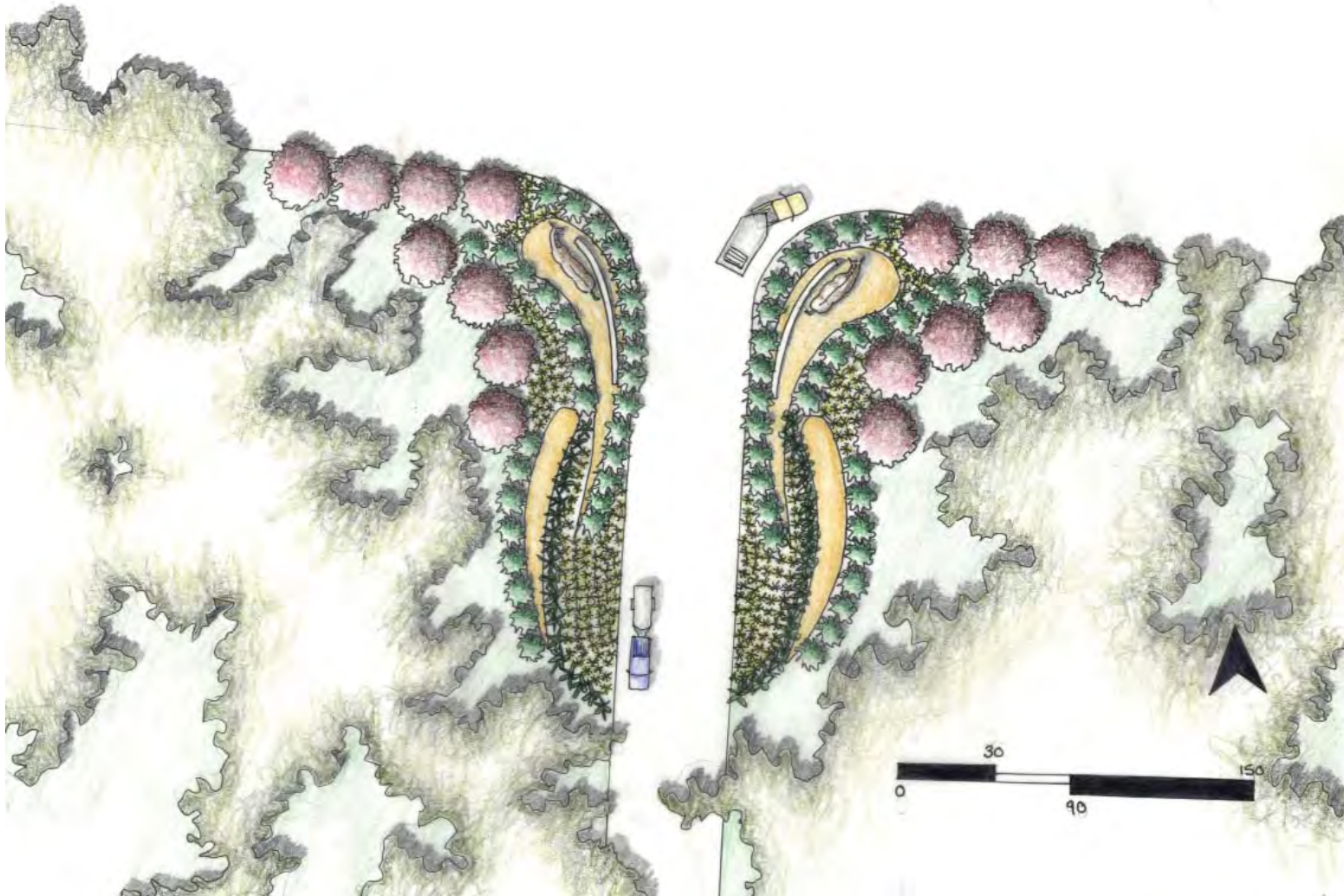


7.4 Facility Focus plan





# ENTRANCE FOCUS



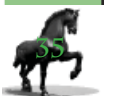
7.5 Entrance plan



# ENTRANCE PERSPECTIVE

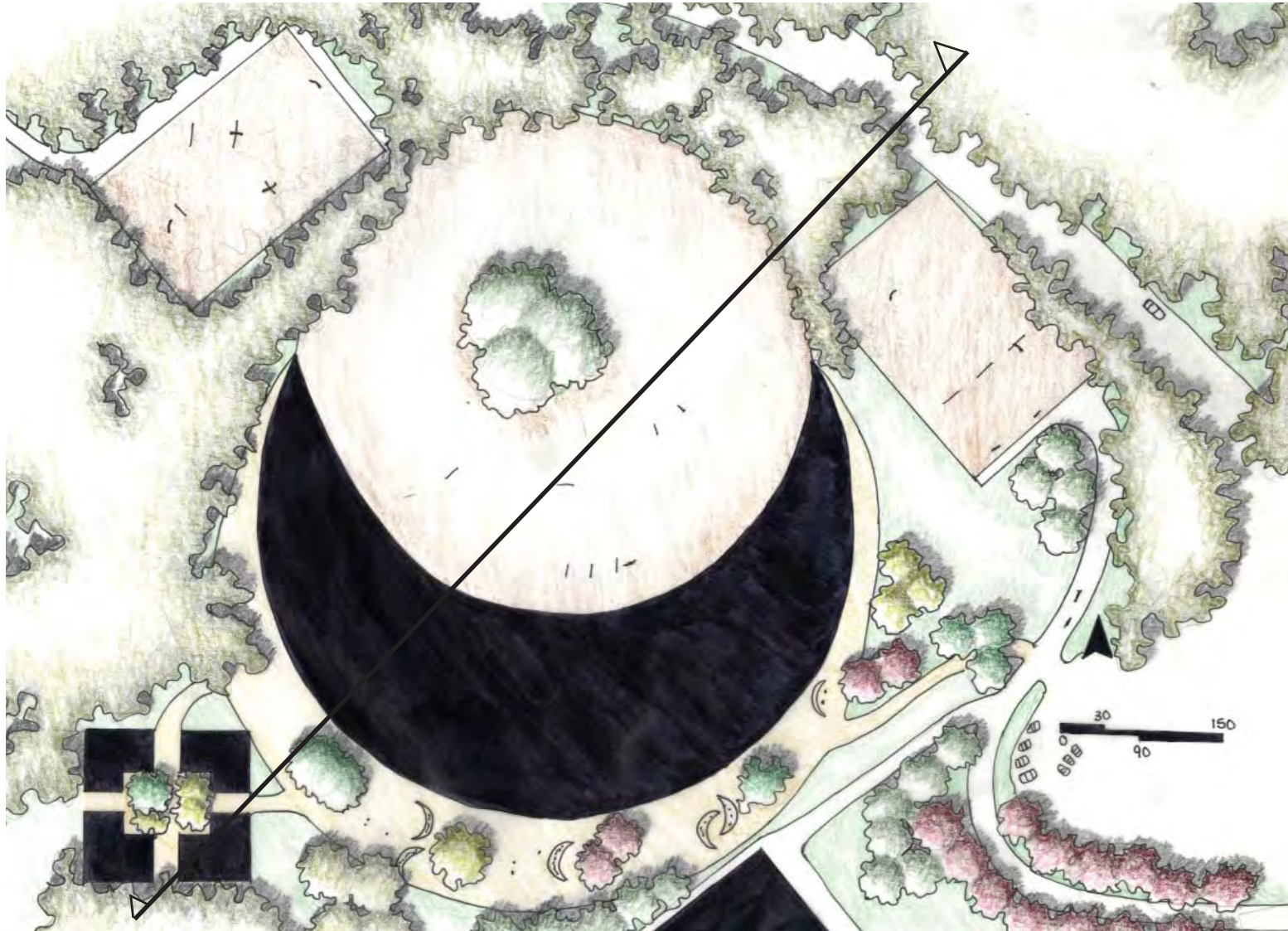


*7.6 Entrance perspective*





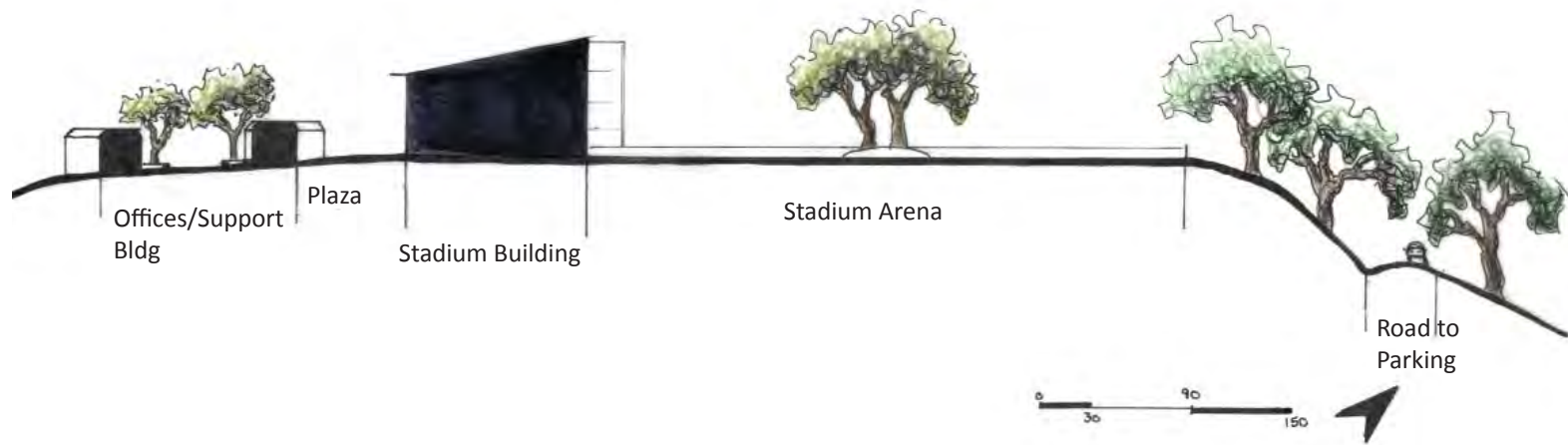
# MAIN ARENA FOCUS



7.7 Main arena plan



# MAIN ARENA SECTION

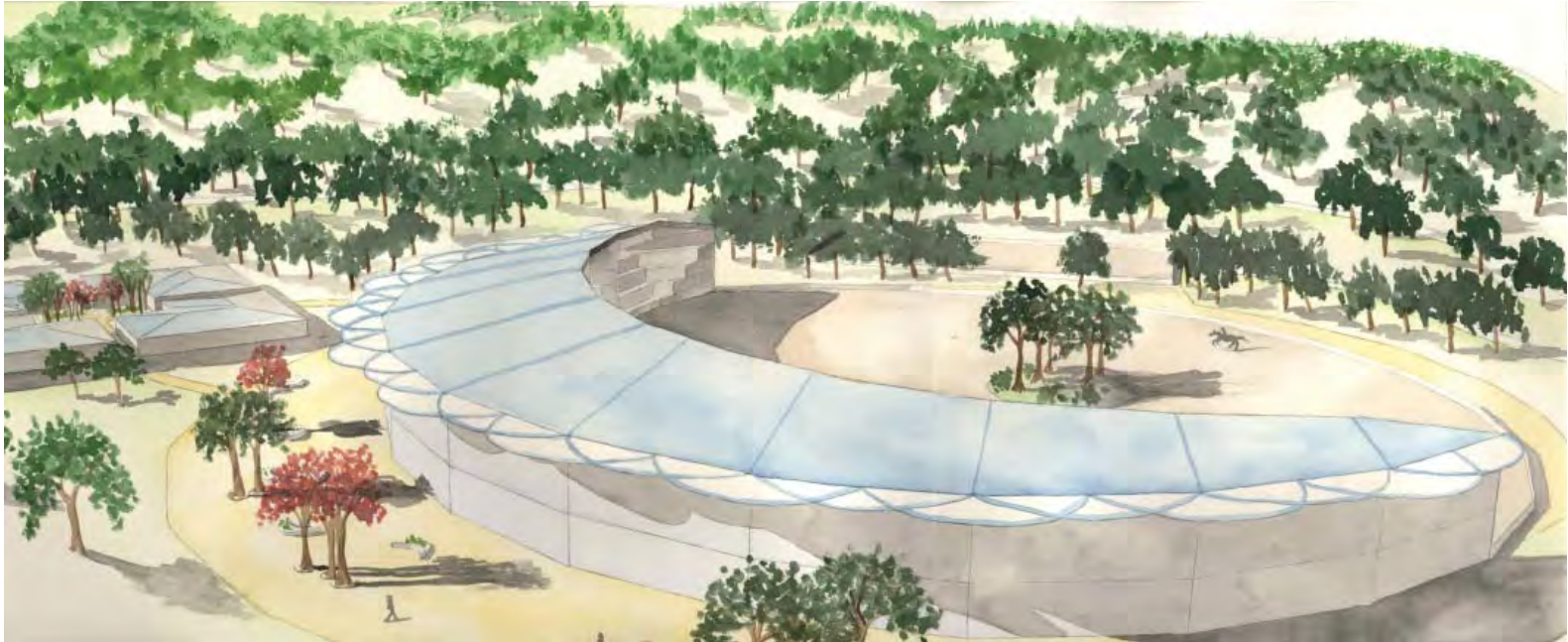


7.8 Main arena section/elevation

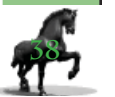




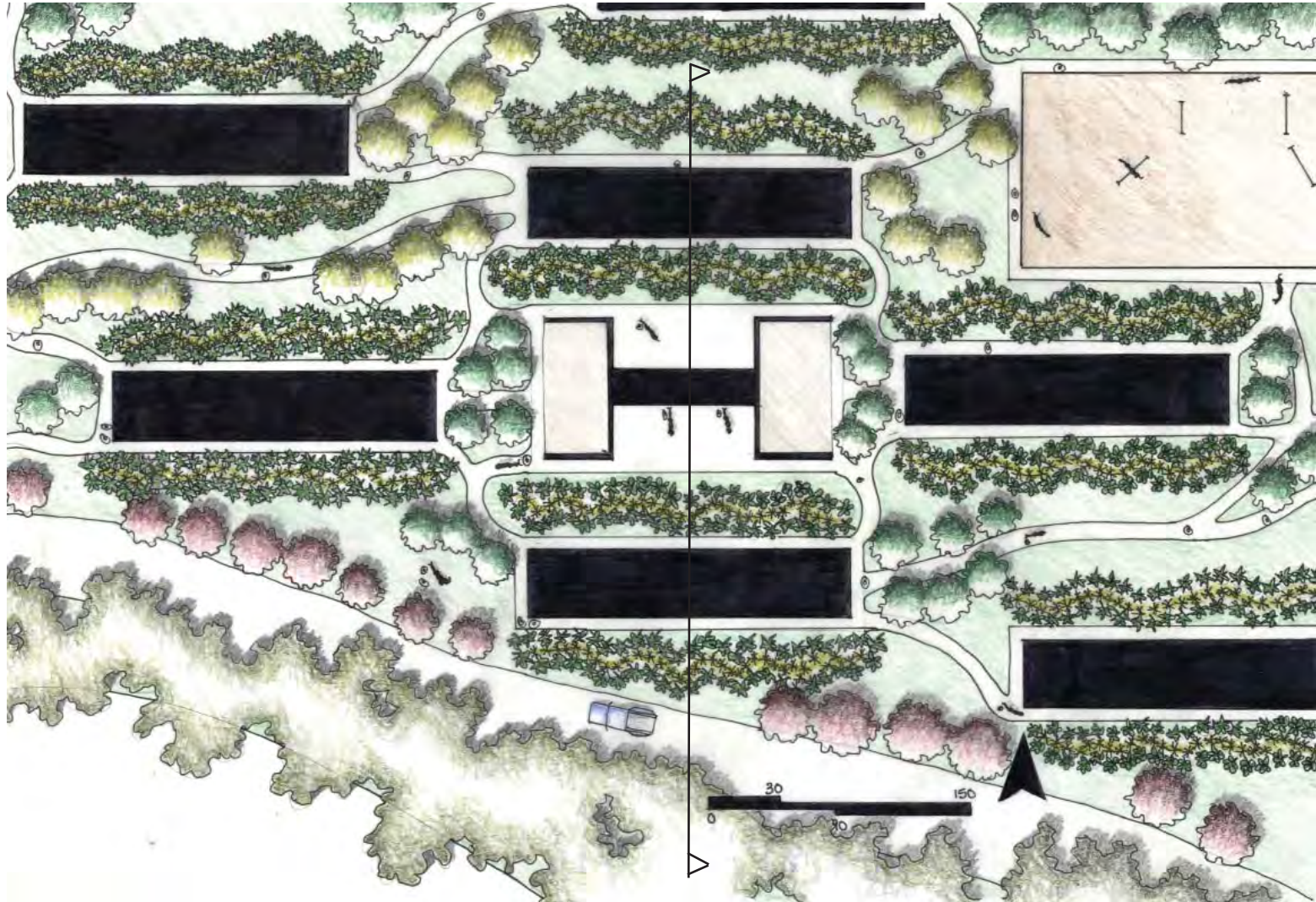
# MAIN ARENA PERSPECTIVE



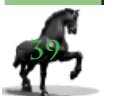
*7.9 Main arena perspective*



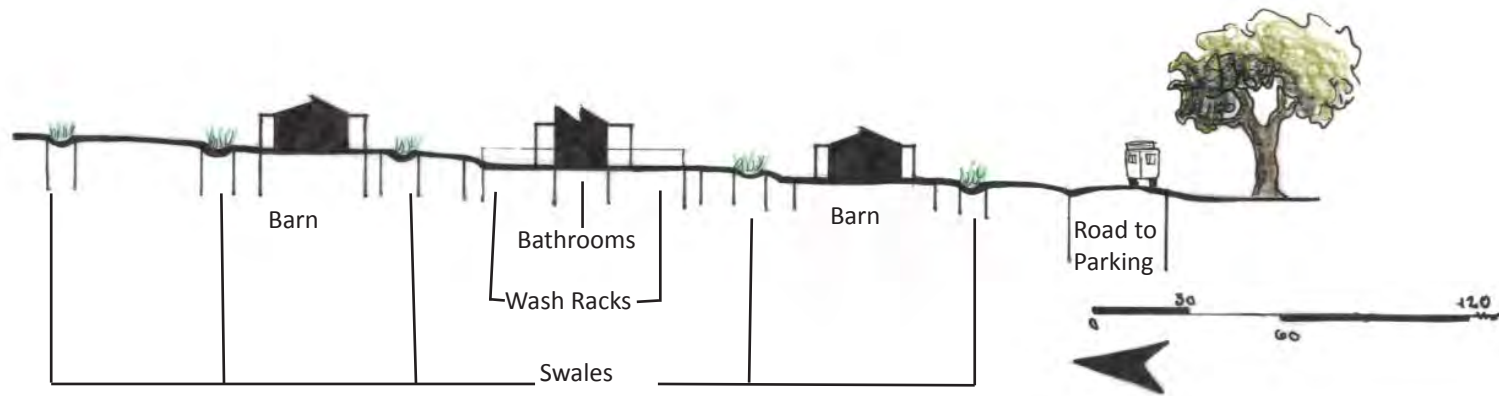
# BARN GROUPING FOCUS



7.10 Barn grouping plan



# BARN GROUPING SECTION



7.11 Barn grouping section/elevation





# BARN GROUPING PERSPECTIVE



7.12 Barn grouping perspective





# CONCLUSION

This project has provided an overview of the history and existing conditions of Fort Ord along with how to handle the issues the site presents and the potential opportunities that can come from a former military base. As challenging as the project was the potential benefits a sustainable horse park could be influential to the county of Monterey and even the region. A take away from designing a sustainable horse park is that implementing sustainable practices is an ideal opportunity that should be implemented in existing and future horse parks.



*8.1 Me competing Bucks at an Event at Ram Tap Horse Trials*



*8.2 Me competing Erin at Ram Tap Horse Trials*



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