



The Pineries Open Space Master Plan

El Paso County Parks

December 2010

DRAFT

Dec. 2, 2010



Acknowledgements

The El Paso County Board of County Commissioners approved the acceptance of the Pineries Open Space parcel on August 19, 2010 which makes this holding the largest parcel in the El Paso County park system at 1,070 acres.

First and foremost, we appreciate the leadership and support from the Board of County Commissioners for the continued development of parks, trails, and open space in El Paso County.

El Paso County Board of County Commissioners

Dennis Hisey, Chair
Amy Lathen, Vice Chair
Wayne Williams
Sallie Clark
Jim Bensberg

Planning for public access to this resource required the interaction of diverse interests. I wish to acknowledge the following individuals and organizations that have helped to create the vision for this wonderful resource.

The Park Advisory Board committed significant time and effort to the oversight of the Pineries Open Space acceptance process and the coordination of the master planning process.

El Paso County Park Advisory Board

Jane Fredman, Chair
Robert Altenbernd
Barbara Remy
Chris Meyer
James Mariner
Warren Hill
Jeff Cramer
Martha Johnson
Michael Straub

Direction and citizen input for the Pineries Open Space Master Plan was provided by a citizens planning committee. Members of the Master Plan Committee, listed below, gave valuable input to County staff and to the consultant team, and generated thoughtful ideas that are incorporated into the Plan.

Pineries Open Space Master Plan Committee Members

- Jane Fredman
- Lisa Dorr
- Judy Tobias
- Terry Taylor
- Anthony Wenger
- Leif Garrison
- Tim Kealy
- Barbara Remy
- Pamela Deveraux

The Palmer Land Trust holds a conservation easement on most of the Pineries Open Space. Nathan Moyer, Stewardship Program Manager of the Palmer Land Trust, provided guidelines for use of the conservation easement and coordinated the review of the master plan by the Palmer Land Trust, a requirement of the conservation easement.

Funding for the Pineries Open Space Master Plan was provided by a grant from Great Outdoors Colorado and a contribution by El Paso County.

County staff played a significant role in the preparation of the Pineries Open Space Plan. The following staff members deserve recognition for their contributions:

- Elaine Kleckner, Planning Manager
- Jerry Westling, Park Operations Manager
- Bill Campbell, North District Maintenance Supervisor
- Kent Timmerman, Park Maintenance III
- Jason Meyer, Park Planner

The County was also fortunate to have a diverse and highly professional Master Plan Consultant Team that was led by N.E.S. Inc. We were very pleased with their outreach efforts, extensive research, and creativity when developing this plan.

Master Plan Consultant Team

N.E.S. Inc. Lead Consultant- John Maynard, Ron Bevans

Land Stewardship Consultants, Inc. – Alan Carpenter

Tapis Associates, Inc. – Priscilla Marbaker

Drexel, Barrell & Co, Civil Engineers – Tim McConnell

CTL Thompson Inc., Geotechnical Consultants – Jon Lovekin

Steve Spalding, Forestry Specialist

Jim Coffman Studios, Equestrian Trail Specialist

Finally, we thank the many citizens who committed the time and effort to provide input on the development of the master plan. This input was extremely helpful in ensuring that we are meeting the needs of park users.

Tim Wolken

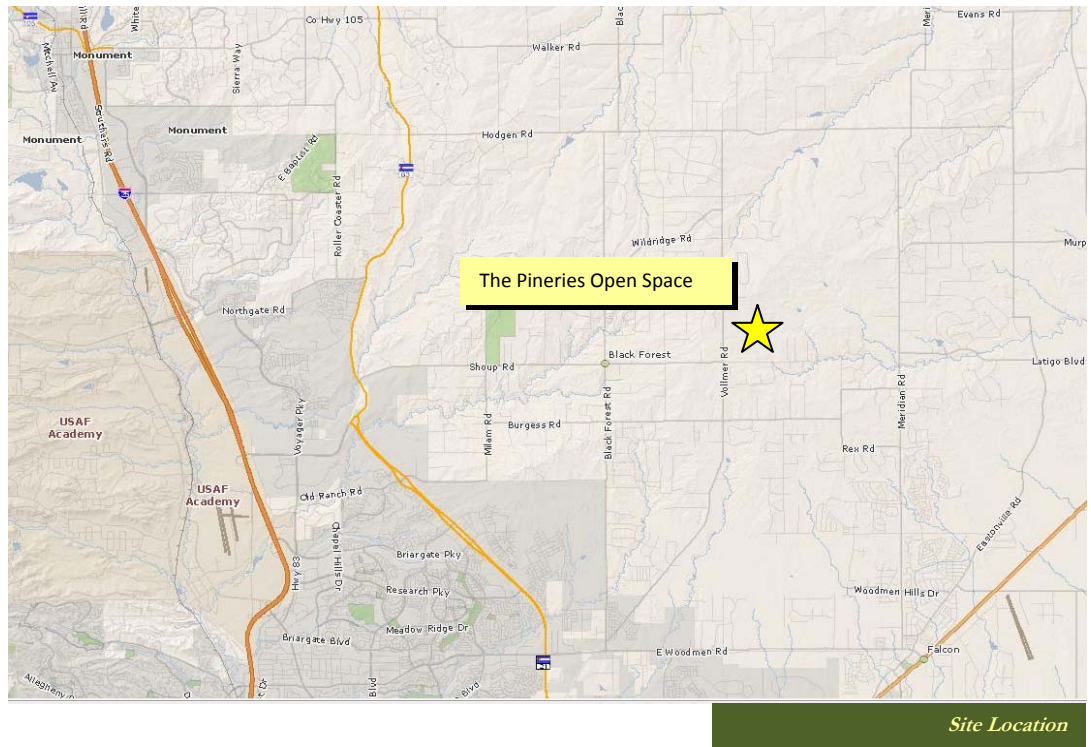
Director of Community Services

Table of Contents

Introduction.....	1
Goals	3
Planning Parameters	4
Historical Use of the Pinerias Ranch	7
Public Process and Outreach	9
Site Inventory and Analysis	12
The Plan.....	25
Recommendations	37
Design Guidelines	40
List of Resources	47
Appendix	49

I. Introduction

The Pinerias Open Space is located in the Black Forest area of El Paso County, Colorado, northeast of the intersection of Vollmer Road and Shoup Road. At the present time, the only access to the approximately 1070 acre Open Space is from Shoup Road via a partially constructed subdivision road and from Vollmer Road via privately owned land.



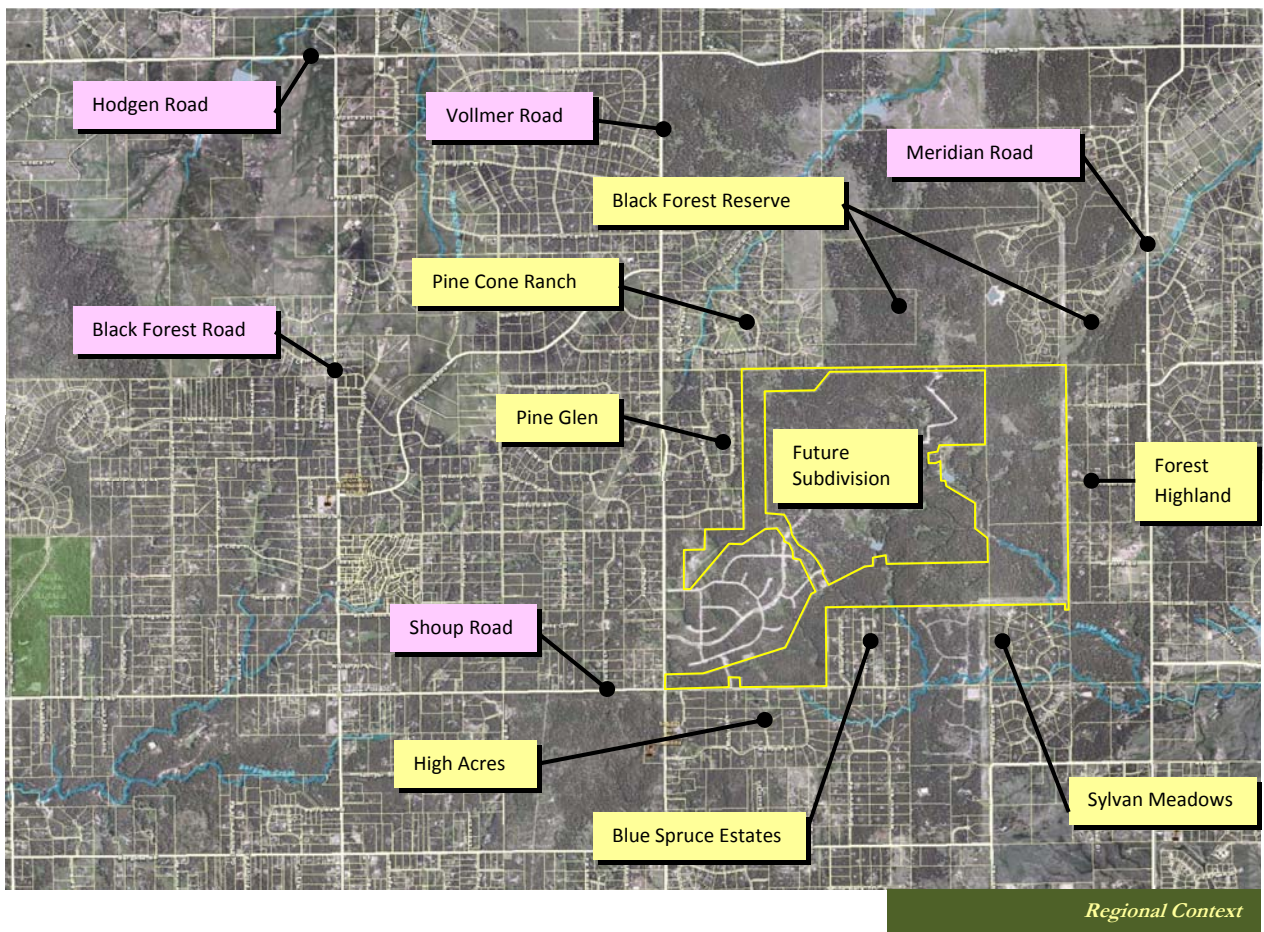
The purpose of this master plan is to set forth the parameters for public access to and use of the property, and to create a vision for its preservation as a unique asset. The Pinerias Open Space is the largest open space holding under County ownership. It contains a variety of unique vegetation habitats, including plants rare and unusual in Colorado and mature Ponderosa Pine forest that is considered to be classified as old growth. The Pinerias Open Space was acquired by El Paso County as a result of dedication by the developer of adjacent land. The property, with the exception of approximately 30 acres, is subject to a conservation easement held by the Palmer Land Trust.

The intent of the conservation easement held by the Palmer Land Trust is to insure that the property will be preserved in its natural condition. By preservation of the property in its natural condition scenic, wildlife and ecological values that currently exist on the property will also be preserved and maintained. The conservation easement allows for conditional public access and for controlled educational access.

The Pinerias Open Space is surrounded by existing rural residential subdivisions. There are limited opportunities for access to the Open Space from these subdivisions, and conservation values of the conservation easement preclude allowing direct access from individual lots.

Interior to the Pinerias Open Space, zoning and first phase subdivision approval has been granted for 389 homes sites. No homes have been constructed within the land interior to the Pinerias Open Space. The configuration of the Pinerias Open Space can be described as a donut defined by the existing lots surrounding it, and with the planned lots as the “hole”.

The Pinerias Open Space Master Plan was influenced by an extensive public participation process. Inputs from adjacent property owners, residents of the Black Forest, and residents of the County at large were taken into account in the preparation of the Plan.



II. Goals

Broadly stated, the goal of the Pinerias Open Space Master Plan is to balance the preservation of the property's unique resources with managed public use. In order to accomplish this broad goal, directional statements, called Planning Parameters, were established that set boundaries for the balance of public use with preservation. These Planning Parameters recognize that the property will change over time as natural processes take effect. The Pinerias Open Space offers the opportunity to study this unique environment, and to manage it in a natural state. Even limited public access will have some impact, but the Planning Parameters used to develop this plan are intended to minimize that impact.

General goals were also established to guide development of the Master Plan and future use of the property. The goals and the Planning Parameters work together to provide direction and structure for the master planning process. The goals of the Pinerias Open Space Master Plan are:

- Provide a place for the recreational use and enjoyment of the citizens of El Paso County.
- Protect and enhance the natural features of the site and wildlife habitat, consistent with the provisions of the conservation easement (Palmer Land Trust and Morley-Howard Investments, LLC, 2006).
- Provide educational and interpretive opportunities in the design of facilities and the use of the property.
- Develop the site as a regional open space area, serving a variety of recreational needs with mixed use facilities, consistent with intent and standards of the Parks and Leisure Services Department Master Plan (2005).
- Respect the historical agricultural and ranching heritage and the cultural values of the property in the design and siting of facilities.
- Adhere to the Goals, Policies and Proposed Actions of the Black Forest Preservation Plan.
- Minimize impacts on adjacent residential properties in the design and management of facilities.
- Design, build and establish an operational budget for facilities in a way that is sustainable, allowing for future expansion as appropriate, providing adequate maintenance and management, and adjusting the Master Plan and management actions, if needed, to respect resource values and meet the needs of our citizens.

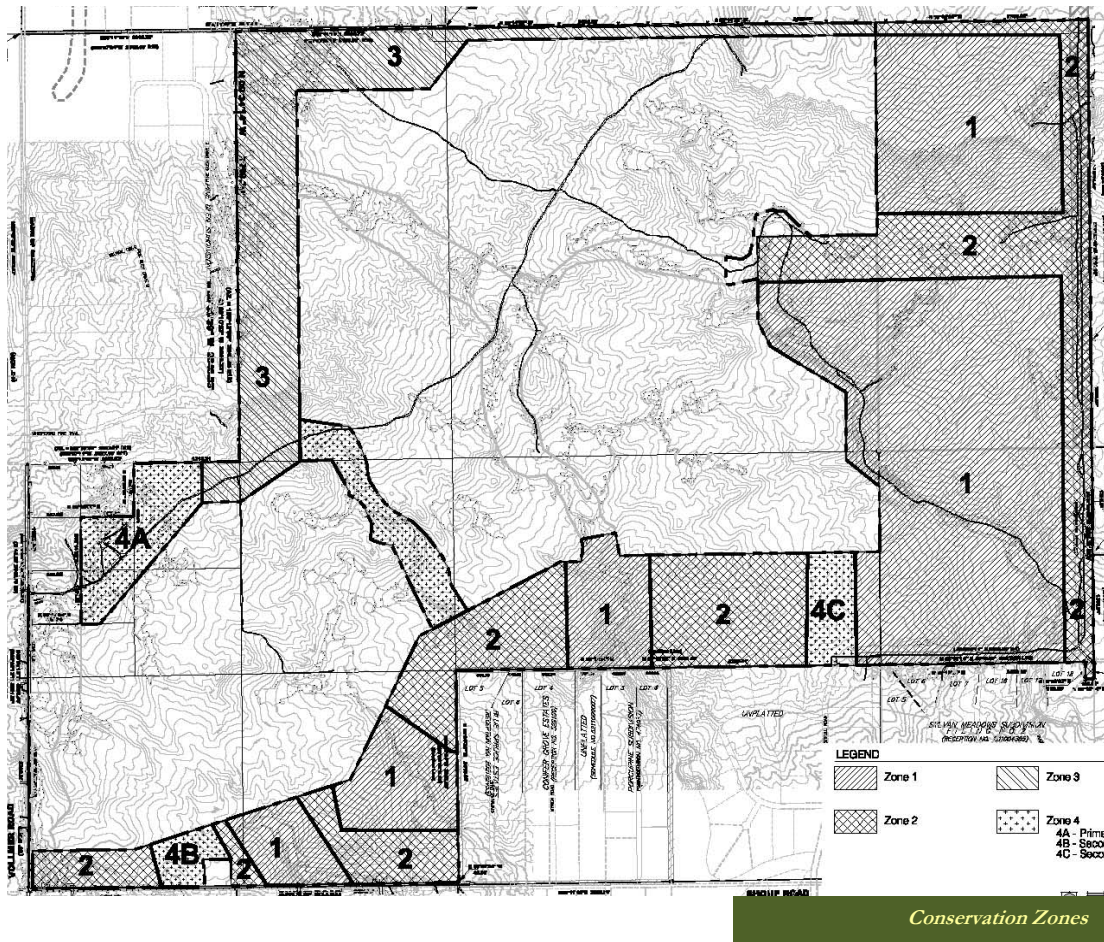
III. Planning Parameters

Planning parameters are direction setting statements that become the guidelines for preparation of the final plan recommendations. The Pineries Open Space planning parameters consist of physical determinants dictated by the specific characteristics of the property; by guidelines established by the Palmer Land Trust as holder of the conservation easement; by inputs from adjacent property owners; and by operational requirements imposed by development and maintenance concerns of the parks staff. The following planning parameters were employed in the development of the Pineries Open Space Plan:



Ranch Drainage

- The conservation easement property is divided into use zones as defined by the Palmer Land Trust, which regulate intensity of use.
- Guidelines found in the Parks and Leisure Services Master Plan provide context and direction.
- Provide a Tier 1 trail connection from the Section 16 trail at Vollmer and Shoup roads to the Woodlake Trail at the northeast corner of the property.
- Design trails to avoid drainage ways, ponds, wetland areas whenever possible.
- Cross drainage ways with trails; do not design trails parallel to drainages.
- Place trails at the edge of large expanses of open space.
- Provide restrooms at formal trailheads.
- Use interpretive signage to identify unique features of the Open Space.
- Control access to areas of rare plants, wildlife habitat, old growth forest, ponds and wetlands.
- Separate equestrian parking from parking areas to be used by others.
- Wherever possible, place trails 500 feet from existing residential lots.
- Provide trail access points from the proposed Sanctuary in the Pines subdivision.
- Design the trail system to discourage the development of social trails. Prohibit individual lot access to the Open Space.
- Prohibit motorized use, except for designated trailhead and active use areas, and maintenance and emergency use access.
- Fence the conservation easement to control unauthorized access, and to delineate boundaries between public and private property.



The Palmer Land Trust (PLT) has established Conservation Zones for the majority of The Pineries Open Space covered by their Conservation Easement. These zones, described in more detail below, restrict use based on conservation values of the various areas of the property.

Zone 1. Highest non-recreational conservation values where public access will be limited to scientific study by approved groups and interpretive programs led by trained staff. This restriction on access shall not apply to trail corridors that may cross through such areas in appropriate circumstances.

Zone 2. Significant conservation values where parties will consult on any proposed public access with a view to minimizing impairment of the non-recreational conservation values, i.e., secondary trail corridors allowed.

Zone 3. Absence of unique habitat where public access will be permitted with a view to prevent only significant impairment of the non-recreational conservation values, i.e. primary trail corridors allowed.

Zone 4. Facility zones where maintenance facilities, trail heads and parking, park purposes including active recreation uses shall be located. Within the primary facility zone (4A), located in the western portion of the Property, the following uses will be permitted: sheds, shelters, caretaker's residence, pavilions, restrooms, playgrounds, athletic facilities, barns, corrals, hitching posts, garage and maintenance facilities, nature center and other structures or improvements related to active recreation and environmental education on the property. The secondary facility zones (4B and 4C), located in the southern portion of the Property, will be limited to trailhead facilities, including benches, picnic facilities, kiosks, restrooms, trail signs, trail head parking areas and trail shelters. All Zone 4A improvements are subject to the provisions of the approved Master Plan. Non-park related County facilities will not be allowed on the Property.

IV. Historical Use of the Pineries Ranch

The Pineries Ranch was acquired by the Farrar family in 1958. At that time the ranch consisted of approximately 12,000 acres. During his lifetime, Mr. Farrar added parcels to the ranch, so that it eventually totaled approximately 16,000 acres. General boundaries of the ranch excluding numerous outparcels, were Shoup Road on the south, Black Forest Road on the west, Hodgen Road on the north and Meridian Road on the east. The land was originally used for the raising of cattle. Additional agricultural uses were added over time, including the treatment of wood with preservatives and the sale of posts and pole fencing along with the sale of miscellaneous supplies and fire wood to neighboring rural residential users.



Ranch Landscape

Changes to government regulations affected land use. An interesting negotiation with Public Service Company occurred in the 1960's. Rather than have the electric utility condemn and purchase an electric easement for overhead transmission lines through the ranch, the Farrar's agreed to grant the easement without charge if it could be moved to jog along the southern and eastern boundaries of the ranch. The easement was clear cut by Public Service, and was then used for the sale of transplant trees that eventually grew within the easement.



Corral Fencing

The Farrar family members and son-in-law moved toward forestry rather than ranching. The cattle operation stopped in the mid to late 1970's, replaced by forest management and the sale of forest products. Sale of transplant trees generated cash used to control mistletoe and pine bark beetles and enhance the forest.

After the death of Mr. Farrar in 1985, the ranch was divided into four parcels. The southern half of the ranch was jointly held by two sisters and managed by one sister and her husband. They established the first conservation easement on their property in 1985, in part to prevent Swan Road from bisecting the ranch. A second conservation easement was created in 1995. Both easements, totaling 1040 acres, are held by the Palmer Land Trust.

The location of the easements was changed in 2006 as a part of a development proposal by Morley-Howard Investments, who purchased the property for residential subdivision. The subdivision, known as Sanctuary in the Pines, has been approved for 389 lots. Although no lots have been platted and no homes have been constructed to date, some development related infrastructure has been partially constructed for the initial phase. In conjunction with approval of the subdivision, the conservation easement land and approximately 30 additional acres were transferred to the El Paso County Parks Department in 2010 for establishment of an open space park.

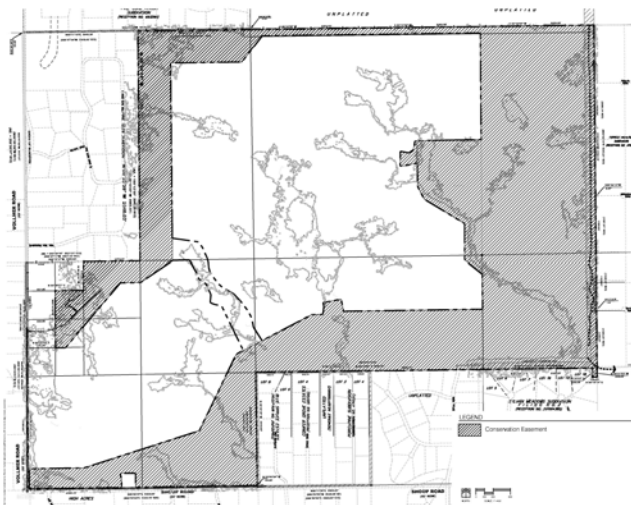


CCC Dams

Erosion control dams were constructed on The Pinerias Open Space by the Civilian Conservation Corps (CCC) in the 1930's.



CCC Dams



PLT Conservation Easement



Ranch Windmill and Stock Pond

V. Public Process and Outreach

El Paso County uses a public process to gather input into the master plans for its parks. The Pineries Open Space public process consisted of several input opportunities.

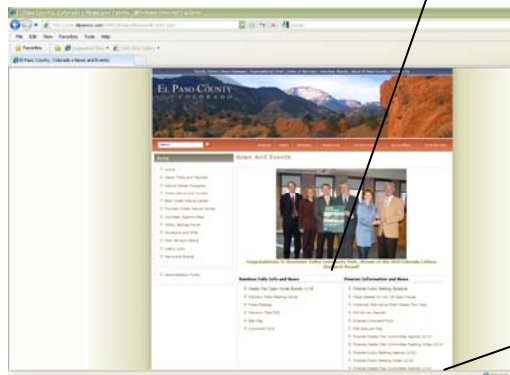
Master Plan Committee. A Master Plan Committee consisting of ten individuals was appointed by the El Paso County Park Advisory Board as an advisory working committee. The Master Plan Committee members represented both the interests of the County park users as a whole as well as

specific user types: hikers, equestrians, mountain bikers, conservation interests. Residents of neighboring subdivisions were also included in the Master Plan Committee membership. The Committee made a field visit to the site, and held four public work sessions to review the consultant's work and make recommendations on potential facility uses, Plan alternatives and the draft Plan.

County Web Site. The County maintained a web site throughout the process. The web site provided meeting minutes, draft alternative plans and a link so that interested parties could provide comments.



Master Plan Committee Meeting



Pineries Information and News

- Pineries Public Meeting Schedule
- Press release for Nov 29 Open House
- Preferred Alternative/Draft Master Plan Map
- Dot Survey Results
- Pineries Comment Form
- Site Analysis Map
- Pineries Master Plan Committee Agenda 10/14
- Pineries Master Plan Committee Meeting Notes 10/14
- Pineries Public Meeting Agenda 10/20
- Pineries Public Meeting Notes 10/20
- Pineries Master Plan Committee Agenda 11/01
- Trails Hierarchy

County Web Site

Neighborhood Meeting. The consultant met with several neighbors on site to discuss trail location concerns relative to the common property line between the neighbors and the Open Space.

Public Notice. Adjacent property owners were provided with written notice for public meetings. The notices described how to interface with the planning process via email, attendance at public meetings, or phone call communication with County staff. Press releases inviting participation in public meetings were sent to more than 30 publications. County staff also disseminated information and meeting notices via e-mail to interested parties, clubs and organizations.

Public Hearings and Approval. Both the Park Board and the Board of County Commissioners held public hearings and took formal action to approve the Plan. Park Advisory Board and Board of County Commissioners meetings are open to the public.

Public Meetings. The master plan consultant and the County hosted two public meetings to provide information about the planning process and to gain public input. At the first public meeting, the project was introduced, and two alternative plans were presented for comment. A dot survey exercise was employed to indicate preference for activities within the Pineries Open Space. Public feedback through this exercise and from solicited comments yielded a strong preference for habitat preservation; for trail and trailhead construction for non-motorized multi-purpose use; and winter trail use (snowshoeing and skiing). A comment sheet was distributed so that additional comments could be made individually. The second public meeting was an open house designed to provide participants with the draft plan, and solicit input to be incorporated into the final plan.

Pineries Open Space Master Plan

Dot Survey Exercise Results – Potential Facilities and Activities

October 20, 2010 Public Meeting

Seventy-one people, not including staff or consultants, attended the meeting. Meeting attendees were given five dots to place on charts, indicating their preference for potential facilities or activities.

Facility or Activity	Number of Dots	% of Total
Baseball/softball fields	3	.9
Batting cages	1	.3
BMX course/free ride course	0	0
Cross country skiing/snow shoe areas	22	6
Disc golf course	13	5
Equestrian arena	2	.5
Equestrian cross country course	9	3
Equestrian designated parking areas	19	6
Equestrian trails	54	16
Fishing pond	5	1
Golf driving range	1	.3
Habitat preservation	75	22
Hard surface courts (basketball/skating)	0	0
Hiking trails	41	12
Horse stables	4	1
Ice skating area	0	0
Interpretive signage	5	1
Mountain bike trails	11	3
Multi-use fields	0	0
Nature center	1	.3
No development along perimeter (write-in)	19	6
Off-leash dog park	4	1
Outdoor classroom	1	.3
Picnic pavilion	6	2
Play structure	5	1
Reduce size of the Sanctuary development (write-in)	5	1
Restrooms	11	3
Skateboard park	4	1
Sledding hill (write-in)	5	1
Tennis courts	3	.9
Way finding/directional signage	3	.9
Wildlife viewing blinds	7	2
Total	339	100

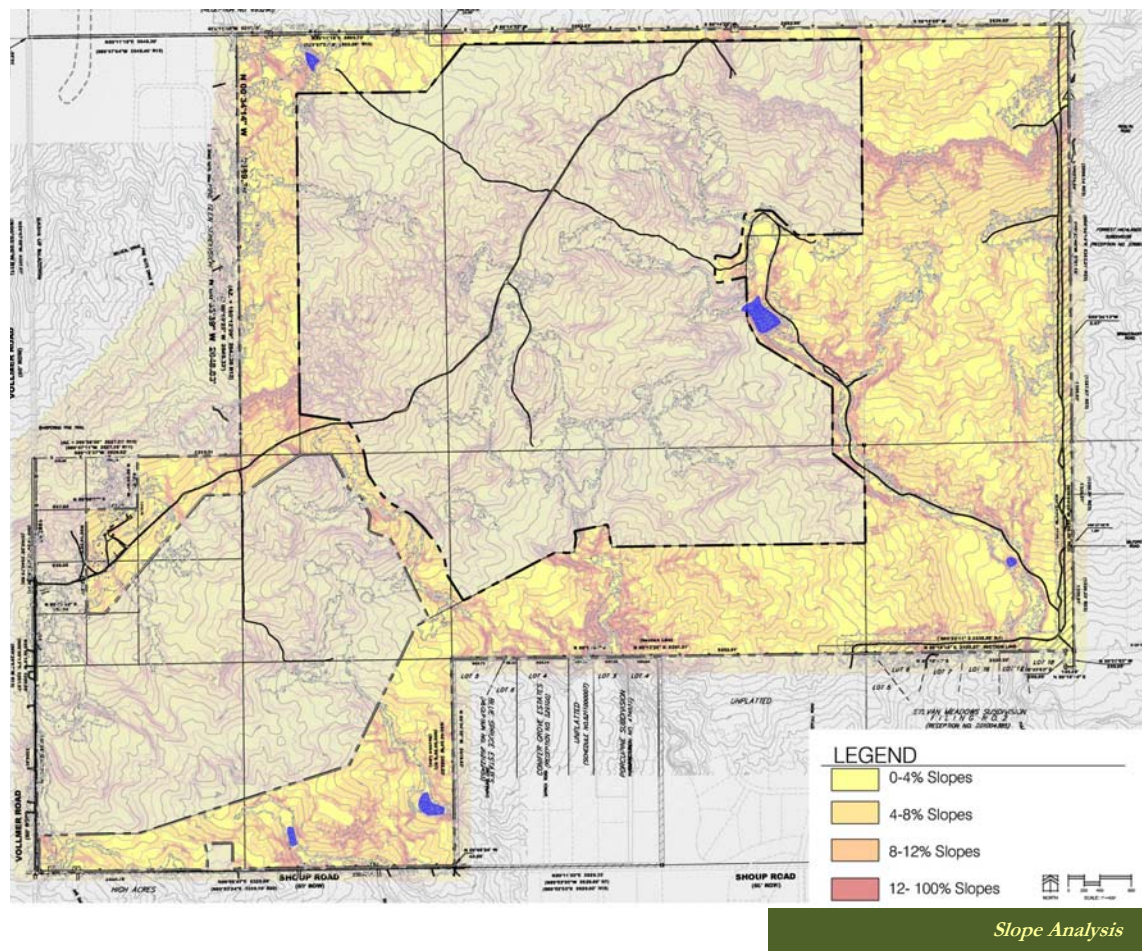
VI. Site Inventory and Analysis

The purpose of the site inventory and analysis was to develop a thorough knowledge base of existing conditions, both natural and cultural (man-made), and to use this baseline to recognize elements that might influence design decisions. The following narrative gives a synopsis of the inventory, analysis and several technical reports that have been prepared in the preparation of the Pinerias Open Space Master Plan (reference Appendix).

Natural Features

1. Topography/Slope

The site is characterized by gently rolling terrain, the majority of which lies in the 0-4% category of slope. In general, site topography will not present significant limitations with respect to development of the facilities within the open space. Areas where slopes exceed 12% should be avoided or specific trail alignment and construction techniques implemented to minimize the trail slope and reduce the potential for erosion.



2. Soils and Geology

CTL Thompson prepared a Geologic Hazard Investigation for the site with respect to the development of an open space recreational facility. A summary of these findings include:

- i. No geologic conditions are believed to be present that would preclude development of this site as an open space park. The occurrence of shallow bedrock may affect site grading, utility installation, and septic system design across the site and shallow ground water may affect grading and utility construction in isolated portions of the site. Expansive soils and bedrock may influence design and construction of site improvements and structures in some areas. Issues associated with shallow ground water and expansive materials can typically be mitigated using commonly employed design and construction techniques.
- ii. Subsurface materials found in exploratory borings drilled for previous investigations at the site consisted of between 2 and 10 feet of clean to silty or clayey sand underlain by sandstone and claystone bedrock of the Dawson Formation. The sandstone exhibited low swell potential or no movement. The clayey sand and claystone bedrock showed low measured swell upon wetting.
- iii. Ground water was encountered at depths of 7 to 32.5 feet below the ground surface during our previous investigation. Relatively shallow ground water was encountered in drainage areas. Seasonal conditions, heavy periods of precipitation, and irrigation of landscaping associated with the development may raise ground water levels or create “perched” ground water on the surface of the bedrock.
- iv. It is believed that site grading that may be necessary for the pavilion and restrooms can be accomplished with conventional earthmoving equipment.

3. Vegetation

The property harbors the native plant communities, including ponderosa pine woodland, foothill prairie, and wet meadow. The wet meadow community is a wetland and is found in the bottoms of certain drainages. Four plant species that are rare in Colorado occur on the property, along with several other plant species that are rare locally. The property harbors at least five species of noxious weeds; however, noxious weeds are not common on the Open Space.

Ponderosa pine woodland:

This community occurs on most of the property. This is by far the most abundant plant community on the property. The dominant plant species is ponderosa pine (*Pinus ponderosa*). An occasional aspen (*Populus tremuloides*) is also present in the tree layer on moister sites. The understory is usually poorly developed due to low light conditions. Shrubs are generally



Ponderosa Pine Woodland

sparse, with kinnikinnick (*Arctostaphylos uva-ursi*) being the most common shrub species present. Herbaceous species are likewise usually sparse in the ponderosa pine woodland community. The most common species are Ross sedge (*Carex rossii*), spike fescue (*Leucopoa kingii*), and fescue (*Festuca saximontana*). Pine needles and small tree branches typically cover most of the soil surface. Little of the soil surface is bare soil.

The ponderosa pines on much of the property were thinned about 20 years ago (K. Timmerman, pers. comm.). The areas that were thinned have much lower tree density than areas that have not been thinned; un-thinned areas would benefit from thinning. The ponderosa pine woodland in the northeast quarter of Section 12 along Snipe Creek has some old-growth characteristics, namely relatively large trees with relatively low tree density.

A small area of ponderosa pine woodland along the western boundary burned recently. This has not created any resource management problems. In fact, the fire and follow-up tree removal have thinned the number of trees substantially, which is conducive to better forest health.

Foothill prairie: This community occurs as inclusions in larger areas of ponderosa pine woodland on sites with somewhat deeper fine-textured soils compared to the woodland areas. The cleared area under the high-voltage power lines is classified as foothill prairie, even though it was formerly ponderosa pine woodland. The foothill prairie is dominated by graminoids, including native blue grama (*Chondrosum gracile* = *Bouteloua gracilis*), narrowleaf sedge (*Carex eleocharis* ssp. *stenophylla*), and six-weeks fescue (*Vulpia octoflora*), and seeded reclamation species (mostly smooth brome - *Bromopsis inermis* = *Bromus inermis*) under the power lines. Forbs are also common, including fringed sage (*Artemisia frigida*) and hairy goldenaster (*Heterotheca villosa*). Wood's rose (*Rosa woodsii*) is the



Foothill Prairie



Wet Meadow

most common shrub in this community. (Carpenter)

Wet meadow: Small areas of this community occur along the bottoms of drainages. This wetland community is supported by ground water discharge. Wet meadows are dominated by graminoids, including grasses, such as slender wheatgrass (*Elymus trachycaulus* = *Agropyron trachycaulum*) and mannagrass (*Glyceria* sp.), sedges, such as Nebraska sedge (*Carex nebrascensis*) and clustered field sedge (*Carex praegracilis*), and rushes, such as Baltic rush (*Juncus balticus* ssp. *ater*). The soil surface is covered by living plants and plant litter. (Carpenter)

Rare plants

The property harbors four native plant species that are tracked by the Colorado Natural Heritage Program (CNHP). These are plants that are demonstrably secure globally, but are rare in Colorado. In addition, several other species that are not tracked by CNHP, but which are rare locally are found on the property. These species include porcupine grass (*Hesperostipa spartea* = *Stipa spartea*), prairie dropseed (*Sporobolus heterolepis*), and lilac penstemon (*Penstemon gracilis*).



Rare Plant- *Krigia biflora*

Richardson's alum-root (*Heuchera richardsonii*) and birdsfoot violet (*Viola pedatifida*) are found in wetlands and wet prairie meadows. *Krigia* (*Krigia biflora*) is found in foothill prairie, while frostweed (*Crocanthemum bicknellii*) is found in ponderosa pine woodland. (Carpenter)

Noxious weeds

The property has a relatively low abundance of noxious weeds. Field surveys of the property have revealed five species of noxious weeds on the property, including Canada thistle (*Breea arvensis* = *Cirsium arvense*), cheatgrass (*Anisantha tectorum* = *Bromus tectorum*), common mullein (*Verbascum thapsus*), leafy spurge (*Tythymalus esula* = *Euphorbia esula*), and yellow toadflax (also known as butter-and-eggs), (*Linaria vulgaris*). The field surveys were not exhaustive, and additional species of noxious weeds, e.g., diffuse knapweed, may be present. A Noxious Weed Management Plan has been prepared to address the current and future needs in the control of noxious weeds. (Carpenter)



Canada Thistle

4. Forest Conditions

The forest within the Pinerias Open Space is a biologically diverse area where one can enjoy communing with nature by observing old-growth trees, unique plants and a myriad of wildlife species. The Black Forest region is an excellent location for growing ponderosa pine, and that is just one of issues facing this forest.



Old Growth Forest

While relatively healthy, the forest is overcrowded by too many trees.

While the rule of ‘survival of the fittest’ is being played out, with the strongest trees getting bigger, the remaining trees are setting the stage for two potential catastrophic events. The dramatic one is the potential for a wildfire. There is a high level of fuel available to burn that could entirely replace the forest as we know today.

The second event is one that was experienced in the Black Forest from the late 1970’s to mid 1980’s and that was an epidemic of mountain pine beetle. The forest condition of the area has not changed sufficiently to deter a widespread beetle infestation. The larger trees have only grown larger and more prone to successful attack by this insect. The prevalence of bigger ponderosa pines coupled with an extensive dwarf mistletoe infection throughout the open space ensures a high probability of tree loss from this forest pest.

A forest is a living entity and a dynamic ecosystem that will change over time. A ‘hands-off’ approach will not keep the forest in a healthy condition and could result in catastrophic loss. Active forest management must become a priority to help remedy the issues the open space faces so as to ensure a forest remains for of the county residents to enjoy. (Spaulding)

5. Wildlife

White-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), black bear (*Ursus americanus*), and mountain lion (*Felis concolor*) are the primary big game species that use the property. Many piles of elk and deer scat was evident during the field visits. The Colorado Division of Wildlife (CDOW) has mapped the entire property as within the overall range for black bear, mule deer, and mountain lion. (Carpenter)

It is likely that the adjacent Pinerias residential development, as well as other development adjacent to or near the property, will affects these big game species due to loss of habitat and increased human presence. However, these species are able to adapt, at least to some

degree, to human presence, particularly if it is predictable. Restricting human use of Pineries Open Space (with the exception to the main access area east of Vollmer Road) to on-trail, day use will help offset the adverse effects of visitors in big game species at the Open Space.

Realignment of the conservation easement in 2005 was accomplished, in part, to preserve habitat for the east side elk herd and other migratory species. The realigned easement created wider corridors for migration and preservation of a more diversified habitat, including water sources.

The property provides habitat for many species of small mammals, including mice, voles, chipmunks, Abert's squirrel, badger, and coyote. The CDOW has mapped the southern portion of the property as within the overall range for the Texas horned lizard, although the property does not have large patches of bare ground that this species prefers (Hammerson 1988). The easternmost edge of the property has also been mapped by CDOW as within the historic range for the lesser prairie chicken, although the property does not now possess significant prairie chicken habitat. Numerous other bird species have been witnessed on site or the habitat is conducive for these species, as noted in the supplemental Ecological Resources / Environmental Baseline report. (Carpenter)



Wild Turkey On-site

6. Drainage and Wetlands

The Pineries Open Space Master Plan Drainage Study provides drainage analysis for the entire Master Plan area in conjunction with the Sanctuary in the Pines Residential Development. The analysis should be utilized to help in the design of trail crossings of drainageways located on the site. Developed runoff rates were figured utilizing the rational method which is extremely conservative for this site due to the size of the drainage basins. More detailed analysis should be completed for specific crossings once the proposed trail locations are firmly determined.

Water quality is also addressed in the study for the Sanctuary in the Pines and the open space. A water quality concern for the open space are the existing detention/water quality ponds located on the Sanctuary in the Pines Development that outfall directly onto CE/open space property. These are of concern because the four ponds that have been constructed to date are only partially complete and expose the CE/open space property to the risk of sedimentation, scour and flooding. Water Quality requirements for the open space will be limited to the more

intensive use areas such as the equestrian and pedestrian trailheads where higher runoff, sediment transport and contaminant potential will be of concern and should be analyzed once final layouts are determined. (Drexel, Barell & Co.)

7. Visual Resources

Due to the wooded nature of the site, the preponderance of visual amenities are related to on-site features, such as vegetation, wildlife and water features. Specific trail alignment should be accomplished in the field with the intent to incorporate off-site vista and where present and take advantage of unique natural features in the trail experience. The primary entrance drive from the south and the area of the existing ranch facilities offers the best panoramic views of Pikes Peak and the Rampart range.



Unique Vegetation



Off-site Views

8. Climate/Microclimates

Located mostly on the southern side of the Palmer Divide with the majority of drainages tending south, the open space has a generally southern aspect that benefits open space use and trail development.

The typical weather experienced in the area shows a yearly temperature average of 48 degrees. The average daily maximum reaches approximately 62 degrees with the average daily minimum temperature falling to 35 degrees. There is an approximate growing season of 126 days per year.

Precipitation levels range from 15 to 23 inches per year. The last spring frost usually occurs around the middle of May with the first freeze in the fall occurring around the first part of October.

Cultural Features

1. Man-made Structures- Man-made structures on the site include ranch buildings, a single family residence, drainage facilities, stable/corral, ranch roads and a tree nursery. One of the existing ranch buildings is proposed to be removed. The remainder of the ranch buildings can be re-purposed to serve open space functions. An existing maintenance building is located in the northeast area of the open space. Access to this structure in its current location is difficult within the open space. It is recommended this structure be dis-assembled and relocated on or off-site to meet County facility needs. The corral provides a unique element to the site and would be beneficial to integrate into the program. Corral fencing could be used for different purposes if the existing fencing is to be modified from its current configuration.



The current access from Vollmer Road along the ranch drive is to be closed or removed. If removed, the existing road should be restored/revegetated with locally indigenous plant materials. The ranch residence will remain for the foreseeable future. Buffering/screening of open space facilities from the residence is appropriate. The tree nursery is proposed to be removed, with existing healthy trees transplanted on-site or used at other park facilities.



Ranch Shed to be Removed



Ranch Shop



Ranch Shed



Stable/Corral



Tree Nursery



Drainage Feature

2. Preliminary/Future development

The future Sanctuary in the Pines development lies internal to the Pinerias Open Space, which is approved for up to 389 single family residences on 2.5 acre and greater lots. The master plan designates access points to the Pinerias' trail network. Access to the trails will be limited to the trailhead areas and designated



Maintenance Building

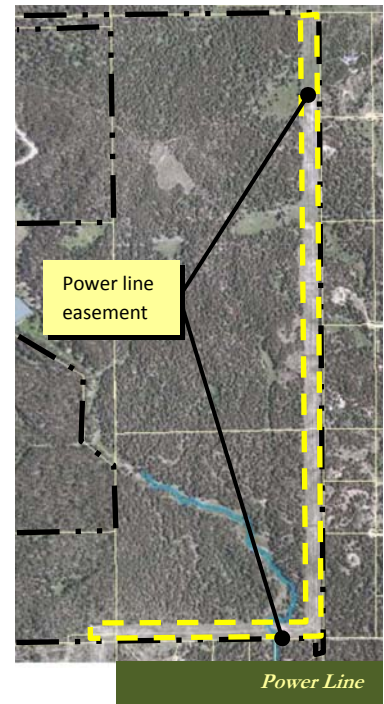
access points. No access will be permitted to individual lots. Upon development of these lots, fencing would be installed as a condition of the conservation easement.

3. Power line

The east and southeast boundary is encumbered by a 300' utility easement to contain an overhead electric transmission line owned by Excel Energy (formerly Public Service Company). The easement does contain a service road that can be utilized as part of the trail network, functioning as a Tier II trail in the County's hierarchy. As the power line tends to diminish the trail experience, the primary trail route should be located adjacent to the corridor, within the forest cover.

4. Regional Context

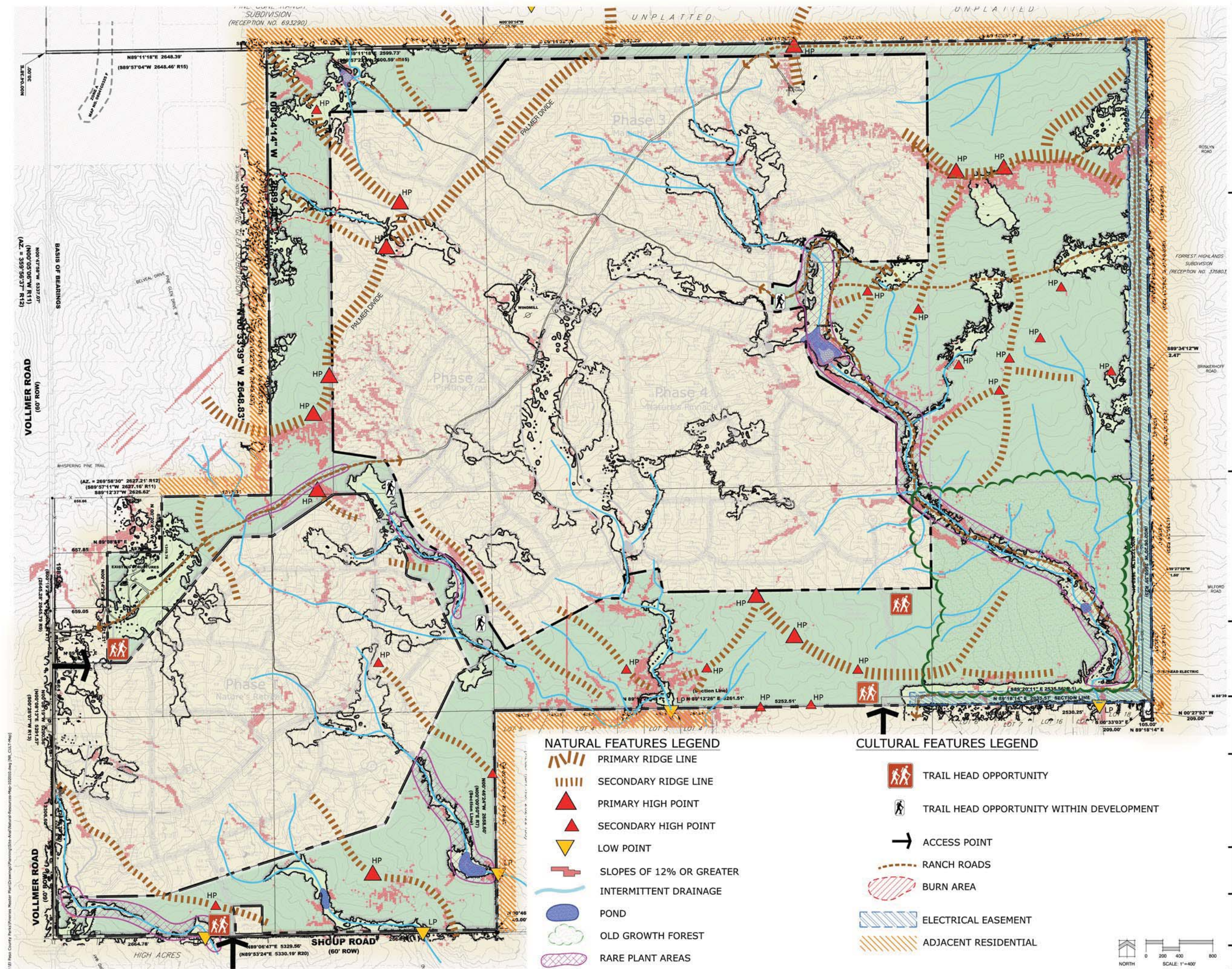
Much of the perimeter of the open space boundary is currently developed as residential in 5 acre plus lots. Through the public process concerns were expressed relative to the proximity of trail and open space facilities to the existing residential properties. To address these concerns trails routes should be located in such a manner to minimize any potential conflict with the adjacent properties.



The following Natural Features and Cultural Features Analysis plan graphically depicts many of the existing conditions and analysis referenced above. This plan was used as a basis for determining many of the Master Plan recommendations.

DATE: 10-02-2010
PROJECT MGR: J. MAYNARD
PREPARED BY: S. CASSAT

PLANT #	SHEET NUMBER
	6



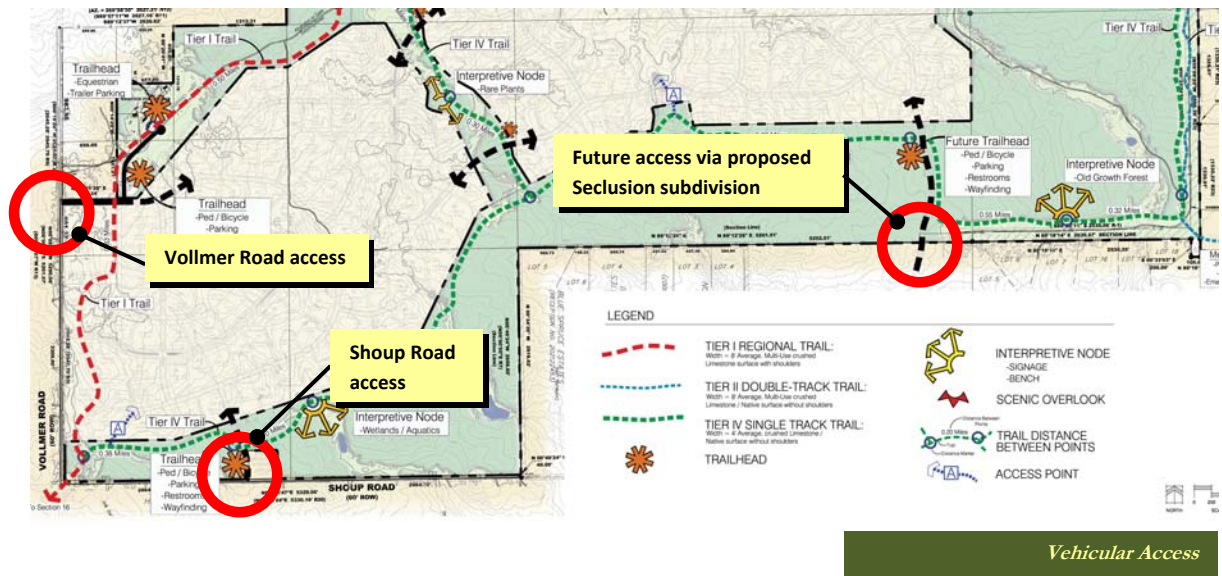
The Plan

Master Plan

The Pinerias Open Space Master Plan was developed through a collaborative, inclusive effort that sought out input from several diverse interest groups. Through this process, the preferred alternative was derived from two alternatives that generally represented different levels of intensity with respect to facility and trail development within the Open Space area. Through the outreach process, with input from the public, the El Paso County Parks Board, the Master Plan Committee, Parks staff and the consultant team, elements of these alternatives were combined to arrive at The Pinerias Open Space Master Plan. The Master Plan identifies key functional uses that are incorporated into the open space network:

- Access Points

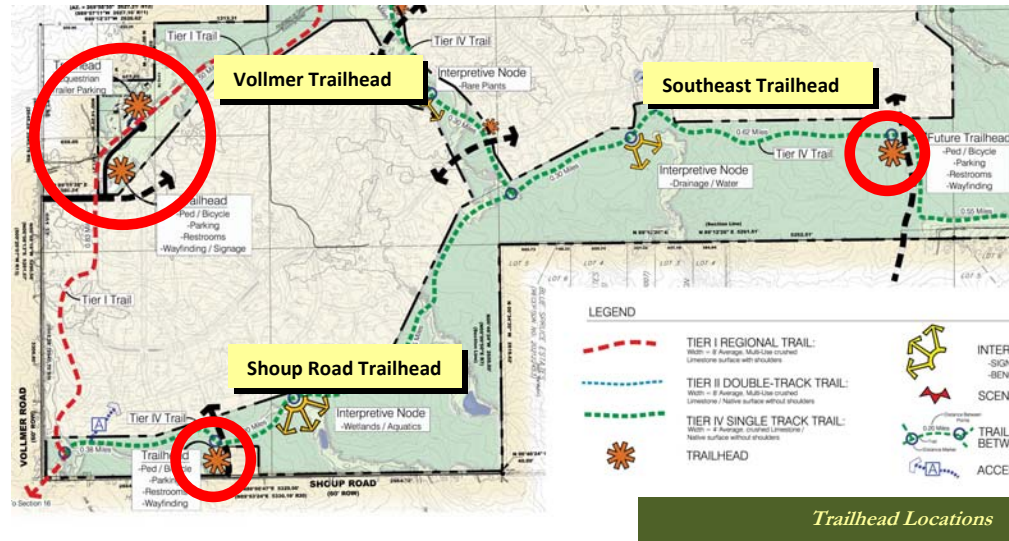
Vehicular access to the open space is limited initially to 2 points: one off Vollmer Road from the west that will provide access to the primary equestrian and hiking/biking trailheads via a future subdivision road; the second being access from Shoup Road in the southwest corner of the site, again this access point will be a future subdivision road. A third vehicular access point with trailhead is planned in the southeast area of the site. This access point is contingent upon the completion of a road network within the proposed subdivision to the south.



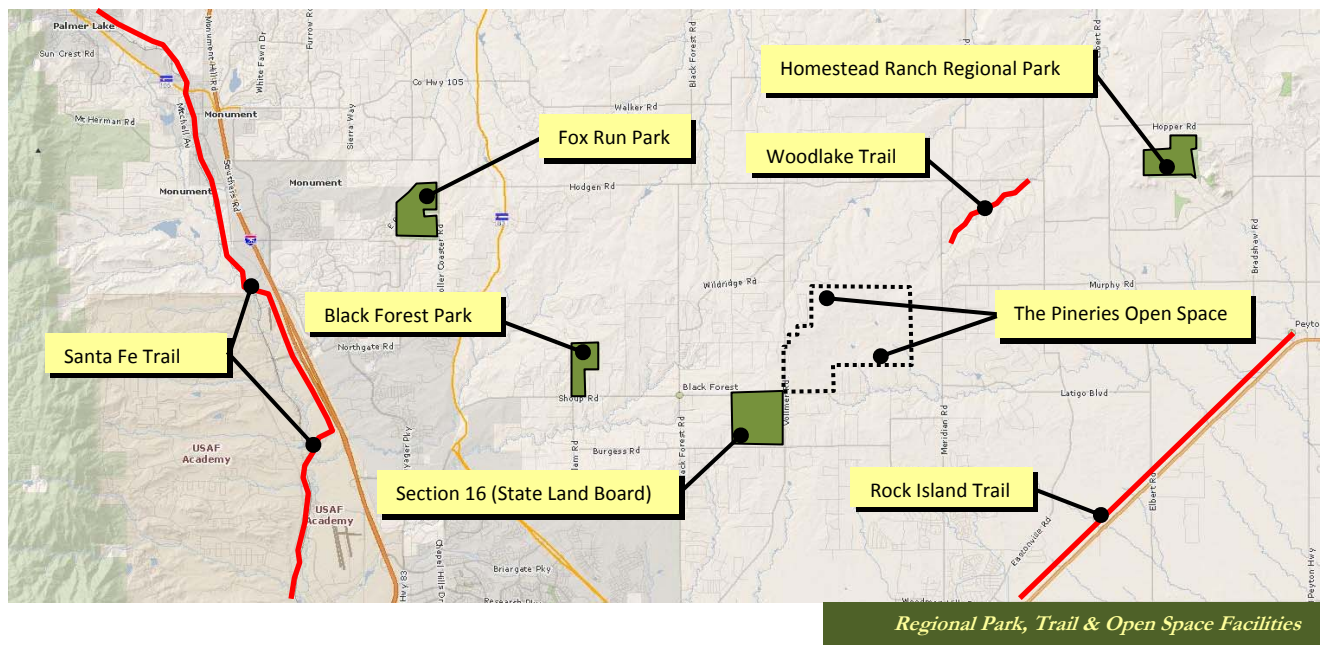
- Trail Head Locations and Facilities

Principal trailhead facilities are located off the primary vehicular access points. The main trailhead (Vollmer Trailhead) will serve both equestrian and hiking/biking users, with vehicular parking and trailer parking.

Internal trailhead locations have been designated on the Master Plan. These would provide points of trail access within the open space from the future planned subdivision, but no facilities would be provided.



- **Regional Trail Connectivity**
An important component of the trail network planned for The Pinerias Open Space is connectivity to a regional trail network. The primary Tier I multi-use trail planned for the Pinerias will provide an important linkage from Section 16 to the southwest to the Woodlake Trail to the northeast. Ultimately this may become part of a trail network that could link the Santa Fe Trail to the west to the Homestead Ranch Regional Park to the northeast and the Rock Island Trail.



- Trail Hierarchy and Conceptual Layout

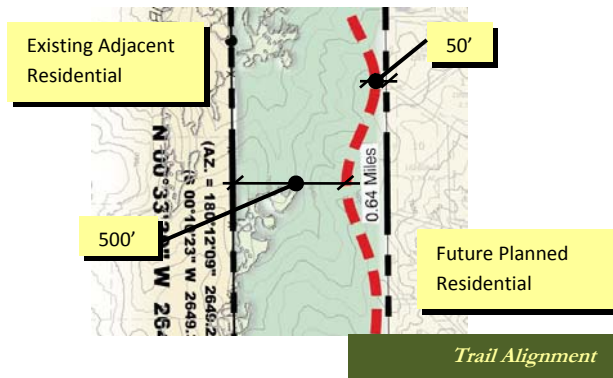
The initial and primary recreational activity at the Pinerias Open Space will be trail use. Following El Paso County's well establish approach, the trail system will be non-motorized multi-use including hikers, runners, mountain bikers and equestrians. The Pinerias trail system is essentially a figure 8 with connections off-site to other Black Forest regional trails at the top and bottom of the "8." One out and back trail will provide access to a scenic pond and meadow area. (Tapis)

The Pinerias Open Space has the opportunity to become the touchstone regional trail system standard by simultaneously embodying Trail Sustainability and Trail Experience. Trail Experience is each trail user's individual subconscious interaction has with the environment that thoughtful trail design embodies. Trail Sustainability includes consideration and attention to trail safety, sustainability, construction cost, structural integrity, and maintenance. (Tapis)

Three trail types are proposed with the Pinerias Open Space: Tier I, Tier II and Tier IV as defined by County standards (see trail standards in the Design Guidelines section). The Tier I trail will provide regional connectivity to the southwest corner of the open space, providing connectivity to Section 16, and the northeast corner of the site, providing future connectivity to the Woodlake Trail. The Tier 4 trails are proposed for sensitive areas within the conservation easement where the single track Tier 4 trail will have the least amount of impact. The Tier II trail, a double track trail, would utilize the existing service road within the power line easement.

The trail layout as shown on the master plan is diagrammatic and is only intended to indicate a general location of trails and trail facilities. Final design work would entail a site specific design with field work to determine the specific trail location. The following parameters would apply in locating the final trails:

- Maintain a minimum separation of 500' from adjacent residential properties as site conditions permit. This 500' separation should be maintained only if the integrity of the conservation easement can be maintained.
- Maintain a minimum 50' separation from the future internal residential properties internal to the open space.
- Avoiding sensitive ecological areas, including areas of rare plants and perennial or seasonally wet areas.



- Trails should meander through forested areas and meadow edges. Lengthy, straight sections should be avoided.
- Drainage crossings should be designed to minimize impact and erosion/sedimentation. (See Design Guidelines Section)

- Interpretive Nodes

The interpretive nodes are located throughout the primary trail loop with the intent to provide educational information specific to the natural systems of The Pinerias as well as providing a rest area. These nodes are intended to be low impact with respect to overall trail development. Interpretive nodes will have a sign and bench as furnishings. (see Design Guidelines Section)

Trailhead Plans

Conceptual layout plans were developed for the primary equestrian and hiking/biking trailhead facilities that lie within the 4A zone of the conservation easement at the Vollmer Trailhead. The plans show a Phase 1 to provide basic facilities in association with the trailhead, and a plan at build-out where more facilities will be provided. The initial phase will consist of:

- the equestrian trailhead, to include
 - parking that will accommodate vehicles with trailers,
 - a round pen constructed with on-site corral fencing
 - hitching rails
 - mounting blocks
 - equestrian trail access
- the hiking/biking trailhead, to include
 - parking area
 - hiking/biking trail access

Centrally located to each trailhead would be a restroom facility that would serve all users. The existing stable building is proposed to be adapted to accommodate restrooms, with further architectural, structural and engineering analysis required to verify adaptability. The existing corral facility would be modified to serve as an area suitable for group functions.

At build-out, facilities would be added, to include:

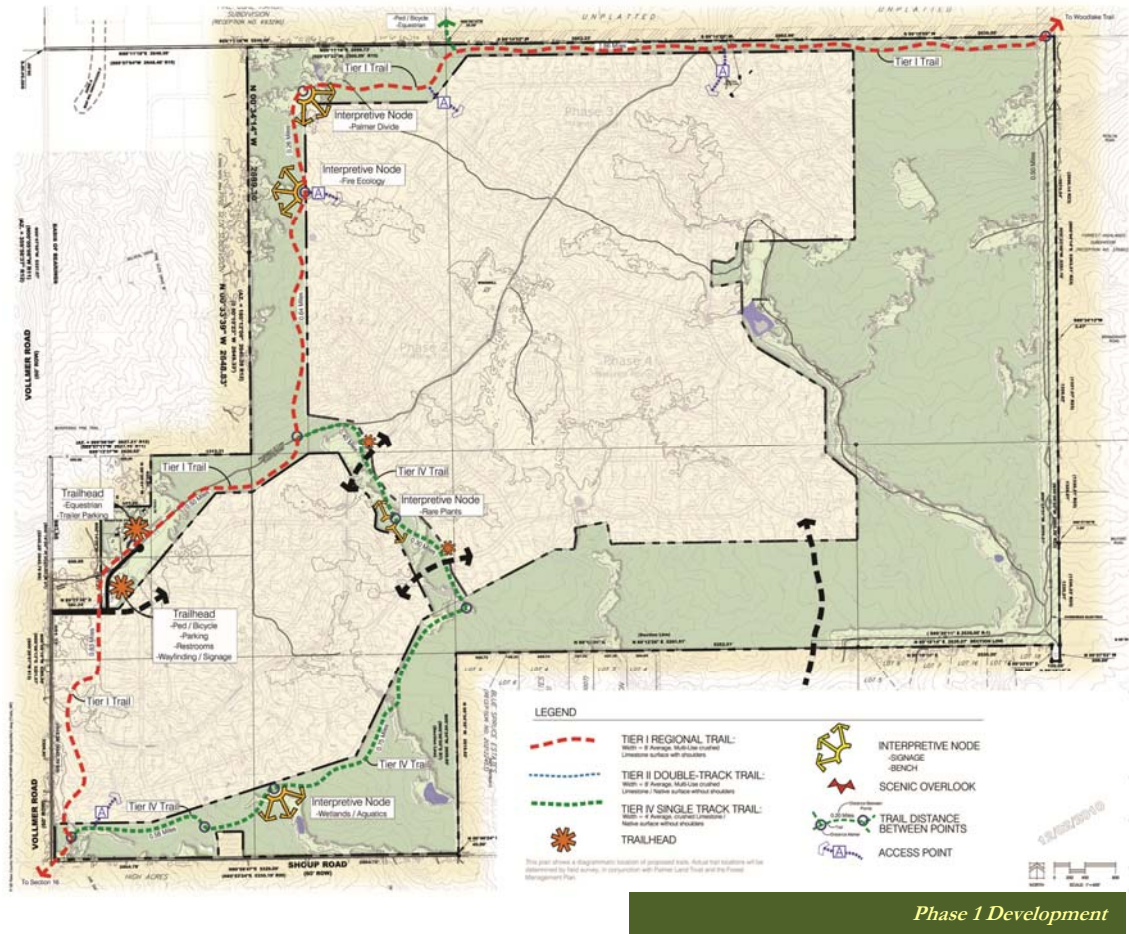
- for rent pavilions (3 total)
- a pond/water feature that could potentially support fishing
- additional trail resources to support the additional facilities

The Shoup Road Trailhead and the Southeast Trailhead will have parking, restrooms and wayfinding signage.

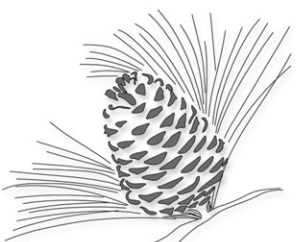
Phasing

The initial phase of The Pinerias Open Space development will concentrate on the construction of the Phase 1 facilities at the Vollmer Trailhead, the complete Tier I trail section, and the Tier IV trail in the southwest area of the site to complete a loop. This would include the Interpretive Nodes if funding is available.

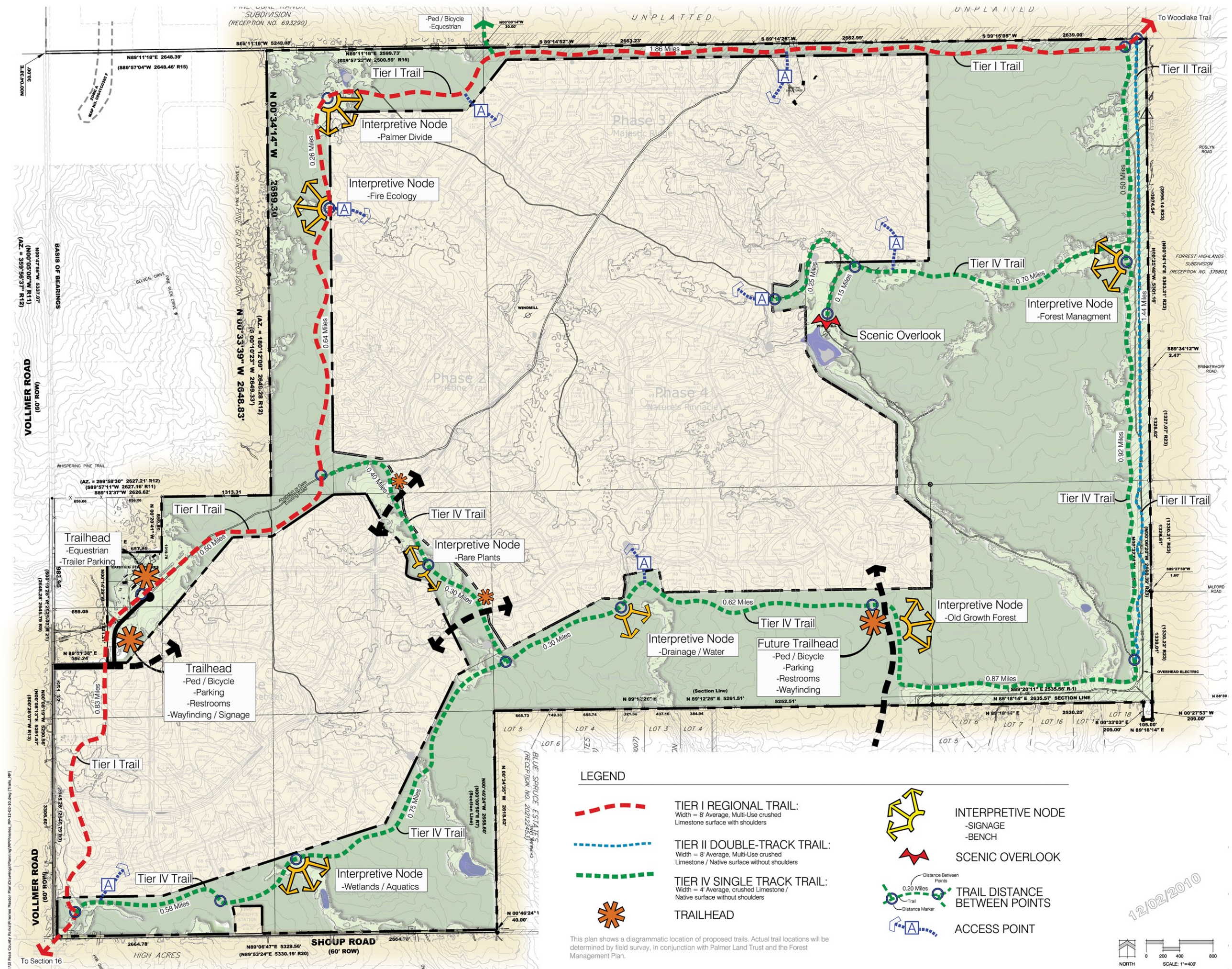
Future phases to complete the trail network and trailhead facilities would be determined as funding becomes available.



THE PINERIES OPEN SPACE MASTER PLAN

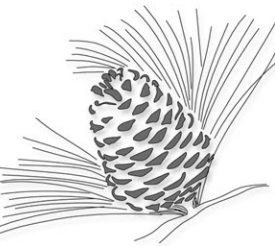


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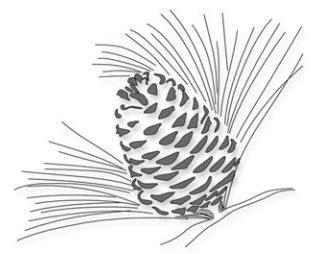
THE PINERIES OPEN SPACE CONCEPTUAL TRAILHEAD PHASE I



THE PINERIES OPEN SPACE

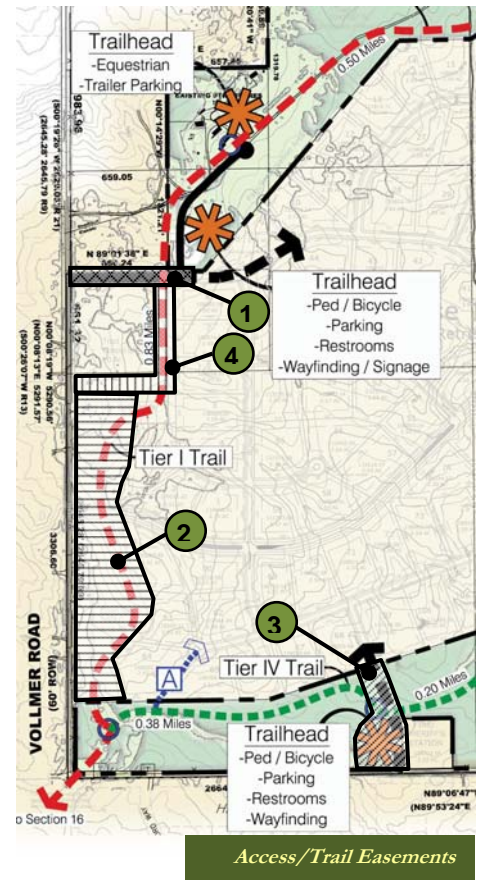
CONCEPTUAL TRAILHEAD

ULTIMATE BUILD-OUT

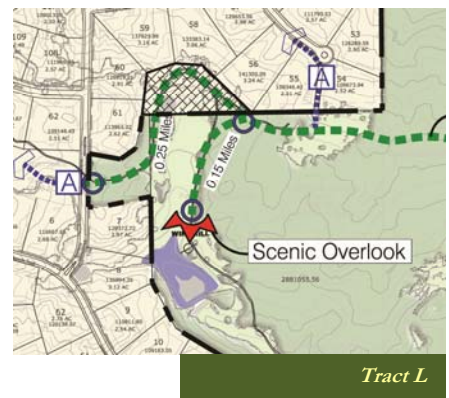


VII. Recommendations

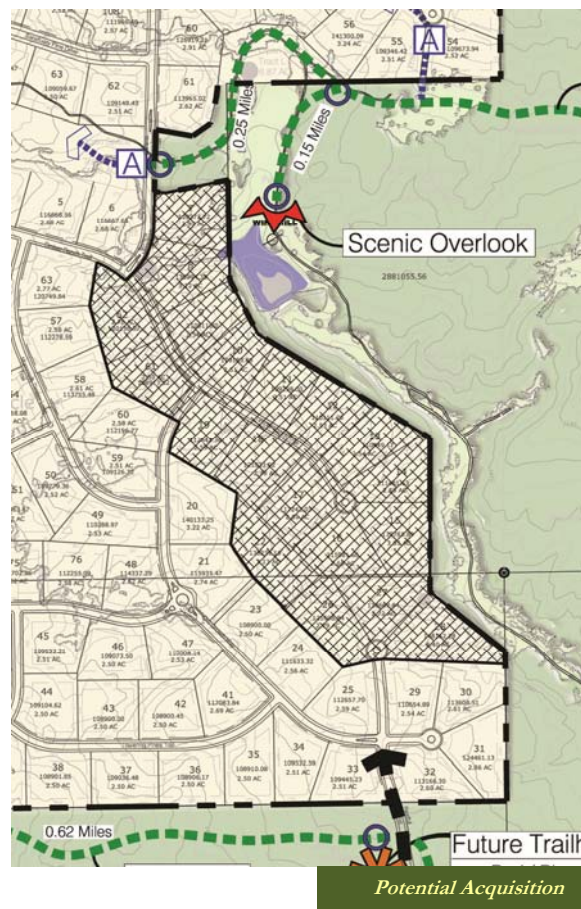
- HCB Sanctuary (HCB Sanctuary is the ownership entity of Sanctuary in the Pines) – Acquire access and trail easements. 1) Access from Vollmer Road to Park Boundary; 2) Trail easements in OS along Vollmer Road; 3) on road from Shoup for TH north of Shoup; 4) adjacent to School/park areas.
- HCB Sanctuary - Acquire easements for public use, or acquire the land shown as HOA owned, in Sanctuary in the Pines Subdivision.



- HCB Sanctuary – Acquire easement, or dedication of “Tract L”, located in Phase 3 of Sanctuary in the Pines north of Snipe Creek. Tract L is shown as open space on Sanctuary in the Pines PUD Plan. It would facilitate access to the Tier 4 Trail from the Sanctuary in the Pines Subdivision.
- Develop Friends Group for:
 - Maintenance Projects
 - Construction Projects
 - Identify projects for Eagle Scouts, volunteers –



- i. Construct warm-up area in equestrian trailhead from coral materials on site
 - ii. See Volunteer Project List below as well
- d. Adoption of memorial benches or other site furniture
- e. Monitor trails for appropriate use
- In conjunction with Palmer Land Trust, develop cooperative monitoring program to minimize social trail development and encroachment on Park/CE.
- Develop list of volunteer projects
 - Survey all areas of Yellow Toadflax
 - Break off and bag Mullen plant seed heads in the fall to prevent spread
- Establish hours for Open Space use. (BOCC Action Required)
- Retain a trail design specialist prior to trail construction to flag specific trail location prior to construction.
- Retain architect to evaluate use of the existing stable building for conversion to restrooms; interpretive center; public meeting space; research station.
- Relocate the metal building, or sell it, that is located near the north boundary of the Open Space near the water tank.
- Transplant nursery trees in Zone 4a area to appropriate locations in the Open Space, or to other County Parks. Trees can be used in areas of mistletoe mitigation where clear cutting is recommended as a mitigation measure.
- Work with residents of the Pine Cone Subdivision and the owners of Black Forest Preserve to provide a walk-in neighborhood access to the northwest portion of Pineries Open Space.
- Investigate potential for an easement for walk-in access to the southeastern corner of Pineries Open Space.
- Work with HCB Sanctuary to complete work on the four detention ponds that outfall into the Pineries Open Space to prevent erosion and sediment deposition.
- Several old fences previously used to control cattle grazing should be removed to facilitate wildlife movement within the Open Space.



- Emergency Access will be evaluated by construction phase and emergency service providers notified for familiarization and input.
- Neighborhood groups may request walk-in access to the perimeter trail where it can be shown that there is a public use easement through private property. Each request will be evaluated by the County Parks Department and the Palmer Land Trust prior to consideration of agreement of access.
- HCB Sanctuary - Acquire proposed Lots 7-19; 22; 26-28; 61 & 62 in Phase 4 of Sanctuary in the Pines (19 Lots) to provide adequate buffer to the Snipe Creek Drainage and Cantrell Pond.

VIII. Design Guidelines

The intent of the Design Guidelines is to develop standards that are unique to the site and character of The Pinerias Open Space as well as consistent with County park facilities.

Trail Experience

Trail Experience is each trail user's individual subconscious interaction has with the environment that thoughtful trail design embodies. This means each trail decision and the final trail design should:

- Be fun and rejuvenating;
- Provide Passageway - not simply a transportation route;
- Provide Compatibility for various trail user types – hikers, cyclists, equestrians, elderly, children, and physically challenged individuals;
- Integrate with the Land, Vegetation, Wildlife;
- Interact with the Environment; and
- Stimulate Inquisitiveness - with view opportunities, alignment – its interpretation without signs along the entire corridor.

Two components effecting trail user experience are unique because of conditions on the Pinerias Open Space. The first is Trail Flow and Rhythm . Together, flow and rhythm, are key components for trails popular with cyclist and equestrians. The experience of travelling where one turn leads to the next, oncoming obstacles and trail traffic are visible, and one rise leads to a similar descent not only create enjoyable trail, but also create a durable trail requiring less braking, no abrupt turning, while controlling speed and minimizing startling user encounters. (<http://www.imba.com/resources/trail-building/twists-and-turns>) The second is Visual Separation. Trail users should be able to enjoy the natural forest environment without viewing the surrounding residences, the future internal residences, the easement mandated perimeter fencing or the electrical transmission lines. While trail users anticipate interacting with traffic and residences at intersections and crossings, a rural trail is compromised by continually exposing trail users to residences, utilities and perimeter fencing. The property lends itself to a reclusive escape into the Black Forest - this is both its beauty and its uniqueness.

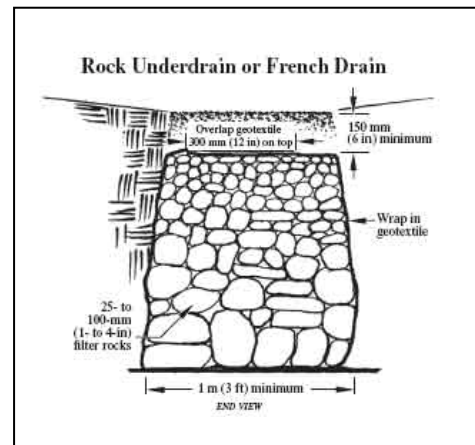
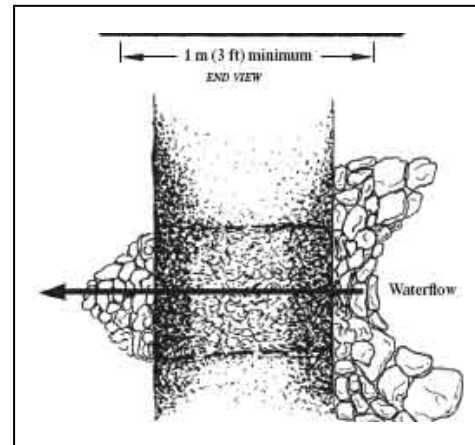


Both trail design components - Trail Flow and Visual Separation - are typically accommodated by thoughtful trail alignment and the physical and topographical diversity of this property allow both these Trail Experience components to be achieved. Certain conditions of the conservation easement will restrict optimal Trail Experience and optimal Trail Sustainability. This will be discussed further in the Trail Sustainability section below. (Tapis)

Trail Sustainability

Trail Sustainability includes consideration and attention to trail safety, sustainability, construction cost, structural integrity, and maintenance. Compliance with the design standards noted above will best ensure durable, safe - sustainable - trails.

Many drainage crossings will be necessary to circumnavigate the property. Drainage crossing always require careful consideration. Most of the drainages are characterized by seasonal or storm related dampness. These crossings will be best stabilized by constructing armored crossings. Depending on the site condition, one of the two details can be applied.



1. Foundation Modification

www.imba.com/resources/trail-building/all-weather-trails

IMBA World Summit 2010 Resources - All Weather Trails

Foundation Modification

- This method requires trailbuilders to excavate the area to be reinforced, install a layer of stone, and then cover the stone foundation with native soil.
- Stone foundations improve drainage beneath the trail and provide a hard under-layer, while maintaining the look and feel of the local surroundings.
- You may need to bring in stone from a quarry for foundation. Rock size depends on trail user weight.
- Put rocks close together to create an interlocking puzzle.
- The foundation should be wide enough to accommodate drift in the trail, as riders find the true line.

2. Rock Underdrain

<http://www.fhwa.dot.gov/environment/fspubs/07232806/page10.htm#rock> Rock Underdrains

Rock underdrains (often called *French drains*) are ditches filled with gravel.

- They can be used to drain a spring or seep running across the trail.
- Wrap the gravel with geotextile to help prevent silt from clogging the rock voids.
- Start with larger pieces of rock and gravel at the bottom, topping off with smaller aggregate.
- Finish the drain with 150 millimeters (6 inches) of tread material so that the surface matches the rest of the trail.

Wrapping rock underdrains with geotextile helps prevent them from clogging. Rock underdrains are used to drain low-flow springs and seeps.

Other drainages are characterized by steep embankments and perennial or constant water flow. These crossings will be best achieved by culvert crossings (www.fhwa.dot.gov/environment/fspubs/07232816/page08a.htm#culv, www.fhwa.dot.gov/environment/fspubs/07232806/page11.htm#culv) or bridges (www.fhwa.dot.gov/environment/fspubs/07232816/page10.htm#bridg, www.fs.fed.us/eng/pubs/htmlpubs/htm10232808/ Locating Your Trail Bridge for Longevity).

Pineries Trail System trails are recommended to remain at a slope of less than 10% in accordance with the Equestrian Design Guidebook with the proper outslope to facilitate drainage. Coupled with grade reversals and proper alignment and construction, the trails will be sustainable for generations.

It is recognized that the optimal alignment will not always be possible given the alignment restrictions imposed by current agreements with the surrounding residents and the restrictions of the conservation easement. In the following situations, it is recommended that the County pursue negotiations in order to achieve sustainable and safe trails that balance trail user, resident and conservation concerns. Negotiations are recommended in cases when trail alignment restrictions cause:

- unsafe visibility because of sight distance;
- significant grade compromise that impacts long term tread durability, erosion and sedimentation;
- additional drainage crossings;
- drainage crossing in less desirable locations;
- residences or utilities to be visible when visual screening from both perimeter and interior properties and fencing is possible outside the prescribed trail corridor.

Trail Standards

Trail hierarchy of the site will be consistent with standards developed for use throughout the El Paso County parks network. Four trail standards are in place, of which three will be utilized to form the trail network within the Pinerias Open Space.

Tier I Trail
Tier II Trail
Tier IV Trail

All trails will be designed and constructed in compliance with a few well tested existing trail construction standards including:

- El Paso County Trail Hierarchy Tier I Regional Trail, Tier II Double-track Trail and Tier IV Single-Track Trail
- Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds, USFS and USDOT <http://www.fhwa.dot.gov/environment/fspubs/07232816/index.htm>
- Trail Construction and Maintenance Notebook, USFS and USDOT <http://www.fhwa.dot.gov/environment/fspubs/07232806/index.htm>
- Trail Solutions: IMBA's Guide to Building Sweet Singletrack, IMBA <http://www.imba.com/catalog/book-trail-solutions>
- Other references are cited when relevant to specific conditions and discussions that follow.



TIER IV SINGLE-TRACK TRAIL:

Width=4' Average, Crushed limestone / native surface without shoulders

This Tier is designed to allow users to access remote open spaces. It is not multi-use and users are encouraged to use caution while passing other users. Typically this trail is used by hikers, preferring a more rustic experience. Maintenance is not routinely performed on these trails.



TIER II DOUBLE-TRACK TRAIL:

Width=8' Average, Multi-use crushed limestone / native surface without shoulders.

This Tier is designed for low maintenance and ease of construction. It's typically found in trail corridors that connect local communities with open spaces.



TIER I REGIONAL TRAIL:

Width=8' Average, Multi-use crushed limestone surface with shoulders.

This Tier is included in our County Trails Master Plan document and is associated with the Land Development code. This Regional Trail system connects communities with open spaces and parks. It's the County's core multi-use trail corridor.

Interpretive nodes

The Pinerias Open Space will offer many opportunities for educational experiences related to specific natural and cultural feature of the site. To take advantage of this opportunity, interpretive nodes have been defined on the Master Plan that will provide educational information specific to a given area of the site. These nodes have been identified as:

- Fire ecology
- Palmer Divide
- Lightning Strikes
- Forest Management
- Old Growth Forest
- Drainage/Water
- Rare Plants
- Wetlands/Aquatics



Interpretive Node

The interpretive nodes would consist of a bench and informational signage located immediately adjacent to the trail.

Site Furnishings

Site furnishings would consist primarily of benches and picnic tables. The intent would be to use standard County furnishings. These site furnishings should reflect the ranch and rural character of the Open Space. Materials should be durable and low maintenance in either a perforated metal or recycled plastic. Colors should be dark green, brown or black.



Site Furnishings

Fencing

Fencing on the site will generally be limited to delineating the Open Space/Conservation Easement from adjacent residential development, both internally and externally. Currently, the external perimeter is fenced with a variety of materials, but generally 4-5 strand smooth wire. The intent is that this fencing will remain in place. Access from the perimeter is to be limited to those points designated on the Master Plan. Any alternate access points or gates installed in the perimeter fence should be removed and access directed to the appropriate trailheads.



Alternative Fencing

Fencing will ultimately delineate the boundary from the future residential subdivision and the conservation easement. This fencing should occur prior to the construction of homes, but can be phased with home construction. This fencing should be installed by the developer. This fencing would be wildlife friendly and can be either a wire fence or alternative 3-4 rail wood pole or Teton fence. The alternative fence should use materials consistent with those found on-site.

Trailheads

The three principal trailheads will consist of gravel parking areas, seating and picnic facilities for the trail users, restrooms, and wayfinding signage.

Signage

Two forms of signage should be implemented into the open space program:

- **Wayfinding-** This type signage would generally include trail maps and directional signage specific to the trail system and features of the open space.
- **Operational-** This type signage would specify rules of use. Of particular importance would be the use of the trail system within the open space and discouraging the creation of social trails throughout the conservation easement.

Parking

Trailheads identified in the master plan will typically provide for vehicular parking, both singular vehicles and large vehicles with trailers. Parking areas should be delineated through partially buried timbers, concrete blocks or other appropriate materials at the perimeter and in areas to define parking stalls, where appropriate. A post and rail fence should enclose the parking areas with openings at points of trail access. General parking criteria:

Equestrian Trailhead.	28' two-way access drives Pull through spaces- 20' X 60' 20' wide parallel pull-offs
Hiking/Biking Trailhead	24' two-way access drive 9' X 18' stalls Accessible parking



Equestrian/Trailer Parking



Hiking/Biking Parking

The use of these design guidelines will assist in the development of The Pineries' trails and facilities in a coordinated and cohesive manner throughout the open space.

List of Resources

- Preliminary Habitat Assessment of Wetlands, T&E Species and State-Listed Species of Concern– Walsh Environmental Scientists and Engineers, LLC July 31, 2006
- Forest and Wildlife Management Plan – Len Lankford March 1996
- Preliminary Geotechnical Investigation Spahn Property – CTL Thompson Inc. June 2006
- Wildfire Hazard & Mitigation Report Stephen J. Spaulding August 1, 2006
- Master Planning Recommendations and Considerations for the Pineries Ranch Open Space by J. McConnaughy, T. Kelso, & A. Markstein August 2008
- Pineries Ranch Baseline Documentation Report Biohabitats, Inc. March 2007
- Vegetation of the Pineries Ranch, Black Forest, CO by Amy Markstein and Tass Kelso August 2008
- Biological Diversity and Conservation Values of the Pineries Ranch by Dr. Judith P. von Ahlefeldt, Dr. Tass Kelso, and Kent Timmerman June 5, 2006
- El Paso County Parks and Leisure Services Master Plan
- Conservation Easement Agreement between Palmer Land Trust and Morley Howard Investments, LLC, 2006
- Black Forest Preservation Plan, 1997
- Amended Park Lands Agreement, 2010

Appendix

- Geologic Hazard Evaluation Pineries Open Space Master Plan by CTL Thompson Incorporated October 11, 2010
- Pineries Open Space Master Plan Findings and Existing Conditions Analysis Report by Drexel, Barrell & Co. November 2010
- Pineries Open Space Drainage Study by Drexel, Barrell & Co. November 2010
- Ecological Resources – Environmental Baseline Report of the Pineries Open Space by Land Stewardship Consulting, Inc. November 2010
- Noxious Weed Management Plan for the Pineries Open Space by Land Stewardship Consulting, Inc. November 2010
- Forest Management Plan by Stephen J. Spaulding November 2010