

Working copy: Nov. 14, 2017

Ken-Caryl Ranch Revised Open Space Comprehensive Management Plan

Prepared by the
Ken-Caryl Ranch Open Space Management Plan Task Force

2017

Adopted by the Ken-Caryl Ranch Master Association Board ____ 2017
Adopted by the Ken-Caryl Ranch Metropolitan District Board ____ 2017

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Introduction

The purpose of the Ken-Caryl Ranch Open Space Comprehensive Management Plan is to establish a framework for setting broad land management and recreational priorities and to provide guidelines to the Ken-Caryl Ranch Open Space staff on managing the natural and recreational resources within the Open Space boundaries. Implementation of the Management Plan will assist the staff in its efforts to preserve and enhance these areas for present and future generations.

With the acquisition of the South Hogback area in 1993, the total amount of land on Ken-Caryl Ranch dedicated as undeveloped Open Space totals about 4,700 acres. Even with contractors, significant resident volunteer participation, and a full-time, professional Ranger staff to help with its management, conflicts relating to the use of Open Space resources are inevitable. Decisions about appropriate activities, impacts, resource protection, education, and non-resident use have become on-going issues for staff to tackle. It is the goal of this plan to help manage those conflicts.

In 1994, a group of Ken-Caryl Ranch residents and members of the Ranger staff convened as the Open Space Planning Team and was tasked with creating an authoritative document that detailed Ken-Caryl Ranch policies and procedures for managing Open Space resources. The group worked for three years to prepare the original version of the Open Space Comprehensive Management Plan, which was adopted in 1997.

In 2004, a group of residents convened to review the old plan, make appropriate changes, and develop new policies where necessary. Several changes to the original plan were recommended but were never completed for adoption. As a result, the Open Space Management Plan Task Force was formed in 2016 to review those inputs, discuss relevant updates, and recommend changes to the Master Association and Metropolitan District Boards. This revised version of the Management Plan is the culmination of the efforts of the Management Plan Task Force and staff. It also takes into account the 2017 resident survey as well as input from community leaders such as liaisons from the Open Space Committee, Master Association Board, and Metropolitan District Board. The Task Force intends for the plan to be updated periodically and recognizes it may not be an all-inclusive document.

As residents of Ken-Caryl Ranch, we recognize that Open Space represents an irreplaceable resource that must be protected for future residents. Because of the importance of Open Space to the quality of life within Ken-Caryl Ranch, we are committed to managing those resources in a manner that ensures both their preservation and enjoyment. Ultimately the activities of the residents must be reasonably compatible with maintaining the health and integrity of the Open Space resources.

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I. Mission Statement

To provide residents with the opportunity to recreate and enjoy nature where they live, while protecting and conserving Open Space resources.

II. Objectives

This Management Plan is intended to provide direction to staff and act as a tool for decision-making. Managing, preserving, and enhancing Ken-Caryl Ranch Open Space can broadly be defined by the following management objectives, in no particular order, that are critical in maintaining the health of Open Space resources.

1. Prevent uncontrolled wildfires that may result in catastrophic destruction of Open Space resources, including human lives and property. The Open Space must be managed in such a way as to minimize the danger of uncontrolled wildfire while at the same time preserving resources.
2. Maintain or enhance vistas and visual resources. Efforts directed at promoting a sustainable, well-functioning ecosystem will enhance the visual resources of the entire community.
3. Restrict the introduction of non-native plant species into the Open Space when possible. Although many exotic plants have been introduced into the landscape, non-native species and noxious weeds should be controlled to prevent their spread into and domination of the Open Space.

4. Maintain, protect, and enhance natural resources.
5. Provide recreational opportunities. The Open Space provides a wide range of recreational opportunities. Development of these opportunities should be balanced with potential impacts on Open Space resources.
6. Protect cultural artifacts. Prehistoric and historic artifacts shall be protected and preserved from destruction or loss. The Ken-Caryl Ranch Historical Society has been consulted regarding this objective.
7. Promote safety and security. The Open Space should be managed in a manner to maintain the safety and security of its residents, staff, and Open Space resources.
8. Protect the Open Space as a community asset. Ensure its integrity by preventing encroachment, maintaining Open Space boundaries, and enforcing right-of-way agreements.

III. How to Use this Plan

The Management Plan Task Force intends for this plan to be a living document. Sections will change as the individual policies themselves need modification, or as deemed necessary by staff, the Open Space Committee, or other groups such as the Master Association and Metropolitan District Boards. The underlying policies are not to be modified without proper vetting by the appropriate committee and subsequent approval by the Boards. In addition, those changes should be made in the context of the relevant sections of this document.

The Management Plan Task Force believes this plan should be reviewed, and, if appropriate, updated every 5-7 years. Decisions by staff, the Open Space Committee, the Master Association Board, and the Metropolitan District Board in the on-going restoration, maintenance, and enhancement of ecological resources, trail-related activities, and forestry management should not be postponed by the normal cycle of updates this document will undergo. Actions taken during the course of decision-making are expected to reflect the general spirit of the Management Plan as it stands at that time.

IV. Defining Open Space

Open Space is defined as: all undeveloped land inside the boundaries of Ken-Caryl Ranch, as well as developed land at the Equestrian Center, owned by the Master Association, the Metropolitan District, or Jefferson County. While greenbelts are zoned Open Space according to Jefferson County, for the purpose of this document, greenbelts are not included in Open Space.

Straddling the transition zone between the high plains and the foothills of the Rockies, the Ken-

Caryl Ranch Open Space was set aside to protect the delicate wildflowers, breathtaking views, and dramatic splendor of this historic Colorado homestead. Upland wildlife abounds in the foothills habitat to the west, and a thriving prairie ecosystem is preserved along both sides of the hogback ridges that bisect Ken-Caryl Ranch. The Ken-Caryl Ranch community has been painstakingly planned and developed with a keen foresight and respect for nature so that residents can enjoy a recreational lifestyle in a naturally scenic environment.

To help residents better understand the Ken-Caryl Ranch Open Space, here are several facts:

- Private Open Space is 3,678 acres, while the public portion is 1,078 acres.
- Open Space is divided into four geographic sections: North Hogback, South Hogback, Valley, and Foothills.
- There are 45+ miles of trails, including natural-surface, hard-surface, service roads, and backcountry dirt trails.
- According to the 2017 Resident Survey, 70% of respondents said they jog/walk/hike and 44% bike on these backcountry trails.
- Usage is estimated to be over 15,000 visits annually on the most heavily used trails such as Massey Draw, Manor House, and Lost Canyon.
- The North and South Hogbacks are sites designated in the Colorado Natural Areas Program, which is an organization dedicated to protecting the best natural features in the state, and by the Colorado Natural Heritage Program, which tracks and ranks Colorado's rare and imperiled species and habitat. The Colorado Natural Heritage Program also designates several other areas in Open Space as Potential Conservation Areas, which are delineated around important elements of biodiversity.

The focus of this plan is to manage those portions of Open Space that remain undeveloped, have essentially undisturbed native vegetation, and receive no irrigation. Lands within this category comprise the majority of Open Space land west of highway C-470. The only Open Space area located in the Plains section of Ken-Caryl Ranch is the Medema Strip, which will not be singled out in this document. The plan also addresses several properties owned by the Metropolitan District and Jefferson County Open Space that are managed by Master Association staff.

Because many of the guidelines articulated in this plan will have far-reaching consequences on the activities in Open Space, the Management Plan Task Force stresses the importance of having solicited residents' and other representatives' input so everyone understands the rationale that formed the basis for these management guidelines.

V. Land Categories

Open Space land ownership, permitted use, and management have long been controversial issues on Ken-Caryl Ranch. These issues were the driving force behind the 1997 Management Plan, the Land Use Task Force in 2001, and ultimately this 2017 Management Plan revision. The land categories described below resulted from that Land Use Task Force, which was formed to identify the ownership and zoning of all undeveloped land on Ken-Caryl Ranch, and then devise

a strategy to preclude any possible efforts to develop this land. The Land Use Task Force subdivided Ken-Caryl Ranch Open Space based on zoning and usage and identified three land categories:

- Equestrian Center Open Space (EC)
- Multi-Use Open Space (MU)
- Undeveloped Open Space (U)

Listed below are summary descriptions and special management considerations of the different land categories as well as a chart showing permitted uses. For the full descriptions, see the “Supplement to Master Declarations of Covenants, Conditions, and Restrictions of Ken-Caryl Ranch Regarding Recreation and Open Spaces,” which was adopted by the Master Association Board in 2004. This supplement identifies the restrictive covenants placed on each of these parcels and is listed in Appendix B of this revised plan.

Ken-Caryl Ranch Open Space – Equestrian Center (KCROS-EC)

(purple on Supplemental Declarations map)

Description: Developed multi-use Open Space associated with the Ken-Caryl Ranch Equestrian Center.

Ken-Caryl Ranch Open Space – Multi Use (KCROS-MU)

(yellow on Supplemental Declarations map)

Description: Undeveloped and developed Open Space. This land is located adjacent to heavily developed areas on Ken-Caryl Ranch. It is located along drainages in the North Ranch, along drainages east and north of the Valley Parkway in the Valley, and along greenbelts in the Plains.

Special Management Considerations for KCROS-MU

Isolated Tracts - These Open Space tracts are usually small strips of land between houses, often serving as easements or drainageways, but often include feeder trails. By their very nature, most of these strips receive little attention from anyone except the adjacent landowners.

Brannon Gearhart and Bradford Park - These two areas represent the only developed recreation areas in Ken-Caryl Ranch Open Space. Picnic tables, some playground equipment, and regular mowing are all permitted in these areas. Large group activities are encouraged here rather than on more sensitive lands elsewhere on Ken-Caryl Ranch.

Medema Strip - The Medema Strip, a non-irrigated, linear piece of land shared with an adjacent neighborhood, Williamsburg II, that is Open Space in name only. Ken-Caryl Ranch staff presently maintains it, including mowing, weed control, and tree pruning. Responsibilities are shared with Foothills Park and Recreation District.

Ken-Caryl Ranch Open Space – Undeveloped (KCROS-U)

(green on Supplemental Declarations map)

Description: Undeveloped and relatively undisturbed Open Space of high aesthetic value. This category may include significant natural, cultural, and historical resources.

Special Management Considerations for KCROS-U

Some areas have special considerations. They consist of the foothills area, the North Hogback, South Hogback, the ridge separating the Valley from the North Ranch by the Manor House, the North Ranch Rocks, and several drainages in the Valley.

North Ranch Rocks - Rock outcrops located in the North Ranch have acquired the notoriety of being a popular meeting and party area. Due to hazards inherent in use after dark and to control access and minimize unacceptable behavior, this area closes at sunset.

The Hogbacks - In 1993 the two hogbacks extending south of Ken Caryl Ave. to Deer Creek Canyon Road (South Hogback) were acquired through the combined efforts of the Master Association, Metropolitan District, Ken-Caryl Ranch Foundation, and individual residents' contributions. Originally owned by the Ken-Caryl Ranch Foundation, in 2003 it was deeded over to the Metropolitan District to be managed by the Master Association. Unlike other KCROS-U land, this parcel is open to the public at large. In 2000, the North and South Hogbacks were designated Colorado Natural Areas on the basis of their geological, archaeological, and biological features. In addition, two rare species of plants are found on the site, and the hogbacks are important for maintaining wildlife movement corridors in the region.

Other Lands Maintained but Not Owned by the Master Association - Two tracts of land owned by Jefferson County Open Space are adjacent to Ken-Caryl Ranch Open Space land. On the extreme north end of Ken-Caryl Ranch is a tract known as Parcel A. On the east side is a tract formerly owned by Bethel College, now owned by Jefferson County, but retaining the Bethel College name. Both of these tracts, while owned by Jeffco, are administered by the Metropolitan District and maintained by the Master Association. They are presently managed as KCROS-U land.

Other Designations of KCROS-U Land - There are three sites on KCROS-U land on the National Register of Historic Places because of their archeological significance. The first two are rock shelters located in Bradford Open Space. Bradford House II is on the south-facing side of the large red rock outcrop by the Bradford Pool, while Bradford House III is the south facing overhang of the east-west running rocks west of the Bradford House. The Bradford-Perley House was listed on the National Register of Historic Places in 2015. This designation does not obligate Ken-Caryl Ranch to any particular management style or practice. There are several other archeological sites on Ken-Caryl Ranch property that have been studied but did not have the significance necessary for National Register designation.

Permitted Uses for the Three Different Zoning Categories of Ken-Caryl Ranch Open Space
 (From the Supplement to the Master Declaration of Covenants, Conditions, and Restrictions of Ken-Caryl Ranch Regarding Recreation and Open Spaces)

	Equestrian Center KCROS-EC (purple on map)	Multi Use KCROS-MU (yellow on map)	Undeveloped KCROS-U (green on map)
Hiking	X	X	X Low impact only
Biking	X	X	X Low impact only
Horseback riding	X	X	X Low impact only
Picnicking	X	X	
Outdoor play	X		
Paved trails	X	X	
Earthen trails	X	X	X Incl. foot bridges
Playgrounds	X	X	
Parks	X		
Volleyball courts	X		
Tennis courts		X	
Swimming pools		X	
Ball fields		X	
Equestrian facilities	X	X	
Paved roads	X	X	
Unpaved roads	X		
Parking areas	X	X	
Educational activities relating to natural, cultural, and historic resources	X	X	X Low impact only
Barns, storage sheds and caretaker residences	X		
Non-vehicular camping	X	X	X
Agricultural uses/management practices limited to growing of hay, grains, grasses, trees and shrubs, and grazing of livestock	X	X	X For habitat mgmt. only
Growing vegetables and keeping livestock	X		
Utility corridors, access easements, and infrastructure limited to unpaved access roads, buried public utilities, and existing overhead utilities	X	X	X
Utility corridors with paved roads, parking areas, electrical substations, gas regulator settings, low-power communication facilities, water impoundments, water supply wells, utility pumping stations, and other similar private and public utility uses	X		
Deposition or excavation of sand, gravel, rock, earth, minerals, and other similar materials under the limitations of, and in the manner prescribed in, the Jefferson County Zoning Resolution	X		
Building construction outside the 25-year floodplain	X		

VI. Management Policy and Procedure

The Management Policy and Procedure section is divided into the following categories:

- A. Cultural Resources and Paleontology
- B. Water Resources
- C. Physical Resources
- D. Wildlife/Wildlife Habitat
- E. Vegetation/Noxious Weeds
- F. Forest Management
- G. Wildfire Prevention
- H. Visual Aesthetics
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- P. Animal Damage Control
- Q. Maintenance Procedures

The importance of each category is explained in the context of overall Open Space management. Specific management goals and objectives are defined, and action steps are stated for resource management.

It is important to recognize that none of these sections are mutually exclusive. As there is no way to eliminate overlap between sections, or resolve potentially competing priorities between sections, it is left to staff and the Open Space Committee to balance the overall goals of this Management Plan. Many sections reference existing plans, policies, procedures, and rules that were previously adopted, rather than attempting to include such information directly in this Management Plan. The overall objective in doing so is to eliminate confusion and ensure there is only one plan, policy, procedure, or rule to reference. The Management Plan is not intended to supersede plans, policies, procedures, or rules, but to guide implementation and enhance their evolution.

A. Cultural Resources and Paleontology

The Ken-Caryl Valley area hosts a number of rich archaeological, historical, and paleontological sites that include artifacts with significant scientific importance. It is essential to preserve these sites and artifacts in order to share that legacy with current and future residents. Some of the more well-known sites include the Manor House, Bradford House II and III, Bradford-Perley House, Kent's House, the Equestrian Center, and Little John's Chimney or Cabin. (The Manor House and Kent's House are privately owned.) Bradford House II and III and the Bradford-Perley House are listed on the National Register of Historic Places. Additional information on the cultural and archeological resources on the Ranch can be found in Appendix C and at <https://ken-caryl-ranch.org/community-news/history-of-ken-caryl-ranch/>.

Goal: Identify, protect, and educate residents about cultural resources located within Open Space.

Objective 1: Maintain a comprehensive cultural resources inventory.

Action: Because of the high probability of discovering additional cultural resources, it is critical to continue the inventory process through the leadership of the scientific community, and it has been recommended to complete an Open Space cultural resources survey on a project-specific basis. The results of the inventory are proprietary and organized in a scientific manner. Proprietary information can only be released to authorized personnel.

Objective 2: Support educational activities for residents to increase understanding of the value and need for protection of artifacts, while limiting their disturbance and removal.

Action: Discourage off-trail activity around sensitive cultural areas. Minimize theft and vandalism by keeping known sites under observation, and minimize trail development in sensitive areas.

Action: Signs and other printed materials will not be used to identify or direct residents to sites containing prehistoric resources. Historic sites are labeled on Open Space maps, and residents are encouraged to learn about the history of the Valley, while simultaneously conserving its resources.

Action: Artifacts, both historic and prehistoric, are part of the cultural heritage and property of all Ken-Caryl Ranch residents. Any artifacts found should be documented for scientific study. The artifact or a photograph of the artifact (with an inch or centimeter scale for reference, if possible), as well as the location of the find, should be provided to the Ken-Caryl Ranch Historical Society.

Objective 3: Protect Cultural Resources prior to new development of Open Space and during special activities.

Action: Any proposed new trail or other facility development will, prior to construction, undergo at a minimum a cultural resources assessment. If a new or known cultural resource site is in the vicinity of a new disturbance, then mitigation measures shall be developed and implemented to limit incidental discovery and disturbance of the site.

Action: Proposed special activities for general recreation purposes must be a sufficient distance so as not to impact a known cultural resource site. Special activities for scientific

or educational purposes may be allowed with strict conditions.

B. Water Resources

Ken-Caryl Ranch Open Space contains multiple hydrologic resources including streams, ponds, wetlands, and riparian habitat. Understanding, protecting, and monitoring these important resources is critical to maintaining the overall health of Open Space resources. The following defines these resources.

Ephemeral Stream – A stream that has flowing water only during and a short time after precipitation events in a typical year. Groundwater is not a source of water for ephemeral streams.

Wetlands – Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, fens, and riparian areas.

Riparian Area – The area adjacent to a stream that could reasonably be expected to contribute to the quality of the general stream habitat through shading, water quality filtering, contribution for food items for fish and wildlife, and the contribution of organic matter for stream food chain support.

Ponds – A small body of still water formed naturally or by hollowing or embanking.

The Ken-Caryl Ranch Open Space spans three watersheds: Massey Draw, Dutch Creek, and a small portion of Deer Creek. Included in the watershed areas are streams, ponds, wetlands, and riparian habitat as defined above. The streams originate in the foothills and all generally flow from west to east, with steep longitudinal slopes in western portions of the Open Space area. Almost the entire upper watershed of Massey Draw is contained within Ken-Caryl Ranch Open Space, including nine identified major tributaries designated as: North Massey Draw, South Massey Tributary, South Massey Tributary No. 2, West Massey Tributary, South Valley Tributary, Bradford Tributary, Ken-Caryl Tributary, Tinker Shaffer Tributary, and West Tributary North Massey.

Dutch Creek has five identified tributaries: South Dutch Tributary, South Dutch Tributary 2, South Dutch Tributary 3, South Dutch Tributary 3B, and South Dutch Tributary 4. Massey Draw, Dutch Creek, and Deer Creek eventually converge on the South Platte River. Refer to the Ken-Caryl Ranch Drainageway Hazard Assessment prepared by Muller Engineering Company in May 2009 for more information regarding the streams and drainage ditches.

In addition to the streams, Ken-Caryl Ranch Open Space contains wetland habitat that has been previously mapped under the U.S. Fish and Wildlife Service's National Wetland Inventory Program, found at <https://fwsmapservices.wim.usgs.gov/>. It is important to note that National Wetland Inventory mapping of wetland habitat does not necessarily identify wetlands as defined

by the Army Corps of Engineers and as regulated under Section 404 of the Clean Water Act. The National Wetland Inventory maps use the Cowardin et al. (1979) methodology for classifying the different types of wetlands that may be found at any given site.

The hydrology of the Ken-Caryl Ranch Open Space has changed dramatically with development. Stream flows along the Front Range ebbed and flowed with the seasons prior to settlement of the region. The primary stream courses of Massey Draw and Dutch Creek, upstream of the developed areas, still resemble this natural flow today. But conditions change dramatically as these drainageways move through the developed areas. Massey Draw, North Massey Draw, Dutch Creek, and a portion of its southern tributary have flowing water throughout most of the year. Storm events create intense, short-duration, high-volume flows in the developed areas.

The transformation of the land from pervious soils to impervious hard surfaces (road pavement, buildings, etc.) means more of our precipitation ends up in the drainageways. Flows have also increased from return flows related to lawn irrigation and other household activity. These persistent trickle flows and intense, short duration flows from storm events (e.g. June 2004) have accelerated erosion. Ken-Caryl Ranch continues to assess the major drainageways within the development and evaluate various hazards, including erosional stability, potential for public safety, hazard, water quality problems, flood hazard, and maintenance needs. Through this work, proposed drainageway improvements have been conducted and will continue in the future.

The maintenance of a healthy and productive aquatic ecosystem is vital for the health of terrestrial Open Space resources. Drainageways shall be maintained to safely and effectively convey storm waters without significantly impacting plant and wildlife habitat. Unstable sections of stream channel should be stabilized when it threatens private property, infrastructure, or public safety.

Goal: Preserve wetlands, riparian habitat, and open water to maintain their ecological functions.

Objective 1: Preserve and protect existing wetland and riparian areas within the Open Space.

Action: Avoid disturbances to the existing wetland and riparian areas in the community's Open Space.

Action: Conduct wetland surveys and delineations when disturbance is anticipated.

Action: Obtain applicable federal and state permits prior to disturbance.

Action: Consider effects on existing wetlands and the riparian area of all management actions and physical improvements.

Action: Avoid trail development and undesignated trail use through significant wetlands and riparian corridors.

Action: Where wetland crossings through identified wetlands are unavoidable, use elevated boardwalks or other appropriate means to minimize effects on hydrology, vegetation, and wildlife habitat.

Objective 2: Preserve and enhance water quality of ponds and streams.

Action: Avoid mowing adjacent stream banks and drainages to encourage the establishment of shoreline vegetation and stabilization of stream banks.

Action: Restrict access to degraded stream bank areas and restore these areas with native

vegetation to prevent shoreline erosion.

Action: Maintain and inspect drainage areas including culverts to ensure proper water flow.

Action: Work with Jefferson County to maintain stormwater grates and prevent flow blockage.

Action: Educate the community about the harmful effects of water runoff into Open Space areas. Prevent excess nutrients and pollutants from residential lawn maintenance, swimming pool draining, and stormwater runoff.

Action: Encourage stream restoration in degraded shoreline areas to enhance water quality and natural stream function.

Action: Work closely with Urban Drainage and Flood Control by submitting projects through Jefferson County.

Action: Encourage natural stream restoration by maintaining shallow, stable base-flow channels with wide, vegetated floodplains to mimic natural streams where appropriate (mountain stream sections excluded).

Action: Promote design criteria for stream stabilization projects that focus on water quality enhancement.

Action: Continue to develop and implement stabilization plans for Massey Draw's and Dutch Creek's main streams and tributaries.

Objective 3: Enhance suitable wetland and riparian areas along Massey Draw's and Dutch Creek's main streams and tributaries where opportunities exist.

Action: Continue the use of Noxious Weed Management practices to control weeds and non-native vegetation in wetlands and riparian areas. Refer to the Vegetation and Noxious Weeds section for more information.

Action: Inventory streams and wetlands to identify degraded areas that may have restoration potential.

Action: Evaluate, design, and implement riparian restoration and management programs.

Objective 4: Foster and support programs that emphasize the natural resource significance of wetlands and riparian areas.

Action: Encourage environmental education and outreach to increase public awareness of wetland functions and values.

C. Physical Resources

The underlying geology and soils of Ken-Caryl Ranch largely control the Ranch's unique visual and ecological character. The rocks exposed here, and the vegetation and wildlife they support, provide an excellent interdisciplinary lab for geologists, paleontologists, biologists, and ecologists. Understanding the composition and distribution of these physical resources and monitoring their condition is critical to maintaining the overall health of Open Space resources.

Although appearing indestructible, much of the exposed bedrock actually is extremely susceptible to erosion or has physical properties that must be considered when constructing trails, buildings, or other structures. Ken-Caryl Ranch managers and residents are fortunate in that 1)

the area was mapped by the USGS in the mid-1970s and 2) the geologic setting is essentially the same as the thoroughly researched Red Rocks Park and Dinosaur Ridge National Natural Landmark to the north.

A detailed soil survey has been completed by the Natural Resources Conservation Service (NRCS, previously the Soil Conservation Service) for the entire Ranch. Survey maps and associated reports can be found for the Ranch and surrounding areas at the NRCS website at <https://www.nrcs.usda.gov/>. As with Ranch geology, soil properties should be considered when constructing trails, buildings, or other structures.

Physical Resources have been or will be discussed in detail in other sections of this plan. Refer to the other sections for more information.

Goal: Minimize the impact to the physical resources of Ken-Caryl Ranch Open Space.

Objective 1: Monitor Ranch geology and minimize soil erosion.

Action: Consider hiring a consultant to inspect slopes, drainages, and cliffs for compromised stability.

D. Wildlife/Wildlife Habitat

While several environmental laws and regulations apply to wildlife living within Ken-Caryl Ranch, no federally listed animal species are known to exist within Ken-Caryl Ranch Open Space. Nonetheless, federally threatened and endangered species are protected under the Endangered Species Act of 1973 as amended (16 U.S.C. 1531 et seq.). Adverse effects to a federally listed species or its habitat require consultation with the U.S. Fish and Wildlife Service under Section 7 or 10 of the Endangered Species Act. Bald and golden eagles, which are protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, are known to use Ken-Caryl Ranch Open Space.

Certain areas of Ken-Caryl Ranch have animals that are considered rare or unique by the scientific community and have been afforded statutory protection. Other areas are characterized by habitat conditions that are critical to the survival of a particular species. Physical topography including hogbacks, streams, sandstone, and shale outcrops are all factors that contribute to the existing habitats that support the diversity of plant and animal communities.

The North and South Hogbacks have been deemed ecologically important by the Colorado Natural Areas Program (CNAP), which designated the area as the Ken-Caryl Ranch Natural Area, and the Colorado Natural Heritage Program (CNHP), which states that the area has very high biodiversity significance. The hogbacks have unique geologic formations and important plant communities that attract a variety of animal species. CNHP also designated the Foothills Open Space as having biodiversity significance. Several areas that are CNHP-designated as Potential Conservation Areas exist within Open Space, which contain important elements of biodiversity including plants, animals, or natural communities. These include the Ken-Caryl

Hogback Complex, Massey Draw, and Mount Lindo to Plymouth Mountain. See Appendix D for more information.

Riparian habitats, which are productive biological systems, exist within Ken-Caryl Ranch Open Space. In an arid setting such as the Front Range, riparian areas naturally attract a multitude of animal species, including many that are dependent upon wetlands for all or part of their life cycles. Riparian areas, even naturally patchy ones, can form corridors that link many different habitat types and wildlife populations along the drainage gradient they occupy. See Section B, Water Resources, for more information.

Goal: Preserve and protect Ken-Caryl Ranch's Open Space resources to maintain and enhance biodiversity, safeguard the health of its resident wildlife species including species of special concern, and educate residents on safely coexisting with wildlife while supporting habitat.

Objective 1: Preserve wildlife and wildlife habitat through proper land stewardship that incorporates strategies to enhance and protect habitat and natural biodiversity and minimize the land use impacts on wildlife.

Action: Identify habitat enhancement opportunities, such as restoring native plant communities including remnant tallgrass prairie in the North and South Hogback Open Space, aspen grove enhancement, and cottonwood, willow, and coniferous forest regeneration.

Action: Maintain standing dead (snags) and down trees in the backcountry that do not present a public safety hazard. Remove dead trees in the front country areas if requested by adjacent landowners at staff's discretion.

Action: Enhance natural habitat or create artificial habitat on a species-specific basis to encourage certain species (e.g. barn owls, bank swallows, cavity-nesting birds) as resources allow.

Action: Encourage volunteer bird inventories through programs such as the Tuesday Birders, Audubon Christmas Bird Count, and bluebird nest box program. Gather data and maintain a bird database as a usable repository for information and analysis.

Action: Consult with Colorado Parks and Wildlife during the planning of any significant wildlife habitat enhancement projects.

Action: Address habitat fragmentation. For trails, refer to the Trails Implementation Process.

Action: Implement weed control measures that minimize impacts on native pollinator populations.

Action: Use prescribed burns to enhance habitats.

Action: Evaluate nighttime Open Space use and its impact on wildlife.

Action: Design future trails to avoid riparian habitat where possible and minimize the number of crossings through riparian areas and stream beds. Encourage trail users to quickly exit riparian areas. Refer to Trails Master Plan for more details.

Action: Improve signage designating sensitive areas.

Action: Promote strategies to minimize impacts on the environment and birds that are being studied, such as: never disturb nests or chase birds, and don't capture birds without the required federal and state permits.

Objective 2: Ensure the health and sustainability of animal populations that are considered to be of special concern or management emphasis.

Action: The Master Association Board can designate areas of Open Space as protected habitat. When directed, staff will develop plans for these areas containing specific management criteria that are typically more restrictive than other areas of Open Space.

Action: Open Space staff may restrict users' access in protected habitat areas if heavy use is causing damage to habitats. Fencing or signage may be used to divert use away from sensitive areas. Except for authorized activities, use or occupancy of parks and Open Space during time such lands are administratively closed to use is prohibited.

Action: Nuisance wildlife control may be necessary where sensitive wildlife and plant species are being impacted.

Action: Implement the guidelines stated in the Ken-Caryl Ranch Prairie Dog Conservation Policy for effective management of prairie dogs.

Objective 3: Integrate wildlife population and habitat protection and enhancement activities into other resource management objectives and actions.

Action: Protect wildlife from short-term activities such as utilities maintenance through cooperation with the appropriate agencies. Conduct nest surveys prior to major management operations such as trail building, forest thinning, etc.

Action: Use seasonal closures to protect sensitive wildlife species where appropriate (e.g. voluntary temporary closure of raptor nesting areas in the South Hogback Open Space).

Action: Identify weed management priorities that benefit wildlife habitat, as described in the Vegetation/Noxious Weeds section.

Action: Identify and provide natural and/or artificial habitat on a species-specific basis for wildlife species to assist with Integrated Pest Management (e.g. bat roosts to assist in controlling mosquitoes) as resources and funding allows.

Objective 4: Protect wildlife and their habitat from domestic animals.

Action: See Animal Damage Control section.

Objective 5: Educate residents about co-existing with wildlife, including the importance of not feeding wildlife, removing attractants, and modifying habitat on private property to detract from unwanted encounters and damage from wildlife.

Action: Continue to educate residents about the importance of not feeding wildlife.

Continue partnering with the appropriate agencies (e.g. Colorado Parks and Wildlife and Colorado State University Cooperative Extension) to conduct outreach programs aimed at discouraging wildlife feeding.

Action: Provide and update resources on the Ken-Caryl website and through newsletters about living with specific wildlife species, including providing links to resources through Colorado Parks and Wildlife and Colorado State University Cooperative Extension.

Action: Remind residents that it is illegal to kill snakes in Colorado except for rattlesnakes that pose a threat (33-6-107(9), C.R.S.).

Action: Educate residents about how to avoid conflicts with coyotes, mountain lions, rattlesnakes, and bears to protect pets from encounters.

Action: Remind residents that hazing of nuisance wildlife species such as coyotes, deer, raccoons, and foxes is allowed as long as their faces/eyes are not harmed and the skin is not broken.

Action: Provide resources on wildlife-proofing homes and properties, including teaching residents to store garbage, all food including pet food, recyclables, and bird seed inside.

E. Vegetation/Noxious Weeds

Ken-Caryl Ranch Open Space is located at the interface of the Great Plains and the Southern Rockies eco-regions along the foothills of the Front Range. Thus, Ken-Caryl Ranch Open Space is comprised of a diverse plant community. The vegetation communities vary depending on location, elevation, topography, and moisture availability. Generally, the Open Space consists of foothill shrubland, mixed grassland, and some coniferous forest with scattered aspen groves at higher elevations. Riparian habitat is present along the three main streams and tributaries: Massey Draw, Dutch Creek, and Deer Creek. More detailed vegetation information can be found in the Ken-Caryl Ranch Open Space Plant List, Colorado Natural Heritage Program, and in Appendix D.

Major influences affecting plant community character and condition are natural disturbances, soil types, topography, hydrology, wildlife interactions, invasion by non-native plant species, land use, and land management. Loss of ecological diversity, native plant communities, soil, and other natural resources are a direct result of weed infestation. These plants severely reduce the value of our Open Space. Noxious weeds compete with native vegetation for resources, including sunlight, water, growing space, and soil nutrients. Once established, noxious weeds can cause severe ecological and agricultural impacts to our Open Space by decreasing biodiversity, diminishing habitat and forage for wildlife, and increasing soil erosion.

The control of noxious weeds is mandated by federal, state, and local laws and is essential to ensuring the health of Ken-Caryl Ranch Open Space resources. These resources will be managed to follow all laws and regulations requiring control of noxious weeds, and staff will implement Integrated Pest Management, which incorporates biological, cultural, mechanical, and chemical control methods. However, the development of an effective weed control strategy must also consider that many of the more common control methods, such as chemical spraying and mowing, may have negative environmental impacts associated with them.

Ken-Caryl Ranch Open Space contains no vegetative threatened and endangered species per U.S. Fish and Wildlife. However, Colorado Natural Areas Program and Colorado Natural Heritage Program have identified species of biological importance in Ken-Caryl Ranch Open Space as described in Appendix D.

Goal: Preserve and maintain native plant communities, protect rare species and communities, and restore native vegetation in suitable areas.

Objective 1: Control noxious weeds.

Action: Develop and implement a weed management plan.

Action: Promote revegetation of non-vegetated areas to mitigate noxious weeds.

Action: Educate staff, residents, and visitors about noxious weed control.

Action: Explore additional funding options through agencies such as Colorado Parks and Wildlife and the Natural Resources Conservation Service for weed management.

Objective 2: Implement Open Space construction and maintenance with noxious weed strategy in mind.

Action: Use weed-free materials in construction and maintenance.

Action: To wash away seeds, clean all equipment used in construction and maintenance before it is used on a project within Open Space.

Action: Minimize ground disturbance and reclaim disturbed areas as soon as possible to reduce the chance of weed infestation.

Objective 3: Protect and promote pollinators to enhance native vegetation.

Action: Educate residents of the importance of pollinators in our Open Space.

Action: Use best available science to make fact based decisions to protect pollinators.

Objective 4: Preserve biological diversity and promote native plant communities.

Action: Identify habitat enhancement opportunities, such as restoring native plant communities including remnant tallgrass prairie in the North and South Hogback Open Space, aspen grove enhancement, and cottonwood, willow, and coniferous forest regeneration.

Action: Maintain standing dead (snags) and downed trees in the backcountry that do not present a public safety hazard.

Action: Remove hazardous dead trees in the front country areas if requested by adjacent landowners. Other front country tree removal requests will be at staff's discretion.

Action: Address habitat fragmentation. For trails, refer to the Trails Implementation Process.

Action: Implement weed control measures that minimize impacts on native pollinator populations.

Action: Use prescribed burns to enhance habitats.

Action: Design future trails to avoid riparian habitat where possible and minimize the number of crossings through riparian areas and stream beds. Encourage trail users to quickly exit riparian areas. Refer to Trails Master Plan for more details.

Action: Improve signage designating sensitive areas.

F. Forest Management

The Colorado State Forest Service worked with Ken-Caryl Ranch to prepare a Forest Stewardship Plan, which will guide forest management activities for the foreseeable future. If there is a major change in forest condition, management priorities, or ownership boundaries prior to the next scheduled update of the plan, the plan will be amended to address those changes. The Forest Stewardship Plan serves as an example of how to reduce the risk of wildfire and increase forest health, while at the same time preserving the integrity and beauty of the land.

At this time, management activities are primarily focused on areas with good accessibility so that people and/or equipment may get into the project area without undue difficulty. Opportunities to

increase access for forest management and wildfire suppression in other portions of the Open Space should continue to be explored and developed as opportunities become identified.

Aspen stands provide important habitat and are visually striking. They are rare at this elevation and in this portion of the Front Range, and efforts should be made to ensure that the current stands and isolated clones are healthy.

Goal: Reduce the threat and impacts of catastrophic wildfire; maintain and improve wildlife habitat; improve overall forest health; maintain aesthetic and recreation resources; enhance and protect water quality; prevent soil erosion; and integrate all management activities.

Objective 1: Thin forests to improve forest health and reduce risk of wildfire.

Action: Thin the ponderosa pine and mixed conifer forest types. In November, thinned trees are made available at the annual Christmas tree sale.

Action: Determine slash management procedures on a project-specific basis.

Action: Protect riparian areas when thinning forests.

Action: Identify and remove hazardous trees within stands and along recreation trails.

Objective 2: Treat and prevent insect and disease outbreaks.

Action: Monitor and treat for insects and disease with the assistance of the Colorado State Forest Service as needed.

Objective 3: Create fuel breaks to reduce the risk, spread, and impacts of catastrophic wildfire.

Action: Create and maintain fuel breaks and fuel treatments around Open Space as recommended in the Forest Stewardship Plan.

Action: Determine slash management procedures on a project-specific basis.

Objective 4: Encourage Ken-Caryl residents' awareness of the importance of active forest management to address hazards and to protect the values that the community receives from its forest lands.

Action: Educate residents through various communications mediums.

Objective 5: Encourage adjacent landowners to manage their land in a similar manner in order to increase the effectiveness of treatments done on Ken-Caryl Ranch property.

Action: Reach out with neighboring landowners to conduct cross-boundary management work where appropriate and strive to develop additional road access and/or agreements.

Action: Urge the Colorado State Forest Service to work with neighboring landowners on forest management opportunities that also benefit Ken-Caryl Ranch forest resources.

Objective 6: Follow Colorado State Forest Service's best management practices for forest management operations.

Action: Coordinate and work with the Colorado State Forest Service to incorporate best management practices in Open Space contract work.

Objective 7: Maintain the aspen forest type and restore aspen stands that are in decline.

Action: Implement aspen restoration treatments recommended in the Forest Stewardship Plan.

G. Wildfire Prevention

A wildfire is a fire, regardless of ignition source, that is unplanned, has escaped control, or is not authorized under state law or local ordinances. Because Ken-Caryl Valley resides within the designated Wildland Urban Interface, or “Red Zone,” it is imperative that residents recognize the risks and responsibilities associated with living in this wildfire prone environment. The risk of wildfire will continue to exist as long as there is natural vegetation. Therefore, the risk shall be managed by following reasonable management practices and actions recommended by forest and fire management professionals that will reduce fire occurrence, fire risk, fire hazard, slow the spread of fire near residences (to allow time for responders to arrive) and promote early detection.

The September 1978 Murphy Gulch Fire, which burned 3,300 acres and part of the Ken-Caryl Ranch Open Space, was considered one of the first significant wildfires in the Front Range Wildland Urban Interface. A number of other large wildfires have occurred along the Front Range of Colorado since that time and in all seasons.

Wildfires have become far less frequent due to fire protection and detection, but they threaten Open Space, more homes and property when they do occur. Large wildfires are becoming more severe throughout the Front Range. The fires of 2012 and 2013 (Lower North Fork, Flagstaff, High Park, Waldo Canyon, and Black Forest) serve as a notice that large and destructive fires will very likely become the norm along the Front Range. For a more thorough history of fire on Ken-Caryl Ranch, see Appendix E.

To gain a better understanding of wildfire risk, hazard, behavior, severity, and fire management actions and practices, residents are urged to go to the following documents and website: Forest Stewardship Plan for Ken-Caryl Ranch Open Space, the Ken-Caryl Ranch Community Wildfire Mitigation Plan, the West Metro Community Wildfire Plan, and the Ken-Caryl Ranch Firewise Board website.

It is the responsibility of the Master Association and Metropolitan District Boards to manage and protect Open Space natural and cultural resources from uncontrolled wildfire. To accomplish this objective, staff makes recommendations from supporting plans and fire management professionals regarding wildfire mitigation actions and practices that can be implemented and still meet comprehensive land management goals and objectives.

The following are some objectives and mitigation actions/recommendations to reduce fire risk, hazard, and ignition and to support fire pre-suppression and suppression operations.

Goal: Prevent uncontrolled wildfires in Open Space that may result in catastrophic destruction of the Open Space resources, including human lives and property.

Objective 1: Prevent/reduce the risk of ignition of flammable vegetation in Open Space that could result in uncontrolled wildfire.

Action: No open fires are allowed in Open Space except in the designated area in Bradford Open Space.

Action: During times of high fire danger, as determined by the Jefferson County Sheriff's Office, all fires in Open Space may be banned.

Action: Ignition of fireworks of any type are forbidden in Open Space.

Action: Ranger patrols shall be increased during Fourth of July due to the high risk of wildfire from fireworks. In addition, at the direction of the Open Space Manager, Ranger patrols may be increased during periods of high or extreme fire danger.

Action: Strive to ensure that contractor vehicles operating on Open Space lands carry basic firefighting equipment (e.g. pointed shovel, Pulaski axe, McLeod rake). If fire danger is determined to be extreme, contractors may be restricted from working or limited to working during those times of the day times when humidity is higher and fire danger is lower, generally from before sunrise to noon.

Action: Chainsaws and other power equipment that can be a source of wildfire ignition shall be required to meet fire safety requirements as recommended by the Colorado State Forest Service.

Action: Educate residents about the risks of backyard firepits and fireplaces near Open Space.

Action: Educate residents on Firewise landscaping and building materials to reduce threat of wildfires that may spread to Open Space.

Objective 2: Reduce the threat of catastrophic wildfire through forest management operations and practices.

Action: Implement forest management recommendations from the Forest Stewardship Plan.

Action: Focus forest thinning operations on reducing fuel loading, ladder fuels, and the potential for extreme fire behavior.

Action: Maintain existing access roads to ensure quick and safe deployment of fire crews.

Objective 3: When allowed by authorized agencies, planned prescribed fire may be used as a management tool when appropriate to meet various Open Space management goals, including the reduction of hazardous fuels.

Action: Advocate to authorized agencies to use prescribed fires.

Action: In the event of a prescribed fire, Rangers shall be cognizant of all procedures identified in the Burn Plan.

Action: Rangers shall work prescribed fires and wildfires only when they are properly trained and are nationally certified (Red Carded) and trained at a minimum in Basic Wildland Fire Fighting. Rangers shall be issued authorized personal protection equipment to ensure their safety.

Objective 4: Use outreach and education programs to inform the Ken-Caryl Ranch community about the threat of wildfire.

Action: West Metro Fire District and Ken-Caryl Firewise Board will implement a continuing program of wildland fire education and events to Ken-Caryl residents and in local elementary, middle, and high schools.

Action: Support and maintain the Ken-Caryl Ranch Firewise Board, its mission, website, and sponsored events such as the emergency evacuation program.

Action: Ken-Caryl Ranch will strive to maintain its national certification as a Fire Adapted Community.

Action: The Rangers will continue to provide wildfire hazard assessments for homeowners that live adjacent to Open Space upon request.

Action: Residential properties that adjoin Ken-Caryl Ranch Open Space will be allowed to mow a 10-foot buffer along their property boundary as a line of defense from wildfire.

Action: Provide literature to residents on the threat of wildfire. Continue articles on wildfire in Life at Ken-Caryl.

Objective 5: Work with West Metro Fire Protection District on wildfire emergency planning.

Action: Pursue development of a plan with local fire districts to ensure a timely, safe, and effective response to all areas of Ken-Caryl Ranch Open Space, including location of access roads, trails, fuel breaks, archaeological sites, ecologically sensitive areas, water sources, and any areas that could impact firefighter safety.

Action: Work with West Metro to update the Ken-Caryl Ranch sections of the West Metro Community Wildfire Protection Plan.

Objective 6: When a wildfire occurs, suppression activities will strive to minimize damage to natural resources and ensure firefighter and citizen safety.

Action: Firefighter and citizen safety shall be the highest priority during wildfire suppression activities.

Action: Prevent damage to natural resources through pre-suppression activities.

Action: Prevent the spread of wildfire to adjacent property.

Objective 7: Develop post-fire rehabilitation plan in the event of a wildfire.

Action: In the event of a wildfire, a post-fire rehabilitation plan will be developed immediately after the wildfire has been controlled and extinguished. The plan will address repair of wildfire and suppression activity damage, to stabilize and prevent unacceptable degradation to natural and cultural resources, to minimize threats to life and property resulting from fire, or to repair/replace/construct physical improvements necessary to repair or improve fire-damaged lands or resources. All mitigation measures will conform with Open Space goals and objectives.

H. Visual Aesthetics

As residents experience Ken-Caryl Ranch Open Space, from near or far, they expect to see a natural, visually pleasing environment. Much of the 4,700 acres of Open Space is undeveloped and in a relatively natural condition. Breathtaking views of the Open Space can be seen throughout the community. Within the Open Space, users experience a naturally scenic environment.

Goal: Preserve and protect visual aesthetics of Open Space.

Objective 1: Minimize Open Space disturbance in undeveloped areas.

Action: When planning work within Open Space, disturbances that affect the appearance of the landscape should be minimized. Visual disturbances in Open Space that detract from residents' experiences include: vehicle tracks, excavations and removal of rocks, de-vegetated soil, cut trees and other dead vegetation left in view, tree branches cut in unnatural ways, and poor trail maintenance. Such Open Space disturbances are not only unsightly, but can also lead to other undesirable impact such as weeds, erosion, trail shortcutting, and safety issues.

Action: In a circumstance when it is necessary to access Open Space by vehicle, care should be taken to limit impacts. Tracks should be temporary and not go down to mineral soil. Visual impacts can be mitigated by traveling parallel to the sight lines of homes, road, and trails.

Objective 2: Maintain and enhance views.

Action: Where appropriate, selectively maintain and remove vegetation to allow Open Space visitors to experience long range views.

Action: Maintain trail corridor vegetation to allow users to see other users approaching, and avoid an over-grown appearance.

Objective 3: Maintain natural vegetation communities.

Action: Where revegetation is necessary, it is preferred to allow revegetation to occur via natural processes using existing soil seed bank such that the new vegetation will blend with surrounding vegetation. If re-seeding is required, native species should be utilized whenever feasible.

Action: The extension of landscaping by residents into Open Space will not be permitted.

Objective 4: Minimize the visual impact of man-made improvements.

Action: New signs or structures are permitted on Open Space lands, but should be minimized, and should have a natural appearance. New benches, picnic tables, shelters, and other recreational structures should be installed only as specified in the Open Space Structures Plan, as approved by the Open Space Committee. The design and placement of other structures, including signs, bridges, raptor perches, kiosks, tie racks, fences, etc. shall be reviewed and approved by the Open Space Committee. Additional review by the Architectural Committee is needed for structures.

Action: Maintain a natural aesthetic. Mowing and tree pruning to achieve formal or park-like appearance conflicts with a natural aesthetic and will be done only where necessary.

Action: Where forestry or other land management practices are performed, the visual impact to users should be minimized.

Action: Remediate vandalism as necessary.

I. Open Space Rules

Use of Ken-Caryl Ranch Open Space by residents, guests, and organized groups is governed by specific rules adopted by the Ken-Caryl Ranch Master Association Board of Directors and enforced by the Ken-Caryl Ranch Ranger staff. The Open Space Rules and Regulations can be found at <https://ken-caryl-ranch.org/open-space/open-space-administration/living-near-open-space/>.

Goal: Have an enforceable set of rules for a successful resource management program and to ensure Open Space user safety.

Objective 1: Maintain ecological integrity and provide a positive recreational experience for users through a set of Open Space rules.

Action: Staff shall patrol the Open Space, parks, and facilities using standard operating procedures.

Objective 2: Rules document should stay current with ongoing management issues.

Action: Staff shall update the Open Space Committee when issues arise that are outside the current rules and guidelines.

J. Coordination with Neighboring Landowners

Ken-Caryl Ranch Open Space is surrounded by property owned by a variety of private and public entities. Effective management of the Open Space requires knowledge of each parcel's owner and, where applicable, their management practices. One of the fundamental management objectives of any Open Space program should be to know the location of their property boundaries and monitor them. Wherever possible, coordinated management across property lines is advantageous to all parties and overall ecosystem health. Where adjacent property owners' practices are not compatible to Ken-Caryl Ranch management, measures must be taken to ensure adverse impacts to Ken-Caryl Ranch Open Space are minimized or eliminated.

Encroachment, the extension of a resident's property onto Ken-Caryl Ranch Open Space, can take a variety of forms ranging from a simple expansion of a turf yard or pet area (using invisible fences) to elaborate landscaping, playgrounds, and even irrigated soccer fields. Encroachment from the 850 properties bordering the interior Open Space as well as several properties that are adjacent to our exterior boundary is not tolerated. Policies and procedures for addressing resident encroachment onto Open Space are adopted by the Master Association Board and monitored and enforced by Ken-Caryl Ranch Ranger staff. Encroachment enforcement policies and procedures are listed in Appendix B.

Goal: Manage Open Space boundaries and encroachment procedures.

Objective 1: Ensure Open Space is not being encroached upon or impacted by adjacent landowners.

Action: Regularly monitor Open Space boundaries for both encroachment by adjacent landowners and/or adverse impacts by actions conducted on adjacent land.

Walk interior Open Space boundaries two times per year and exterior Open Space boundaries one time per year.

Action: Contact properties with encroachments or other Open Space use rules violations and address per the Master Association’s Landscape Rules Violation Enforcement Policies and Procedures. Enforce Ken-Caryl Ranch encroachment policies and procedures where applicable.

Objective 2: Where feasible, establish agreements with adjacent landowners that will facilitate effective natural resource management.

Action: Identify which landowners are amenable to agreements and write agreements.

Action: Review existing agreements to ensure they are still necessary or determine if they need modification for current circumstances.

Objective 3: Ensure that community property is not lost to adverse possession.

Action: Grant long-standing, historic encroachment license agreements as needed.

Action: Continue to maintain files and other records of license agreements. Provide support to administrative staff responding to request for status report from title companies involved in property sales. Respond to requests from property owners adjacent to Open Space and attempt to estimate location of common property boundary and mark. Follow up with new property owners of properties that have licensed areas and execute new agreements or resolve old encroachments. Walk licensed areas once a year to ensure compliance.

K. Recreation, Trails, and Signage

Providing quality recreational opportunities for Ken-Caryl Ranch residents’ enjoyment has become increasingly important as demographics change and as the 2017 resident survey suggested. As indicated in the 2017 resident survey, backcountry dirt trails are one of the most highly used Open Space amenities on Ken-Caryl Ranch.

In many cases, these opportunities have been facilitated by the maintenance of existing resources, construction of new features, and improvements such as paved or hard-surface paths interspersed throughout the residential areas. The benefits of providing recreational opportunities are many – from increased property values, to fitness, to family enjoyment.

Some of the types of users include, but are not limited to hikers, runners, bikers, dog-walkers, equestrians, non-resident groups, school groups, and campers. Open Space features include, but are not limited to undisturbed Open Space, trails, picnic tables, benches, campsites, ponds, and the vistas and wildlife that intertwine with all of these.

Goal: Provide high-quality recreational opportunities for the entire community.

Objective 1: Manage, maintain, and construct a trail system such that a high-quality and consistent experience is preserved. Sustainable trail uses shall be promoted and enforced; widely accepted trail building procedures shall be used when applicable.

Action: Maintain trails in accordance with the Trails Maintenance Plan. Trail maintenance and trail erosion control activities should be performed regularly to keep all

trails in good condition. Some trails may be temporarily closed to some forms of facilitated recreation if such use causes excessive trail damage. Where recurring severe trail maintenance issues exist, trail re-routing should be considered. Major maintenance projects, including trail re-routes will follow the Trails Implementation Process.

Action: Build new trails using the principles of the Trail Master Plan, and when appropriately vetted and approved by both the Open Space Committee and Master Association Board. New trails will follow the Trails Implementation Process, which may include resource assessments as determined by staff.

Action: Mow tall grass along trails according to the Rough Mowing Plan.

Action: Establish and maintain trails that allow multi-purpose use. Temporary trail closures may be required due to poor trail conditions, and should be posted at trailheads. Horses are prohibited from using trails having paved surfaces.

Action: Restore abandoned trail alignments to promote re-growth of vegetation and prevent further erosion.

Action: Maintain hard-surface paths so as to provide sustainable access and safe use.

Objective 2: Ken-Caryl Ranch Open Space is highly valued by residents because of its exclusivity and ability to reconnect users with nature that other public Open Space does not. This experience, in part, is due to well-maintained amenities and low usage when compared to nearby public Open Space facilities. Large organized groups may detract from the residents' experience and cause accelerated wear and damage to Open Space trails and must go through the Group Use application process.

Action: Enforce Organized Group Use policy.

Action: Deter trespassing. Specifics may include: Staff and volunteer patrol of trails to identify, educate, and stop trespassers, tracking and reporting of habitual offenders, and installation of signage, fencing, and/or gates.

Action: Maintain a reasonable balance between all types of trail development and preserving undisturbed Open Space.

Action: Proposals for new types of uses must be properly vetted by the Open Space Committee, staff, Master Association Board, and potentially the Metropolitan District Board where appropriate.

Action: Discourage uses of Open Space that would compromise users' experiences within Open Space.

Objective 3: Signs, markers, and kiosks should be dispersed and used sparingly so as to keep the natural aesthetic of the Open Space. Where these features are installed, materials and designs should be consistent and within the general look and feel of the surrounding area.

Action: Open Space access points should be posted as private land to deter trespassing where there is frequent use.

Action: Maintain a consistent design and graphic standard for all signs, markers, and kiosks and periodically review the standards being used.

Action: Place signage at the appropriate trailheads to educate trail users. Topics may include trail etiquette, avoiding wet/muddy trail conditions, avoiding interaction with wildlife predators and picking up after pets.

Action: Provide trail maps for resident use in both electronic and hard copy form. Maps should be regularly updated as trail locations change or as new trails are added.

Action: Encourage exploring new ways to use signs, fences, and gates as deterrents to violators.

Objective 4: The Boards and Committees should be receptive of other types of uses that have or have not yet been considered and vet them through the normal process.

Action: Either through the Open Space Parks & Rules document, or new policies specific to those activities, devise and make public the principles by which these activities should be handled.

Action: For activities that would be completely new to Ken-Caryl Ranch, use legal counsel where appropriate and refer to other Open Space management plans for guidance. Jefferson County Open Space is one such peer.

Objective 5: Attempt to reduce and potentially eliminate non-resident use through permanent structures and monitoring activities.

Action: Restrict access of non-resident users to private Open Space through the installation of perimeter fencing along private Open Space boundaries where unauthorized access is a problem.

Action: Install gates, where appropriate, to control or facilitate access to Open Space.

Action: Install No Trespassing - Residents Only signs at key locations around the perimeter of private Open Space to alert non-residents that these areas are private property and Public Access signs at those points where the public at large is permitted. Additional fencing may be necessary in areas where persistent trespassing occurs.

Action: Patrol Open Space to minimize non-resident use and unauthorized activities.

Action: Work with local law enforcement to enforce trespassing per protocol.

Action: Implement monitoring programs to ensure that initial management actions have effectively corrected the problem.

Action: Develop and implement a plan to enlist the aid of Ranch residents in a volunteer Open Space patrol program.

L. Utilities and Rights of Way

A variety of easements and road rights of way crisscross Ken-Caryl Ranch Open Space. Examples include:

- High transmission and other overhead electrical power lines
- Underground power transmission cables
- Underground cable TV and telephone cables
- Private, underground communication cables
- High pressure natural gas supply pipelines
- Sanitary sewer and water supply lines
- Water wells
- Recreational trail easements
- Public right of way along Hwy C470, Ken-Caryl Ave., North Ranch Road, Valley Parkway as well as numerous neighborhood streets, occurs adjacent to Open Space

Many of the utility easements have a direct benefit to Ken-Caryl Ranch residents as they provide water, energy, communications, and sanitation to homeowner properties.

Sometimes the utility companies' management and field activities are in conflict with Open Space management objectives.

- Residents and Open Space visitors can be negatively affected by the visual impact of extensive operations like wildfire fuel mitigation work, overhead line clearance work, or excavation of cable trenches.
- Above ground permanent infrastructure in the easements such as switch boxes, transformers, support poles, and cables, if not maintained, can be unattractive.
- Maintenance operations can also disturb wildlife and plant habitat and alter runoff, which may cause erosion and lead to poor water quality.

In the case of some of the electrical supply easements, the easement agreements don't clearly define how access is gained to the easement or the description of the location of the easement does not appear accurate, leaving staff to believe that some maintenance operations are in violation of the agreements.

Where Open Space is adjacent to public right of way, there is an obligation to manage vegetation and maintain sight lines for motorists. The County has a responsibility to maintain drainage features in the right of way such as culverts and drain pans.

Goal: Ensure that maintenance and other activities within easements and rights of way located in Open Space are in compliance with easement agreements and other applicable laws and regulations and that associated impacts to Open Space visitors, neighboring properties, wildlife, and other Open Space resources are appropriately mitigated.

Objective 1: Staff should be aware of the status and location of all easements, rights of way, and other agreements that grant use of Open Space to others.

Action: Create archive of agreements. Review easement agreements with Master Association legal counsel. Determine if access to easements is properly defined and identify other discrepancies. Work with utility companies/grantees towards a mutually beneficial resolution.

Action: Create map layer of easement locations. Walk easements at least once a year and note problems. Determine if easements are properly marked.

Action: Utility easement access and work should comply with all other sections of this document. No new utility easements should be granted without proper vetting and compliance with Ken-Caryl Ranch Open Space management objectives.

Objective 2: Improve communications with easement and right of way grantees/agents.

Action: Create a work notification and approval process that utility companies follow when planning maintenance activities. Depending on the scope of the work, the review process should allow plenty of time for community leadership review. Submittal material should be detailed enough for all reviewing to understand the full scope of work.

Action: Work should be monitored by staff to ensure that it is being executed according to approved plans.

Action: Reach out to utility companies and identify individuals that are responsible for directing work in easements in the Open Space. Develop positive rapport in effort to establish better communications between agencies.

Objective 3: Permanent infrastructure within the utility easements should not pose a threat or hazard to Open Space resources, visitors, or neighboring properties. Also, it should not impede Open Space maintenance operations.

Action: As part of the annual monitoring tour, staff will note damaged utility permanent infrastructure, exposed underground cable, unsightly switch boxes, or other problems and contact appropriate representatives to address problem.

Action: If exposed communication cable is found along grade, utility company will be required to either remove or bury immediately.

Objective 4: Maintenance of utility permanent infrastructure should not negatively affect Open Space resources or pose a hazard to visitors.

Action: Extensive work planned during the bird breeding season will require a nest clearance survey performed by qualified biologist. A written summary report will be submitted to staff.

Action: Regular maintenance operations that require use of vehicles or heavy equipment will not be allowed if surface conditions are wet or snow covered to the point where rutting or significant damage to vegetation will occur.

Action: Large surface disturbances will require restoration and revegetation. Seed mixes will be approved by staff. Mulch material will be “weed free.” Erosion matting and other erosion and sediment control features will be bio-degradable. Plastic netting is not permitted.

Action: Maintenance operations near trails will require a “spotter” to inform trail users of potential hazards. Notification signage may suffice depending on scope of work. If utility companies are using Open Space service roads to access work sites, signage will be posted to notify trail users of equipment use on trails.

Action: Woody slash generated during line clearance or fuel mitigation work will be scattered or chipped and spread thinly over the ground. Large slash piles will not be tolerated.

Action: All work performed in utility easement shall remain within the easement, unless permitted by Ken-Caryl Ranch Master Association in writing. Depositing materials or using equipment outside of the easement is not permitted.

Action: When installing new permanent infrastructure, staff will notify Ken-Caryl Ranch Historical Society of potential impact.

Action: Areas where overhead electrical transmission lines pose an electrocution hazard to birds of prey or other large birds should be monitored. Any bird carcasses found that are suspected to be electrocution fatalities will be reported to U.S. Fish and Wildlife Services.

Action: Grantees and owners of easements and rights of way will be held responsible for damage to Open Space. Sedimentation from eroding service roads, erosion associated

with discharges from storage tanks, and dumping of slash and debris are examples of damage observed in the past.

Objective 5: Open Space operations should not damage or disturb utility permanent infrastructure.

Action: By authority of state statute, and to avoid damage to underground permanent infrastructure, utility locates will be completed by staff or contractors working in Open Space to identify location of underground utilities. Work around overhead utilities, such as removal of trees, will be closely monitored to prevent damage.

Action: Burrowing animals shall not be relocated to areas where underground utilities exist.

Action: Where trails exist over underground utilities, tread erosion will be closely monitored. Severe erosion will be addressed as quickly as possible.

Objective 6: Perform limited maintenance and services in rights of way and alert right-of-way agents of larger maintenance concerns.

Action: The deer escape ramps along C-470 should be inspected once a year. Any breaks in the fence or problems with the gates that compromise the ability of deer and elk to enter/exit the right of way will be reported to CDOT.

Action: Where right of way intersects Open Space areas, staff will periodically mow a buffer strip off of the road pavement or curb to maintain sight lines for motorists.

Action: Staff will collect and dispose of deer and elk carcasses within road rights of way. If deer or elk are mortally injured due to a vehicular collision, staff will respond and, if necessary, euthanize the injured animal.

Action: Staff will periodically inspect rights of way, with focus on drainage features (especially road culverts) and alert right-of-way agents of maintenance issues. The Ken-Caryl Ranch Open Space Drainageway Hazard Assessment includes road culverts and notes maintenance issues and potential hazards (e.g. flooding hazard).

M. Hazardous Materials/Environmental Compliance

Protection of the environment is required by state and federal environmental laws and regulations. Environmental laws prohibit certain activities without proper authorization, such as disposal of solid or hazardous waste. Certain materials, such as some insecticides and herbicides, must be stored, used, and disposed of properly to protect those using the products, the public, and the environment.

Most of our activities in Open Space do not significantly impact environmental quality or come under direct environmental regulation. Nevertheless, we must comply with the spirit of these laws and regulations. These objectives will influence, but must also be balanced with, other Open Space management objectives. For example, it may be possible to minimize, but not entirely eliminate, the use of chemicals for weed control.

Goal: Manage Open Space in a way that protects the health of Open Space resources and the public by preventing contamination of air, water, and soil. Comply with all environmental laws

and regulations that apply to the ownership of and operations in Open Space.

Objective 1: Prohibit the disposal of any solid waste, hazardous materials, or hazardous waste in Open Space or on properties adjacent to Open Space, including discharges of liquids or solids into streams, ponds, and storm drains.

Action: Educate residents through signage, literature, and the website about illegal solid waste disposal in Open Space. This includes excess soil and rock from excavations, grass, and other vegetative cuttings, pet waste, or litter. Any fill materials used for trail development or other authorized structures (e.g. retaining walls) in Open Space must be clean and free of contamination. Remind residents that water flows to creeks, streams, and rivers and picks up contaminants such as leftover paint, motor oil, lawn fertilizers, pesticides, household pet waste, and oil leaks along streets and driveways.

Action: Control stormwater runoff from the Equestrian Center to minimize impacts to Massey Draw. Water upstream and downstream of the Center will be inspected periodically for odors and visual indicators of potential impact (discoloration, sheens, foam, turbidity, etc.).

Action: Educate residents on how to properly dispose of hazardous waste.

Objective 2: Follow all U.S. Army Corps of Engineers Section 404 requirements for protecting wetlands.

Action: Before dredging of sediments or placement of fill in streams or ponds is allowed, the proper Army Corps of Engineers Section 404 permits are required.

Action: Protect all existing wetland areas from degradation.

Objective 3: Minimize improper hazardous material and waste usage to remain in compliance with the Environmental Protection Agency.

Action: Store, use, and dispose of all chemicals and hazardous materials associated with the maintenance of Open Space in a manner that is consistent with applicable regulations and the manufacturer's recommendations. Whenever possible and reasonable, the use of hazardous chemicals will be minimized and less harmful substances will be substituted. Herbicide/pesticide applicator supervisor must maintain applicable licenses.

N. Health and Safety

It is the duty of staff, to the best of its ability, to ensure the health, safety, and security of Ken-Caryl Ranch residents using Open Space. Associated management efforts are intended to minimize or eliminate threats to public health, eradicate safety hazards, and make Open Space secure against unauthorized activities.

Goal: Provide the conditions to ensure a safe and secure environment for all resident Open Space users.

Objective 1: Reduce perils caused by allowing access to certain Open Space areas.

Action: Install interior fences within the Open Space boundaries to disallow access to unsafe areas as deemed necessary by staff.

Action: Install vehicular access control barriers wherever the problem of unauthorized vehicular use is identified.

Action: Install warning notices at designated rock outcrops to notify Open Space users that technical climbing is prohibited.

Objective 2: Attempt to mitigate obvious hazards when they become apparent.

Action: Remove barbed wire from Open Space where it poses a hazard to common uses.

Action: Monitor Open Space for public health and safety issues.

Action: As reasonable, reduce naturally occurring perils that pose a risk.

Action: Mitigate hazards such as ice on hard-surface paths.

Action: Remove large animal carcasses (e.g. deer, elk) from roadways and private property located in the Ken-Caryl Ranch community. Carcasses for animals smaller than 100 pounds are removed by Jefferson County Animal Control.

Action: Euthanize deer and elk following Colorado Parks and Wildlife protocols.

Objective 3: Increase awareness of issues to proactively reduce risks.

Action: Maintain kiosks at trail heads to inform residents of important or time-critical information.

Action: Alert residents of potential danger associated with the presence of wild animals.

Action: Post hazard warning signs when public health hazards (e.g. bubonic plague carrying fleas) are known to occur within Open Space.

Action: Avoid negative impacts of off-leash pets (see Animal Damage Control section further detail).

Action: Keep up-to-date on potential new uses of Open Space that might encroach on the principles outlined at the introduction to this section.

Objective 4: Ensure proper safety training for the Ranger staff.

Action: Rangers should be trained in wilderness first aid.

Action: Rangers should be properly trained in wildfire safety. This is discussed in more detail in the Wildfire Prevention section.

O. Scientific and Educational Uses

In addition to its aesthetic and recreational value, Ken-Caryl Ranch Open Space provides a unique natural laboratory for scientific research and education. The protection from intense development has preserved many of the native plants that have largely disappeared from the Front Range area. The unique physical setting of our Open Space is responsible for much of the biological diversity observed on Ken-Caryl Ranch. The accessibility of these areas provides an exceptional opportunity to educate residents on natural processes.

Goal: Provide scientific and educational opportunities for Ken-Caryl Ranch residents.

Objective 1: Promote valid scientific research in our Open Space.

Action: Establish priorities for scientific research.

Action: Solicitations for funds for scientific research in Open Space will be coordinated by the Ranger staff and approved by the Open Space Committee to avoid confusion, replication, and irrelevance.

Action: All scientific research activities in Open Space must be approved by the Open Space Committee in advance. Criteria for approval will include (in no particular order):

- Timely application (a minimum of 30 days in advance)
- Consistency with Open Space priorities and commensurate benefit to residents
- Potential for damage to Open Space resources
- Demonstrated scientific value
- Degree of impact to residents' use of Open Space
- Need for Ken-Caryl Ranch resources and/or funding
- Access by staff personnel to data and results

Objective 2: Provide educational opportunities to residents regarding Ken-Caryl Ranch natural resources in the Open Space.

Action: Encourage educational activities for residents when these activities promote an appreciation or understanding of Open Space resources.

Action: Consider creating an interpretative plan for the Open Space.

P. Animal Damage Control

Animal damage is a broad category that includes several types of negative impacts from both domestic and wild animals.

Dogs affect Open Space in multiple ways. Wildlife can be affected by their scent. By keeping dogs on a leash and concentrated along established trail corridors, widespread disruption of wildlife can be avoided. When dogs are let loose, they naturally chase wildlife, causing wildlife to expend energy, or worse, dogs will catch and kill wildlife. Dog feces contain coliform bacteria, which can pollute nearby streams and ponds and cause sickness. Dog feces are also one of the most common carriers of parasitic worms and other microscopic parasites that cause disease in humans and other animals. Additionally, residents may be disturbed, scared, or injured, by off-leash dogs.

Domestic cats, when allowed to run free, can kill large numbers of birds and small mammals. Residents must keep cats under control to prevent damage to Open Space plants and animals. Horses may cause trail damage to soft-surface trails, especially when the trails are wet.

Many residents are aware that wild animals from Open Space can cause damage or be a nuisance to maintaining their property. However, residents must be aware that by choosing to live in an area with a large amount of natural habitat, such impacts are inevitable. Wild animals should be protected, and residents must accept impacts from wild animals.

Goal: To minimize damage and nuisance caused by domestic animals in Open Space, and to minimize disruption and disturbance of wild animals.

Objective 1: Avoid negative impacts of off-leash pets.

Action: Staff shall enforce Jefferson County and Ken-Caryl Ranch regulations for off-leash pets, including but not limited to Jefferson County fines. Monitor compliance through logging incidents of off-leash pets.

Action: Post signs to instruct and remind users to follow off-leash pet regulations.

Action: Dogs and cats found running free in Ken-Caryl Ranch Open Space will be reported to Jefferson County Animal Control.

Action: Research impact of allowing dogs on trails.

Objective 2: Avoid negative impacts of pet feces in Open Space.

Action: Users are required to pick up and remove their household pets' feces from Open Space and dispose properly.

Objective 3: Limit trail damage caused by horses.

Action: Restrict equestrian use of trails at times when horses are likely to cause trail damage.

Action: Equestrians should follow the Ken-Caryl Ranch Trail Use Guidelines.

Objective 4: Protect wild animals.

Action: Domestic animals may not leave designated trails in specified protected habitat areas.

Action: Staff will not provide control of wild animals or attempt to prevent damage to residents' property caused by wild animals. Staff will provide education to help residents experiencing conflicts with wildlife at their properties. Site assessments may be performed to point out attractants on the property that may not be obvious to homeowners.

Action: Wild animal problems involving threats to humans will be referred to Colorado Parks and Wildlife. Staff may assist CPW personnel if requested. Staff will provide education and outreach to help residents avoid or protect themselves from dangerous incidents with wildlife.

Action: Communicate frequent animal sightings to increase awareness when deemed necessary.

Q. Maintenance Procedures

Open Space staff is committed to working cooperatively with other agencies, research institutions, citizen interest groups, and others in the management of natural resources to achieve the goals outlined in this plan.

The Ken-Caryl Ranch Open Space Department currently has full-time Rangers and several seasonal positions devoted solely to the management and maintenance of Ken-Caryl Ranch's Open Space. Tasks include rules enforcement, wildlife education, and natural resource monitoring, along with care and repair of Open Space facilities.

The following procedures are general guidelines established for the maintenance of Open Space areas. It is the intent of the Ken-Caryl Ranch Open Space Department to limit maintenance activities in order to preserve the natural state of these areas. All Open Space maintenance activities should consider adverse impacts to neighboring properties, users, and resources.

Goal: Manage Ken-Caryl Ranch Open Space natural resources through preservation, maintenance, and restoration.

Objective 1: Mow and trim the Open Space.

Action: Mow and trim areas identified in the Ken-Caryl Ranch Rough Mowing Plan, which includes Open Space areas adjacent to roadways, large area mows, and along selected trails. Trimming should be limited to trailheads, benches, kiosks, fences, and signs.

Action: Maintain a four-foot mowed strip at an approximate four-inch height along selected trails and roadways depending upon terrain and equipment access.

Action: Mow vegetation as needed. Generally, mowing should begin in May and continue through October.

Action: Share mowing responsibility of the Medema Strip with Foothills Park and Recreation District.

Objective 2: Maintain trails.

Action: Coordinate and oversee work done by private contractors on trails.

Action: Coordinate with the Ken-Caryl Ranch Metropolitan District Parks Department to remove snow and ice on hard-surface trails. Open Space staff occasionally removes ice from these trails when conditions are particularly hazardous for an extended period of time. No snow removal shall occur on soft-surface and backcountry trails.

Action: Remove debris and sediment buildup on trails.

Action: Maintain trail corridor clearances. Remove woody vegetation, tree limbs, etc. as needed.

Action: Maintain backcountry trails per the Trails Maintenance Plan.

Objective 3: Maintain drainage area.

Action: Maintain and inspect culverts under trails and roads on a regular basis.

Action: Inspect and monitor sites identified in the Drainageway Hazard Assessment. Take corrective action as necessary.

Action: Implement projects identified in the Drainageway Hazard Assessment.

Action: Coordinate and oversee work done by private contractors.

Action: Facilitate update of Drainageway Hazard Assessment every 10 years.

Objective 4: Control trash/debris and mitigate graffiti/vandalism.

Action: Clean up litter as needed. Litter and debris of a hazardous nature should be removed promptly (e.g. glass or trail obstructions) to prevent injury.

Action: Empty trash receptacles and re-stock pet waste bags twice weekly, unless additional needs arise.

Action: Report waste of a hazardous nature requiring expert assistance or specialized equipment to the proper local, state, or federal authorities.

Action: Remove landscape debris and other non-hazardous material/items dumped in Open Space by adjacent property owners if no responsible party/perpetrator is identified.

Action: Immediately report and repair damage due to graffiti or vandalism.

Action: Remove and dispose of materials used to construct tree forts or ground structures.

Objective 5: Maintain restroom facilities.

Action: Maintain the portable toilet at the Bradford firepit site. Inspect on a weekly basis and report any maintenance needs to the contracting company.

Objective 6: Address hazard and nuisance trees affecting private property (front country areas only).

Action: When requested, remove or prune trees that are causing or have the potential to cause damage to private property.

Action: When requested, remove deadfall and standing dead trees in Open Space even if they don't present an immediate danger to Open Space visitors or private property. These requests will be honored only if the dead wood is determined not to be of significant value to habitat.

Objective 7: Maintain and inspect fences and boundary markers.

Action: Inspect boundary and barricade fencing on regular basis.

Action: Maintain fencing. Repair breaks/cuts/sags in wire fence. Replace fallen or deformed boards and rotted posts in wood fencing.

Action: Remove old wire fencing, especially welded wire and barbed wire, as time allows. Historic fencing along exterior boundaries should be replaced or removed depending on the location, need, and access.

Action: Inspect and monitor boundary markers. Clear vegetation around markers to the extent that markers can be easily found. Repair/replace damaged signs indicating location of property boundary.

Objective 8: Perform assigned maintenance around Dakota Lodge campus.

Action: Remove snow and ice from entrance road, parking lots, and walkways.

Action: Maintain gates/fencing around Ranger office.

Objective 9: Maintain signs and other structures.

Action: Replace damaged and unreadable signs and sign structures as quickly as possible.

Action: Periodically clean signs, especially ones that tend to be used as bird perches.

Action: Repair and clean benches and picnic tables as needed.

Action: Coordinate and/or assist in installation of new benches and picnic tables as identified in the Ken-Caryl Ranch Open Space Structures Plan.

Action: Inspect and monitor miscellaneous structures, including historic sites (e.g. Bradford-Perley House, Stone Bridge, Pump House, etc.), picnic shelters, and enclosures. Assist appropriate community groups in coordinating repairs requiring private contractors or repair in-house.

Action: Maintain signs, kiosks, and fence gates.

Action: Coordinate with utility companies to ensure broken or defaced units are promptly taken care of.

Objective 10: Perform miscellaneous duties as assigned.

Action: Assist Community Standards Administrator with removal of non-compliant signs and other covenant violations (e.g. fence extensions, portable basketball hoops, etc.).

Action: Clean, maintain, and repair Open Space equipment and vehicles. Keep service records and driving logs for DOT regulated vehicles.

Action: Maintain pond aerators at Brannon Gearhart Park and Dakota Lodge. Add microbes on routine schedule to address sludge and algae problems at Brannon Gearhart Park Pond. Turn off aerators in winter to avoid thin ice hazard.

Action: Provide supplemental irrigation to rooted stock planted at restoration sites. Protect plantings from animal damage as needed.

Action: Work with the Ken-Caryl Ranch Metropolitan District KC Nature staff on a periodic Wildlife Awareness Open House.

Action: Coordinate the annual Christmas tree harvest and sale.

Action: Enforce Open Space Rules and Regulations.

Action: Patrol the Open Space.

VII. Future of Open Space

The climate changes happening now and those expected before the end of the 21st century have serious implications for ecosystems and the benefits they provide, including temperature regulation, watershed protection and flood control, erosion reduction, recreation and aesthetic values, and species habitat. Climate change may also affect wildland fire managers. Warmer temperatures, a longer fire season, increased mortality in forests, and changing vegetation communities increase the risk of catastrophic wildfire.

Actively managing Ken-Caryl Ranch Open Space forests, grasslands, and other resources so they can adapt to climate change is a form of risk management. This is intended to maintain the many benefits we receive from the Open Space and avoid future costs that might come from reacting too late to changes.

VIII. Appendix

Appendix A

Summary of Open Space Plans and Recommended Frequency for Review

Shown here is a summary of all Open Space plans, dates they were last revised, date last reviewed, and recommended frequency for review.

Plan Name	Original Adoption Date	Date Revised	Date Reviewed	Recommended Frequency for Review
Comprehensive Management Plan	1997	2017	2006, 2017	Every 5-7 Years
Trails Master Plan	2009		Ongoing	Every 5-10 Years
Trails Implementation Process	2013			As Necessary
Forest Stewardship Plan	2006	2015		Every 10 Years
Wildfire Mitigation Plan	2008	2014		As Necessary but No Longer than Every 10 Years
Drainageway Hazard Assessment	1997	2009		Every 5-7 Years
Trails Maintenance Plan	2016	2017	2017	Annually
Noxious Weed Plan	N/A	Annually		Annually
Rough Mowing Plan	1993	2016	2016	Every 5-7 Years

Appendix B

Reference Documents

Document	Website Location
Master Declaration of Covenants, Conditions, and Restrictions	https://ken-carylranh.org/wp-content/uploads/2011/08/MADECS070615.pdf
Open Space and Parks Rules	https://ken-carylranh.org/open-space/open-space-administration/living-near-open-space/
Encroachment Enforcement Policies and Procedures	https://ken-carylranh.org/open-space/open-space-administration/living-near-open-space/
Supplement to Master Declaration of Covenants, Conditions and Restrictions of Ken-Caryl Ranch Regarding Recreation and Open Space	https://ken-carylranh.org/open-space/open-space-administration/living-near-open-space/
1997 Open Space Comprehensive Management Plan	https://ken-carylranh.org/open-space/open-space-administration/open-space-management/
Trails Master Plan	https://ken-carylranh.org/open-space/open-space-administration/open-space-management/
Trails Implementation Process and Strategy	https://ken-carylranh.org/open-space/open-space-administration/open-space-management/
KCRMA/KCRMD Cooperative Agreement Regarding Open Space	https://ken-carylranh.org/open-space/open-space-administration/open-space-management/
Forest Stewardship Plan	https://ken-carylranh.org/open-space/open-space-administration/open-space-management/
Wildfire Mitigation Plan	https://ken-carylranh.org/open-space/open-space-administration/open-space-management/
Drainageway Hazard Assessment	https://ken-carylranh.org/open-space/open-space-administration/open-space-management/
Trails Maintenance Plan	https://ken-carylranh.org/open-space/open-space-administration/open-space-management/
2017 Resident Survey	https://ken-carylranh.org/community-news/resident-survey/
Trail & Community Map	https://ken-carylranh.org/open-space/trails/

Appendix C

Cultural Resources: Additional Information

Prehistoric and Historic Resources

Paleontological, archaeological, and historical resources of significant scientific importance have been identified within the boundaries of Ken Caryl Open Space. Because of the high probability of finding additional resources, an extensive inventory of fossil-bearing formations should be completed to ensure their protection. The inventory will require specialized scientific knowledge and should be conducted by an individual or organization familiar with the paleontological history and resources of the area.

The results should be organized into a computerized database that includes site location, identification code, geologic description, scientific significance, and exhibit location (if fossil(s) has been removed). The contents of the database should be considered proprietary and should be released to authorized personnel only. Once inventoried, rangers will monitor for damage to or disruption of resources.

Paleontological Resources

In June 2009 two Ken-Caryl teens stumbled across a mastodon mandible in Massey Draw near the Community Center that had been uncovered by flood waters. The Denver Museum of Nature & Science reported that it was the best example of a mastodon ever found in Colorado to date, the third such find in the state, and could be 50,000 to 150,000 years old. Further investigation uncovered a tusk as well. Both the mandible and tusk were donated to the Denver Museum of Nature & Science.

Archaeological Resources (Pre-Columbian Era)

The Colorado Archaeological Society has conducted at least 33 archaeological digs on Ken-Caryl Ranch, beginning in 1973. The South Valley Archeological District, Bradford House II and Bradford House III are located on open space land. Bradford House II and III are rock shelters located near the North Ranch parks and are both listed on the National Register of Historic Places. Bradford House II is a small rock shelter on the south-facing side of the large red rock outcrop by the Bradford Pool used for 4,500 years, from approximately 3000 BC to 1540 AD. Bradford House III is the south facing overhang of the east-west running rocks west of the Bradford House. Five distinct periods of occupation were identified in Bradford House III, including two from the Archaic period and three of the Plains Woodland period. The South Valley District consists of multiple sites, dating from about 3000 BC to 1000 AD.

The archaeological digs uncovered artifacts such as pottery, projectile points and hide scrapers used by the people of the Archaic and Woodland period. The people were probably hunters and gatherers with little knowledge of farming, since no farming tools have been found. Archaeological sites found on the Ranch also yielded human burials.

Columbian-Era Native American Resources

The land along the Hogback was a shared land, of the Cheyenne and Arapaho peoples of the plains and the Utes of the mountains. Chief Left Hand (Niwot) of the southern Arapahoes was

known to roam the area, although he preferred the Boulder Valley. The Utes seemed to feel a special affinity for the Valley. They traveled and lived for a long time throughout the Morrison area to the north of the Valley. They had a trail that passed through the Ranch, a section of which the Bradford Road followed. The Colorow Cave in Willow Brook, to the north of the Valley, is named after Chief Colorow of the Utes.

Historical Era Resources

The Bradfords

Robert Bradford and his family settled the ranch in the 1850s, while trying to establish Bradford City. Bradford set out to build a toll road to accommodate the travelers from Denver to the mines. The Bradford Road operated successfully for seven years to Fairplay, Oro City (Leadville), Tarryall and Breckenridge, Colorado. It was abandoned when the Turkey Creek Canyon Road opened in 1867. The trail went west from the vicinity of the Bradford-Perley House, near the present-day Manor House and thence up the mountains, but the exact location is unknown. The Bradford Trail and Manor House Trail are believed to more or less parallel the old Bradford Road.

Bradford's improvements to his land included a 2-story stone house, a stable, corn cribs, smokehouse, milk house, hen house, blacksmith shop, and two wells. The front addition to the stone cabin was finished in 1872. Over 40 apple and peach trees were planted, and some of the Ben Davis Heirloom apple trees are still productive today.

The Manns

Joel Mann and his family members settled several hundred acres in Deer Creek and the South Valley in the 1870s and 1880s. Frank Mann built the beautiful Falcon House, overlooking the birds' nests high in the red rocks. Mann Reservoir, visible from South Valley Road and part of South Valley Open Space Park, was named for Frank Mann. During the mid-1930s the Falcon House was inhabited by a family whose father was a ranch hand on the Ken-Caryl Ranch. At that time, the children in the family walked to school in Waterton. After Martin Marietta purchased the property in 1987 the Falcon House was razed because of the legal liabilities posed by the condition of the house and problems with vandalism, despite local efforts to save the house.

Other Pioneer Settlers

Bradford City was a Civil War recruitment site, and after the war a few veterans settled down in the Valley along with their families. Many other families settled along the Hogback region in the nineteenth century on plots generally between 40 to 160 acres. A few were homesteaders, proving up their land over the course of five years before gaining title. Others paid cash outright for their land. With the exception of a few small parcels at the crest of the Dakota Hogback and sections of railroad grant and school grant lands, all of the land in Ken-Caryl was claimed by 1900.

Early 20th Century Ranching

The Perleys

James Perley was a miner in Black Hawk in the late 1800s. The Perleys purchased the Bradford Ranch in 1895, where they raised steers for slaughter and milk cows. Perley's son ranched the land with his 6 children until it was sold to John Shaffer in 1926 for \$1,000. He was killed in an

accident in 1934. The Perleys were the last residents of the house. Over the ensuing years it gradually fell into ruin. In 1967 a devastating fire destroyed the interior of the Bradford-Perley House.

The house was listed as a State Historic Site in 1997 and was designated as “one of the Most Endangered Sites in Colorado” in 2002. Ken-Caryl Ranch residents undertook preservation of the ruins. Colorado State Historical Fund, Ken-Caryl Ranch Master Association, Ken-Caryl Ranch Foundation, The Holmes Foundation, and the Gates Foundation provided grants. Individual donations also contributed to the effort. The preservation project earned the Stephen H. Hart Award for excellence in preservation in 2004, and in 2006, the house was declared “saved.” The Bradford-Perley House was listed on the National Register of Historic Places in February 2015. Original homemade nails used for the house construction can still be found in the vicinity. To the east and north of the Bradford-Perley House the ruins of outbuildings are extant. This area was studied and partially excavated in the 1990s, with a number of artifacts, mostly metallic, removed. Occasionally artifacts are still found in this area.

The Shearns

About 1905, the Shearns of Texas purchased the 640 acres of former railroad-grant land on the east side of the Hogback and additional acreage on the west side of the Hogback near the present day Bradford Intermediate School, incorporating as Mountain View Stock Farm, which was primarily a hobby ranch in existence until 1915. They built a summer home along Massey Draw in the Valley, which was later known as Carroll’s House. There are foundations, a stone bridge, and cattle feeders remaining. John Schaffer began purchasing land, including this ranch, around 1915.

The Shaffers

On October 17, 1914, John Shaffer, a grain commission trader from Chicago, purchased the first 2,660 acres of what would become Ken-Caryl Ranch for \$100,000. He and his wife Virginia named it Ken-Caryl after their sons, Kent and Carroll. Shortly after, he built the colonial-style 8,000 square foot Manor House on the highest portion of the estate. As time went on Shaffer added other buildings, including separate homes for his sons and their families. Shaffer built all the houses of wood and some of them were pretty insubstantial. Carroll’s House, a beautiful two-story building with a gazebo, was used primarily as a guest house. Kent’s House, a bungalow-style one-story building, is still standing to the west of the Manor House. Shaffer built new barns and a corral almost immediately and four years later added the huge Dutch style barn that is still central to the Ranch complex. The barn was built to stall the purebred cattle that were to come. The barns, corrals, staff housing, workshops, and associated buildings are now the Equestrian Center.

West of the big house, in the foothills, atop Beacon Hill, Shaffer built a log chalet. It had dormitories at each end, one for women and one for men, and a shared living room. Two large fireplaces warmed the chalet. The chalet burned not long after it was built and only a chimney remains today, which is protected by fencing put up by local Boy Scouts and the ranger staff, and signage was installed by the Historical Society. It is now referred to as “Little John’s Chimney.”

Other Areas

Other known historical areas in the Valley associated with the ranching era include:

- Smaller ranches that were scattered around the Valley, most of which are effaced from the landscape. However, remnants may still be found, such as bricks, nails, and other debris. This includes, but is not limited to: a small ranch where Massey Draw cuts through the Hogback, and is now covered by South Valley Road and Ken-Caryl Avenue; the Frank Mann Ranch (the previously mentioned Falcon House and outbuildings) in the South Valley; and the Shearn Ranch/Carroll's House on Massey Draw (the previously mentioned foundation of the house and a stone bridge).
- A silo was located along North Ranch Road, between Ken-Caryl Avenue and Blue Grouse Ridge Road.
- The ruins of a kiln located in North Valley Open Space.
- Stock feeders located in various areas.
- The pump house, recently repaired and preserved, on Massey Draw just west of the Equestrian Center.
- A timber diversion structure on Massey Draw, located near the intersection of the Massey Draw Trail and Colorow Trail.
- Debris found in Massey Draw, which was used as a disposal area during the ranching era.

Mining

Prospecting for various materials such as mica, uranium, and others occurred in the 19th century in the Valley in various locations. Mining spoils piles exist in the South Hogback and the Docmann mining shaft that has since been filled in is located in the southern part of the valley up Docmann Gulch.

Appendix D

Ecologically Important Areas Within Open Space

The Ken-Caryl Ranch Natural Area, which contains the North and South Hogbacks, is one of only 3 sites designated in Jefferson County by the Colorado Natural Areas Program (CNAP), a statewide program under the Colorado Parks and Wildlife dedicated to protecting the best natural features in the state. The Ken-Caryl Ranch Natural Area contains an excellent illustration of the Dakota Hogback, including exposures of the Dakota, Lyons, and Lykins formations. The eastern, higher ridge of the hogback (including the North Hogback Open Space and the South Hogback Open Space) consists of Dakota sandstone that is approximately 75 million years old, with a lower ridge to the west (in the North Hogback Open Space) composed of Glennon Limestone that is about 250 million years old.

The Niobrara shale on the east face of the eastern-most hogback supports a population of a hybrid between two rare plant species of twinpods, *Physaria vitulifera* x *Physaria bellii*. The area is also an important topographic feature for migrating raptors, and provides feeding grounds and potential nest sites for the golden eagle. The hogbacks are vegetated with a mosaic of plant communities representative of the rocky scarps and shallow valleys of hogbacks along the east face of the Front Range. There are examples of foothills mixed grass prairie, oneseed juniper

woodland, and Gambel oak thicket that provides habitat for a variety of animal species. The property contains a good representation of a variety of fauna including indigenous foothills birds, mammals and reptiles.

(<https://ken-carylranh.org/wp-content/uploads/2011/08/Colorado-Natural-Areas-Program-AOD-SHB.pdf> and <http://cpw.state.co.us/aboutus/Pages/CNAP-Info.aspx>)

Several areas within Ken-Caryl Ranch Open Space are considered by the Colorado Natural Heritage Program (CNHP) to be biologically important. The North and South Hogback Open Spaces are designated as having Very High Biodiversity Significance. Half of the Foothills Open Space is designated as having High Biodiversity Significance while the other half has General Biodiversity Significance. There are also several areas designated as Potential Conservation Areas within Open Space, which are delineated around important elements of biodiversity (plants, animals, or natural communities). These include the Ken-Caryl Hogback Complex, Massey Draw, and Mount Lindo to Plymouth Mountain.

CNHP labels the Ken-Caryl Hogback Complex as a Level 4 Potential Conservation Area with a Biodiversity Significance Rank of B2: Very High Biodiversity Significance. The hogback ridges provide habitat for rare plants and healthy grassland and shrub communities on the outcrops of Dakota sandstone and Niobrara shale. Xeric tallgrass prairie is found along the lower slopes of the hogbacks with shrub communities dominated by mountain mahogany, skunkbrush, and Gambel's oak, along with scattered ponderosa pines and Rocky Mountain juniper. Black-tail prairie dog communities, rare butterflies including the Ottoe skipper and Arogos skipper, northern leopard frog and a nesting Prairie Falcon are also found in the valley and on the hogbacks. In addition, a Long-eared Owl was documented nesting in the Gambel's oak woodland associated with the hogbacks.

(http://www.cnhp.colostate.edu/download/documents/pca/L4_PCA-Ken%20Caryl%20Hogback%20Complex_11-29-2015.pdf)

CNHP labels Massey Draw as a Level 4 Potential Conservation Area with a Biodiversity Significance Rank of B3: High Biodiversity Significance. The undeveloped eastward-facing, forested and steep cool canyon habitats characterize most of the site, with first and second order streams that flow eastward. The drainages are steep, rocky, well-defined, often very narrow and forested. The understory is cool and shady and supports a wide variety of native vegetation. The cool canyons support quaking aspen, beaked Hazelnut, water birch, and Douglas-fir in the overstory. The wetlands include valley bottoms and seeps. The valley bottoms form three separate depressions where aspen trees dominate and Oven Birds can be heard throughout the summer.

A dense layer of tall forbs including Porter's licorice-root dominate these low wet areas. The dry uplands with rugged topography support forests and woodlands including ponderosa pine, mountain mahogany, and Gambel's oak with grassland and shrubland communities interspersed throughout. The physical topography, unaltered drainages, undeveloped surrounding landscapes, and ecological processes such as wildfires and flooding contribute to the habitats that support the existing diversity of rare animals, plants, and plant communities. These include the globally vulnerable (G3/S1) Montane riparian forest, a good to fair (BC-ranked) occurrence of a globally

secure (G5/S4) Foothills Ponderosa Pine Scrub woodlands and a fair (C-ranked) occurrence of the state rare (G5/S2) plant *Geranium Bicknell*.

In three wetlands located in valley bottoms, several species of conservation concern observed include: Blue Ridge carrion-flower, wood lily, and the bird's foot violet. Oven Birds, which are globally secure but imperiled in the state, were nesting in these valley bottom wetlands. In addition, five plant species were observed in the wetlands that ranked an 8 or above on the Colorado Floristic Quality Index (FQI) Coefficient of Conservation: wood lily, water birch, wild sarsaparilla, red baneberry, and black snakeroot. (Coefficient of Conservation values range from 0-10 with 10 ranks representing species that are always found in unaltered high-quality habitats. Therefore, the presence of species with these high FQI values is indicative of the high quality of this area. High quality undeveloped lands like these are especially uncommon along the Front Range. (http://www.cnhp.colostate.edu/download/documents/pca/L4_PCA-Massey%20Draw_2-28-2017.pdf)

The Mount Lindo to Plymouth Mountain PCA was created because of wetland and riparian dependent elements within the South Platte River basin and has some of the highest known biodiversity value in the area

(<http://www.cnhp.colostate.edu/cwic/location/pcaList.asp?huc4=1019&GeoUnitID=2>).

Birds

All migratory birds are protected under the Migratory Bird Treaty Act. Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured. Any person or organization that plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures. Numerous migratory bird species designated as species of particular conservation concern have the potential to exist within Ken-Caryl Ranch based on habitat preference according to the U.S. Fish and Wildlife Service's IPaC website, including: American Bittern, Bald Eagle, Black Rosy-finch, Black Swift, Brewer's Sparrow, Brown-capped Rosy Finch, Burrowing Owl, Cassin's Finch, Dickcissel, Ferruginous Hawk, Flammulated Owl, Golden Eagle, Lewis' Woodpecker, Loggerhead Shrike, Long-billed Curlew, Mountain Plover, Peregrine Falcon, Prairie Falcon, Oven bird, Sage Thrasher, Short-Eared Owl, Swainson's Hawk, Veery, Virginia's Warbler, Western Grebe, Williamson's Sapsucker, and Willow Flycatcher. Golden eagles and prairie falcons have known nests in the red rock formations at the adjacent South Valley Park and South Hogback Open Space and most likely use Ken-Caryl Open Space for hunting.

Other raptor species known to occur or have habitat present include American Kestrel, Coopers Hawk, Northern Goshawk, Red-tailed Hawk, Sharp-shinned Hawk, Swainson's Hawk, Eastern Screech Owl, Great Horned Owl, Long-eared Owl, Northern Pygmy Owl, Northern Saw-whet Owl, and Turkey Vulture (Ken-Caryl Ranch Docmann Loop Trail Project Raptor Survey, August 2016). Other bird species known to occur based on biological surveys completed for trail projects include black-headed grosbeak, broad-tailed hummingbird, chipping sparrow, house wren, warbling vireo, western tanager, yellow warbler (Biological Surveys of Upper

Bradford/East Tin Cup and Upper Massey Proposed Trail Realignment corridors at Ken-Caryl Ranch, October 2011) and spotted towhee, chickadee, robin, broad-tailed hummingbird, flicker, blue gray gnatcatcher, magpie, mourning dove, scrub jay, and crow (Biological Survey for Lower Question Mark Peak and West Cougar Trail, September 2012).

Other Species

Ken-Caryl Open Space also provides habitat for a variety of other animal species. Some of the most common animal species found within Open Space land include deer, elk, bears, mountain lions, cougars, skunk, raccoon, red fox, coyotes, snakes and other reptiles, raptors and song birds. In addition, the Chatfield Basin, including Ken-Caryl Open Space, is one of the most important butterfly conservation areas in the United States.

Appendix E

Wildfire Background

History of Wildland Fire in the Ken-Caryl Valley

Wildfire has been a natural part of Colorado's ecosystem for thousands of years. Fires occurred throughout the year, depending upon the cause, weather conditions, and how dry natural fuels would be. Naturally occurring lightning-ignited fire maintained the health of forest and grasslands. Many of the plant species and communities are adapted to recurring fire through phenological, physiological, or anatomical attributes. Some plants, such as lodgepole pine and western wheatgrass require reoccurring fire to exist.

In the lower Front Range Areas of Colorado, wildfires would occur on average: in the grasslands every one to three years; in the grass and shrub areas approximately every decade; in the ponderosa pine forest every two to three decades; and every 50 to 200 years in mixed conifer forest composed of Douglas fir, ponderosa pine, and aspen.

Pre-settlement wildfires in the grasslands and grass/shrub areas would burn rapidly and hot. They would last only as long as it took to burn the dry grasses or the wind would be blowing to spread the fire. Wildfires in the ponderosa pine forest would remove accumulated needle/leaf litter, woody material, and vegetation, by natural low-intensity surface fires. Large fires occurred less frequently as there was less fuel for them to burn. On those occasions when drought, wind, and topography aligned, large fires also burned through mixed-conifer forests found on wetter and north-facing slopes would result in "crown fires" that would kill some or all of the trees. These mixed-conifer forests would gradually recover through regrowth of pioneer species such as aspen, and reseeded from adjacent trees that had survived the wildfire. In all cases, ashes from the burned vegetation would recycle nutrients back into the soil and help feed new plant growth.

Since European settlement of the lower Front Range, agriculture, ranching, land use policy, and changing ecosystems have altered fire behavior and fuels accumulation from their historic setting. European settlers in Jefferson County (Ken-Caryl Valley) changed the natural fire regime in several interrelated ways. The nature of vegetation (fuel) changed due to land use

practices such as homesteading, livestock grazing, agriculture, water development, and road construction. Livestock grazing reduced the amount of fine fuels such as grasses and forbs, which carried low-intensity fires across the landscape. In addition, continuous stretches of forest and prairie fuels were broken-up by land clearing activities.

The removal of natural vegetation allowed introduced weedy plants to colonize and occupy, in many instances, large expanses of land. The establishment of cheatgrass and other annual weeds are examples. Many of these weedy plants become flash fuels as they age, causing to burn faster and hotter than normal wildland fuels. The invasion of Rocky Mountain juniper and oakbrush stands and grasslands has also increased fuel loads and changed the nature of fire in these ecosystems.

In addition, more than a century of fire suppression policy has resulted in an unusually large accumulation of hazardous fuels such as oakbrush and western juniper in many forest and prairie ecosystems. The presence of flashy fuels coupled with large accumulation of naturally occurring fuels has created hazardous situations for public safety and fire management.

Due to these land use practices and policies, forest and prairie lands have become more overgrown and have greater levels of wildfire fuels, while providing less palatable food for wildlife. Ponderosa pine forests have increased amounts of shrubs and small trees growing under larger trees, resulting in the potential of increased fire behavior and “crown fires.” Mixed conifer forest may suffer more frequent crown fires from larger, more severe and more frequent wildfires occurring through the Front Range.

Fire Risk and Fire Hazard on Open Space Lands

Fire risk is the probability that wildfire will start from natural or human caused ignitions. Fire hazard is the presence of ignitable fuel coupled with the influences of terrain and weather. The nature of fuels, terrain, and weather conditions combine to dictate fire behavior, rate of spread, and intensity. Wildfire fuel attributes refer to both dead and live vegetation and include such factors as density, bed depth, continuity, loading, vertical arrangement, and moisture content. Structures are also a fuel source. Fire tends to burn more rapidly and intensely upslope than on level terrain. However, evening "chinook" winds may rapidly drive wildfire downslope. Weather conditions such as high ambient temperatures, low relative humidity, and windy conditions favor fire ignition and erratic fire behavior. Wind can be the driving force in destructive Wildland Urban Interface fires, and it can be the driving force in fire spread and intensity.

The Colorado Wildfire Risk Analysis Program (CO-WRAP) provides communities and land managers with the opportunity to examine the wildfire hazards, specific to their areas, as well as likely mitigation actions that may help protect their values at risk. The CO-WRAP report for Ken-Caryl Ranch is found in Appendix 5 of the Forest Stewardship Plan. A summary of the report's findings indicates that wildfire risk is greatest around structures in the community; fire rates of spread are significant over most of the area due to fuel type and slopes; fire intensity is higher with shrub and forest vegetation types; and most fire activity will be ground and passive canopy fires. Also, a wildfire hazard map was developed in 2006 using fuel types and slope, which combine to give prediction of how severe the wildfire hazard could be. Generally speaking, grassy areas contribute the least to the wildfire hazard of an area, and densely stocked areas of timber or brush would contribute the most.