



City of Boulder
Open Space and Mountain Parks

West Trail Study Area
Inventory Report
Executive Summary
and Key Findings



Final Draft
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INTRODUCTION

The overall purpose of the West TSA Plan is to provide the management direction and describe the strategic actions that will protect natural and cultural resources, improve the visitor experience, and provide a physically and environmentally sustainable trail system in the West TSA.

The West TSA Plan will articulate the community's long-term vision, define desired future conditions, and identify on-the-ground management actions directed at achieving and maintaining desired conditions. The West TSA Plan will guide both day-to-day and long-term management decisions.

The Inventory Report represents a compilation and analysis of information about existing conditions for the natural, cultural, and recreational resources in the West Trail Study Area. The information is based on field work, research studies, surveys, resource inventories, and on-the-ground knowledge of the area by OSMP staff and the public. The goal of the Inventory Report is to help inform West TSA decisions about how to balance providing a quality visitor experience and sustainable access and protecting the area's natural and cultural resources.

The West TSA Inventory Report is comprised of the executive summary / key findings (this report) and three separate reports dealing with natural, cultural, and recreational resources. While the reports vary to some extent based on the different resources, a common inventory approach was used.

Description of the West Trail Study Area

Setting. The West TSA forms the spectacular mountain backdrop to the City of Boulder. It contains highly diverse forested and grassland ecosystems at the juncture of the Rocky Mountains and the Great Plains. It is one of the most biologically diverse areas in Open Space and Mountain Parks (OSMP) and the Colorado Front Range. The West TSA mountain backdrop and transitional area to the plains is a globally unique and highly valued natural resource heritage. It also contains many cultural resources which tell stories of Boulder's past.

This dramatic rise of the mountains from the vast flat of the Great Plains not only sets the biological stage for high biodiversity and beauty, it also offers a wide range of exciting recreational opportunities. The West TSA contains many high-use visitor areas, receives almost half of the visitation to OSMP, and is a regional destination for recreation. In addition, the West TSA shares boundaries with numerous city and county neighborhoods whose residents access and recreate on the nearby OSMP lands. With so many people enjoying the beauty of this area, the juxtaposition of high resource values and high visitor use creates many challenges to sustaining the health of ecosystems and providing high-quality visitor opportunities that are compatible with resource conservation.

Location and Acreage. The West Trail Study Area includes Open Space and Mountain Parks lands west of Broadway and SH 93 from Linden Avenue to Eldorado Springs Drive. See [West TSA Basemap](#). The large size of the West TSA requires an area-wide planning approach to address habitat protection and connections at a landscape level and address trails and trail connections in a larger geographic context. The West TSA includes approximately 11,250 acres, with 10,700 acres owned and managed by OSMP and 550 acres of federal lands where OSMP is cooperatively assisting in the management of natural resources and visitor use (approximately 100 acres of National Institute for Standards and Technology property and 450 acres of National Center for Atmospheric Research property).

The Visitor Master Plan management area designations are shown on the [West TSA Basemap](#) (see descriptions on page 5). The management areas include Passive Recreation Areas (1,500 acres), Natural Areas (5,240 acres), and Habitat Conservation Area (3,960 acres).

The [West TSA Basemap](#) identifies OSMP conservation easements (CEs). These CE lands are owned by other parties, but OSMP has conservation easement agreements on them which preclude most or all new development and require protection of the conservation values on the property. The privately-owned CE lands do not allow public access and their management is outside the scope of the West TSA Plan and therefore not included in the West TSA planning area.

[Appendix B](#) summarizes legal agreements and past planning affecting West TSA recreational access.

Natural Ecosystems. Many of the ecosystems in the West TSA are generally healthy and functioning naturally. The West TSA contains a wide array of rare, sensitive, and unique plant species and communities and wildlife species, some of which are highly sensitive to human presence and visitor use. In the ever increasing urbanization of the Front Range, the West TSA provides extremely valuable habitat and refuge to sensitive species. Some of these natural assets are or will be threatened by high and increasing visitor use and increasing dispersal of the use. A major focus of the West TSA Plan will be to maintain or increase the level of natural resource protection and restoration, in order to maintain the balance between resource protection and recreation.

Cultural and Geological Resources. The West TSA contains a wide range of important paleontological, archaeological, historic, and geologic resources. There are cultural features and sites important to indigenous people, sites and structures indicative of European settlement and mining, and trails and structures constructed by the Civilian Conservation Corps (CCC) still used by visitors. The well-known West TSA geological formations, such as the Flatirons and Red Rocks, showcase Boulder's geological history and contribute to the beauty of the mountain backdrop. Some of these cultural and geological resources require a higher level of protection, in order to enable long term stewardship of the resource.

Recreational Resources. Recreational opportunities abound in the West TSA, and many consider it a world-class recreational destination. The West TSA offers a wide range of recreational opportunities—from hiking, contemplation, and nature study to rock climbing, horseback riding, and dog walking. Most visitors to OSMP (and likely to the West TSA) report a high quality of experience, and a large number of visitors greatly enjoy the natural setting for passive recreation. However for many visitors, increasing levels of visitor use over time have degraded the visitor experience with loss of remoteness and increased visitor conflict. Another major focus for the West TSA Plan will be to maintain or improve the quality of visitor experience.

Trail System. The West TSA contains an extensive designated trail system (78 miles), in places densely packed together, with many mountain backdrop trails developed in the early 20th century. A majority of these older designated trails were not located or built to be physically and environmentally sustainable. Many were built in canyon riparian areas, which are some of the most ecologically sensitive lands in the West TSA. A large number of user-created undesignated trails (58 miles) also exist that may not be physically or environmentally sustainable. Some undesignated trails provide access to destinations not served by designated trails, while others result in multiple trails to the same destination. Another major focus for the West TSA Plan will be on making the existing trail system more sustainable and on reducing the extensive network of undesignated trails to reduce resource impacts. A large number of proposed West TSA trail and trailhead improvements (trail reconstructions, refurbishments, and reroutes; trailhead / trail access improvements; priority new trail connections; and critical road crossings) are identified in the Visitor Master Plan. These improvements are intended to improve trail sustainability. A definition that OSMP uses

is that a trail or visitor facility is considered sustainable when principles of ecology, economics, and ethics have been incorporated into the physical design in an effort to achieve ecological and biological integrity, quality user experience, and performance for current and future generations with a minimum of maintenance and upkeep.

Visitor Master Plan Management Area Designations in the West Trail Study Area

West TSA Plan recommendations will include management objectives and strategies for providing resource protection and visitor opportunities. Management Area designations, adopted as part of the Visitor Master Plan (VMP), will provide the context for decision making.

All OSMP lands are categorized under one of four management area designations in the VMP. Three of these management area designations exist in the West TSA: Passive Recreation Area (1,470 ac), Natural Area (5,240 ac), and Habitat Conservation Area (HCA—3,959 ac). The VMP identifies goals and specific management strategies to be applied to the different areas, which are based on different land characteristics (e.g., physical and ecological qualities, existing and anticipated visitor use patterns, existing and potential visitor infrastructure, among others).

The primary goal of each management area is to plan for and facilitate visitor use in areas that can best accommodate the use, which includes providing a high-quality visitor experience and ensuring compatibility of visitor use with natural, cultural, and agricultural resources. The Management Area Designations provide a framework to decide what level of resource protection, visitor access and activities, and trail and facility development are most suitable in a given area.

On one end of the spectrum, the emphasis in Passive Recreation Areas is on providing a high-quality visitor experience in areas that are closer to where people live and work and accommodating a higher level of visitor use, while protecting the natural and cultural resources. At the other end of the spectrum, in Habitat Conservation Areas the emphasis is on protecting and restoring the high habitat values in the more pristine, less human-modified areas within OSMP, while providing a high quality visitor experience in more remote areas. Natural Areas are in the middle of the spectrum, where the emphasis is on protecting the natural and cultural resources and accommodating low to moderate levels of visitor use.

The following is an abbreviated list of characteristics and goals of the three management areas in the West TSA. The complete description of the management areas can be found in the VMP (pp. 47-55).

Passive Recreation Areas (PRA)

- Generally in close proximity to city or county development and may include patches of high quality habitat.
- Offer destinations for a wide range of different passive recreational activities.
- Accommodate high levels of visitor use with appropriate management, trails and trailheads and services.
- Provide a high level of public access to destinations and connections through designated trails (also have a relatively high density of trails).
- Discourage travel on undesignated trails.

Natural Areas (NA)

- Relatively high resource and recreation values.
- Varying levels of visitor use, types of activities, and availability of facilities.
- Provide opportunities for passive recreational and educational activities that require topographic relief or a natural setting (e.g., hang/paragliding, climbing/bouldering).
- Interspersed recreational and natural values require that management determine the appropriate mix of open space purposes and manage multiple uses accordingly.
- Eliminate undesignated trails when they are redundant or damaging to resources.

Habitat Conservation Areas (HCA)

- Tend to be located in remote areas and represent the largest blocks of an ecosystem type with few, if any, trails or roads.
- Naturally functioning ecosystems, contain important habitat connections, high potential for restoration of natural ecosystems.
- Low level of visitor use and low level of developed facilities.
- Provide public access and passive recreational opportunities that foster appreciation and understanding of ecological systems and have minimal impacts on native plant communities and wildlife habitats or other resources.
- Eliminate all undesignated trails, unless they are made part of the designated trails system or provide specialized access to appropriate low-use destinations.

West TSA Planning Process and Next Steps beyond the Inventory

There are three phases of the West TSA planning process:

Phase 1: Inventory of Existing Conditions

Phase 1 is conducted primarily by OSMP staff (with input from the public and the Open Space Board of Trustees). Phase 1 is focused on providing the essential information base and management direction for the rest of the planning process.

Key Questions:

- What resources (and essential qualities) should the plan focus on?
- What are the existing conditions for those natural, cultural, and recreational resources?
- What key issues influence or are likely to influence existing and future conditions, and which ones are most important to deal with?

Planning Steps:

- Identify targets, attributes, and indicators (TAIs) for natural, cultural, and recreational resources (*see definitions below*), which organize the inventory of existing conditions.
- Characterize existing resource conditions using the TAIs.
- Review information and direction from adopted plans and identify what the Open Space and Mountain Parks Department and the Open Space Board of Trustees consider essential requirements (sideboards) to be built into the West TSA Plan.
- Assess the existing situation, which involves identifying key issues and interests articulated in interviews with a number of community members.
- Identify and prioritize problems and constraints affecting existing and future conditions.

Completion of this phase involves review by the Open Space Board of Trustees and the public and then revision of the reports:

- West TSA Targets, Attributes, and Indicators Report
- West TSA Inventory of Existing Conditions Report (this report)
- West TSA Sideboards Report

What are Targets, Attributes, and Indicators?

- **Targets** broadly define what we are planning for—those natural, cultural, and recreational resources that we are trying to protect, provide, and manage.
- **Attributes** define essential qualities or components of targets that, when present, result in long term sustainability of the target. When these attributes are absent or are severely compromised, the target is no longer sustainable without significant management effort and could be lost completely.
- **Indicators** are quantitative and qualitative measures of the attributes; they are what we measure to track conditions of the attributes. One or more indicators are selected for each attribute. Indicators help us characterize existing and desired future conditions for the attributes and inform us of their status or health. Thresholds can be selected for indicators to help identify at what point conditions are acceptable or within the range of desired conditions.

Examples:

Target	Attribute	Indicator
Mixed Conifer Forest	Wildlife and Habitat Effectiveness	% of Highly Suitable Goshawk Habitat in the Target
Historic Buildings and Structures (BSOs)	Integrity of Historic Buildings and Structures	% in Excellent to Good Condition
Visitor Experience	Access to Destinations	Proportion of Key Destinations Served by a Designated Trail in Each of the VMP Management Area

The West TSA Plan will include recommended actions to maintain existing acceptable (or good) conditions and bring unacceptable (fair or poor) conditions up to acceptable for many of the West TSA natural, cultural, and recreational attributes and indicators. OSMP is using the Conservation Action Planning (CAP) framework, where feasible, to set measurable standards for what is considered “acceptable” and direct proposed management strategies and actions to maintain or achieve acceptable conditions. Standards or thresholds of acceptability may be developed by the Community Collaborative Group for selected indicators. In some cases the indicator data is collected system-wide only (such as responses from the Visitor Survey); in other cases West TSA-specific data is collected (such as condition of particular trail segments). The indicators can help assess the overall effect of the package of individual on-the-ground management actions in moving toward acceptable conditions at the system-wide or TSA-wide level. The indicators also can help assess the effect of individual management actions in moving toward acceptable conditions of the targets and attributes.¹

A detailed description of the West TSA TAIs can be found in the [West TSA Targets, Attributes, and Indicators Report](#) (March 2009). [Appendix A](#) includes a summary table identifying the West TSA TAIs.

¹ **Note:** At this stage of the planning process, no commitments have been made on which of the indicators will be monitored over the long-term. During the final stage of plan development, implementation strategies, actions and priorities will be formulated, including commitments for ongoing monitoring of selected indicators of resource conditions and the effect of implementation actions and strategies on those conditions. Some of the indicators monitored will be West TSA specific. Some indicators will apply to the entire OSMP system, but will yield useful information where inferences can be made about the West TSA.

Phase 2: Definition of Desired Conditions

Phase 2 is conducted by a Community Collaborative Group (CCG) with the involvement of OSMP staff. This group will be composed of a representative cross-section of diverse community interests that have a stake in the West TSA. Phase 2 involves defining a broad-brush vision for the West TSA, prioritizing issues and opportunities to focus on, and defining desired future conditions with enough specificity to drive the rest of the planning process.

Key Questions:

- What are the desired future conditions for natural, cultural, and recreational resources that the plan focuses on?
- How do existing conditions and desired future conditions compare?
- What are the prospects of achieving desired conditions?

Planning Steps:

- Define desired future conditions for natural, cultural, and recreational resources using the selected targets, attributes, and indicators.
- Set management objectives and thresholds of acceptability for the attributes and indicators.
- Assess what resources meet or exceed desired conditions and what resources fall short of desired conditions and assess the prospects of maintaining existing conditions that are close to desired and bringing existing conditions up to the desired level.
- Identify best opportunity areas to meet desired conditions for natural, cultural, and recreational resources.

Phase 3: Development of Plan Implementation Strategies

Phase 3 is conducted by the CCG with the involvement of OSMP staff. A consensus-based plan is produced by the CCG. The focus is on finding creative solutions to planning problems and opportunities. The CCG will grapple with the tradeoffs involved in meeting competing needs and desires, and attempt to strike the right balance between resource protection and visitor use. The aim of the plan is to provide a package of on-the-ground changes that will provide overall improvement in conditions for natural, cultural, and recreational resources.

Key Question:

- What is the most beneficial and feasible package of plan proposals to maintain or achieve desired conditions?

Planning Steps:

- Develop and evaluate plan alternatives and scenarios that involve on-the-ground management strategies and actions to maintain desired conditions and bring existing conditions up to desired conditions.
- Select preferred plan alternatives.
- Develop a cohesive plan and implementation program (including monitoring) for the West TSA.

Once the plan is adopted, management actions are implemented, success is monitored and management strategies and actions are adjusted to improve their effectiveness. The plan implementation horizon for the West TSA Plan is ten years (although a much longer view is considered in the plan for sustaining natural, cultural, and recreational resources in perpetuity). The plan will be revised approximately every five years, with course corrections made as needed.

A major goal for the West TSA Plan is to make the existing trail system more physically and ecologically sustainable. Much of the West TSA trail system was developed without consideration of minimizing impacts on natural resources. If new trails are planned in the West TSA, they will have to minimize impacts on natural resources.

Ensuring the long-term sustainability of ecosystems is an underlying goal for all OSMP plans. For TSA plans, maintaining or improving natural resource conditions frames decisions on the best way to enhance and manage recreational access and opportunities. Natural, cultural, and recreational resource information in the West TSA Inventory Report, along with subsequent work to assess the current health or status of these resources, will help us decide the best way to provide natural resource protection in the context of high visitation and the desires for enhanced recreational opportunities.

The West TSA Inventory Report provides information and analysis to identify the most ecologically valuable and sensitive habitat areas and map these identified areas with an overlay of designated and undesignated trails and access points, and cultural resources. Knowing where the most valuable habitat areas and culturally significant sites are will help guide decisions on where existing trails should be rerouted to avoid or minimize impacts and where undesignated trails should be designated / improved or closed and restored. Knowing where these habitats areas and culturally significant sites are will also guide decisions on where to locate new trails to minimize impacts. “Best opportunity areas” will be identified—places where compatibility between resource protection and recreational access has the best potential.

SUMMARY OF KEY FINDINGS

Natural Resources

The West Trail Study Area is a complex and diverse mosaic of ecosystems and habitats, which supports a rich diversity of plant and animal species and ecological communities. Large contiguous blocks of ponderosa pine woodlands and mixed-conifer forests support forest interior species and allow wide-ranging species to move across the landscape. Riparian areas and cliffs provide unique habitat types for some of the rarest species on the OSMP system. Forest / grassland edges and forest meadows provide habitat for species adapted to both forest and grassland ecosystems and are some of the most productive and diverse zones on the landscape. Grassland habitat supports diverse plant and animal communities, including several rare or imperiled species.

Rare Plant Species and Communities

Rare plant species and communities are widely distributed in the West TSA. The highest number of occurrences is located in riparian areas and the largest acreage in the xeric tallgrass prairie. Rock cracks and crevices harbor many rare plant species and communities.

Non-Native Weed Prevalence

The targets with the most complete non-native weed mapping are Foothills and Montane Riparian, Ponderosa Pine Woodlands and Savannahs, and Foothills and Montane Forest Openings.

Weed prevalence is an indicator of vegetation composition for several natural resource targets. Weed prevalence varies widely among the targets in the West TSA, with very low prevalence in the Mixed Conifer Forest and Woodlands Target (0.4% of the target has $\geq 6\%$ weed canopy cover) and the Cliffs and

Talus Target (1.4% of the target has $\geq 6\%$ weed canopy cover). For the other targets (Ponderosa Pine, Riparian, and Forest Openings), it ranges from 6.2 to 12.6 %.

Of the areas that have been mapped to date, the highest weed concentrations occur in the Sanitas, Anemone Hill, and Chautauqua areas, and the grassland area south of NCAR and Shanahan Ridge. Trails in the higher elevation foothills generally have lower weed prevalence, while lower elevation trails have higher weed prevalence.

Potential Highly Suitable Wildlife Habitat and Trail Effects

All areas within the West TSA provide habitat for plant and animal species. These lands provide habitat for both common and rare species. Known information about existing wildlife populations and their occupied habitat was compiled for the West TSA Plan. This on-the-ground wildlife and habitat information will be considered when areas are identified and evaluated for possible changes to the existing trail system and visitor activities (in addition, new focused field work may be completed for this evaluation).

Because it is not feasible to survey and inventory all species and habitats on the ground, potential wildlife habitat in the West TSA has been identified and evaluated for selected wildlife indicator species using habitat suitability (HS) models. These wildlife indicator species are characteristic of the ecosystem type where they occur, and they play the role of “umbrella” species, i.e., they represent the habitat needs of many other species with similar needs. The well-supported assumption is that maintaining or restoring good habitat for the wildlife indicator species directly benefits many other species with similar habitat needs.

Habitat suitability models are commonly used to identify areas that have the characteristics to be highly suitable for the indicator species. Key environmental and biological characteristics and habitat requirements of the wildlife indicator species were identified from the scientific literature and other habitat suitability models. The HS models identified wildlife habitat suitable for each of the indicator species. Then “the best of the best” of the suitable habitat was identified as highly suitable habitat.

The number of acres and percent of highly suitable habitat in the West TSA for each of the wildlife indicator species is as follows:

Northern Goshawk Habitat	482 acres, 5%
Abert’s Squirrel Habitat	944 acres, 9%
Prairie Falcon	51 acres, 0.5%
Black Bear	1,280 acres, 12%
Wild Turkey Habitat	466 acres, 4%
Shrub-Nesting Bird Habitat	114 acres, 1%
Grasshopper Sparrow	624 acres, 6%

For the highly suitable wildlife habitat, “trail effect” was analyzed using known information about the flushing or disturbance distance caused by human presence on roads or trails, which varies for the different indicator species. Trails and roads were overlaid on the highly suitable habitat. Trails and roads reduce the effectiveness of wildlife habitat, which potentially reduces the amount of highly suitable habitat. Taking trail effect into account in the model, the results show that the percent of highly suitable wildlife habitat in the West TSA is potentially reduced, as follows:

- **Northern Goshawk Habitat.** Highly suitable habitat decreased from 482 acres to 313 acres due to trail effect.
- **Abert’s Squirrel Habitat.** Highly suitable habitat decreased from 944 acres to 538 acres due to trail effect.

- **Wild Turkey Habitat.** Highly suitable habitat decreased from 466 acres to 145 acres due to trail effect.
- **Shrub-Nesting Bird Habitat.** Highly suitable habitat decreased from 114 acres to 25 acres due to trail effect.
- **Grasshopper Sparrow Habitat.** Highly suitable habitat decreased from 624 acres to 212 acres due to trail effect.

These decreases in highly suitable habitat for wildlife indicator species result from the extensive network of designated and undesignated in the West TSA. Specifics for the habitat suitability models can be found in [Appendix A](#) of the Natural Resource Inventory.

Trails in Riparian Areas

The development of many of the trails in the West TSA follow historical settlement roads, mining roads, regional roads providing access to the western mountains, and user-created trails. As a consequence, almost all the east-west canyons (Sunshine Canyon, Boulder Creek, Gregory, Long, Lost Gulch, Greenman, Bear Creek, Shadow, and South Boulder Creek) have designated trails or roads in them, and all major drainages have trails immediately adjacent to or within the riparian vegetation for much of their lengths. Since riparian areas provide important habitat for many rare and sensitive plant communities and sensitive wildlife species, the presence of trails or roads decreases the effectiveness of wildlife habitat and wildlife movement corridors.

Approximately 28 % (22.5 miles) of the West TSA's 78 designated trail miles are in or near riparian areas. Approximately 19% (14.7 miles) of the West TSA's designated trail miles are in critical bear foraging habitat, and approximately 13% (7.3 miles) of the West TSA's 58 undesignated trails are in this habitat. In critical bear foraging habitat, dogs are allowed on 14 miles out of 15 designated trails. Designated trail density in critical bear foraging habitat is an average of 61 feet per acre; for undesignated trails it is an average of 30 feet per acre. Additional mapping will allow comparison of this trail density among different creek canyons.

Mapping of the occupied range for the Federally-threatened Prebles's meadow jumping mouse shows that almost all the major drainages in the West TSA provide suitable Preble's habitat according to the U.S. Fish and Wildlife Service and the Colorado Division of Wildlife.

Cliff-Nesting Bird Protection

The Boulder mountain backdrop has one of the highest densities of productive nests for cliff-nesting falcons and eagles in the entire Front Range. Not only does the mountain backdrop offer many steep rock walls and crags, but known active nests are protected by seasonal wildlife closures.

44% of highly suitable cliff-nesting raptor habitat falls within an existing seasonal wildlife closure.

Wildlife Population Monitoring

These are key points summarizing results from recent monitoring:

Forest Birds

- Forest birds have significantly higher numbers of individuals and species in thinned, open ponderosa pine forest stands as compared to un-thinned, dense areas.
- Forest stands that have been thinned provide habitat for a wider range of forest bird species.

Accipiter Surveys

- Surveys of accipiters (hawks that inhabit deeply wooded areas) were conducted in 2008 to locate potential breeding areas for forest raptors in the West TSA.
- Staff surveyed Gregory Canyon, Flagstaff, Panther Canyon, Lost Gulch, North Draw and Aspen Canyon during the 2008 field season.
- In Lost Gulch staff located two Cooper's Hawk nests where successful breeding had taken place.
- In Aspen Canyon, staff observed two Cooper's Hawk fledglings close to a nesting site.
- A juvenile Northern Goshawk responded to broadcasts at two stations in the Flagstaff study area but was not detected during subsequent surveys.

Forest Owl Surveys

- Staff surveyed four canyons, Gregory, Aspen, Shadow and Panther, for Flammulated Owls during the 2008 field season.
- Surveys in all four canyons produced responses from Flammulated Owls.
- A Long-eared Owl was also detected in Shadow Canyon.
- Fledging Long-eared Owls were located on Shanahan Ridge.

Cliff-nesting Raptor Monitoring

- During 2008, 49 volunteers logged 587 site visits for the cliff-nesting raptor monitoring program.
- In total, three Prairie Falcon pairs produced 15 fledglings, two golden eagle pairs fledged three young, and two Peregrine Falcon pairs fledged three young.
- Cliffs in the West TSA provide unique and exceptional habitat for cliff-nesting raptors.

Northern Leopard Frog Monitoring

- Northern leopard frog populations on OSMP property face threats that affect many other Western U.S. populations and have led to a precipitous decline in leopard frogs in the Western U.S. The most apparent threats are habitat degradation and loss, fungal infection, and predation from non-native species.
- In the West TSA, eight sites were surveyed for Northern Leopard Frogs from 2006-2008. Leopard frogs were observed at one of these sites in 2006 and two of these sites in 2007.

Bat Monitoring

- On average 20-40 volunteers spend 400 hours/year conducting auditory and visual counts of bats at water holes.
- Volunteers and staff monitor wildlife closures for 2 imperiled bat species, the Fringed Myotis (*Myotis thysanodes*) at Der Zerkle and the Townsend's Big Eared Bat (*Corynorhinus townsendii*) at Harmon and Mallory Caves.
- Seven watering holes and four roost sites are regularly sampled for bats within the West TSA boundary.

Tallgrass West Bird Monitoring

- Tallgrass West (the area of grassland habitat west of Hwy 93 between Shanahan Ridge to north and Eldorado Springs Drive to south) is an area of regional importance characterized by locally rare big bluestem communities that serve as home to many grassland nesting bird species of conservation concern.
- Over the four years of study completed to examine effects of grazing regime shifts, staff detected 51 species of birds at the Tallgrass West study sites. Of these, 49 were native and five are considered grassland specialists.

Cultural Resources

The West TSA is rich in cultural resources, ranging from fossilized remains of ancient sea life and dinosaurs, sites and artifacts used by Native Americans, and roads, mining sites and homesteads used by Euro-Americans. These and other cultural resources tell stories of past human activities, how people lived over the ages, and their effects on the land. For the West TSA, cultural resource management actions will be planned to preserve and in some cases interpret those cultural resources that are frequented by OSMP visitors or are near current or planned trails.

Some paleontological sites and features in the West TSA have been identified. Fossilized dinosaur footprints, worm trails, mollusks, stromatolites and trace fossils of ripples have been found in the West TSA. Current information will be supplemented by a comprehensive survey of these resources and their protection needs to be completed in fall 2009.

Several locations of aboriginal sites and artifacts are known. Aboriginal features in the West TSA are predominately scatters of flakes, rock shelters, or stone structures (e.g., hunting blinds, tipi rings). However, resource protection needs and agreements dictate that these locations not be shared with the public.

Euro-American sites, buildings, and structures reveal much about early settlement times. Physical remains and recorded historical accounts point to a wide variety of historic land use activities in the West TSA. The major activities included:

- Mining of gold and other minerals
- Homesteading, farming, ranching, and logging
- Early recreation (summer cabins)
- Entertainment, education, and recreation (Chautauqua National Historic District)
- Health care related to clean air and the outdoors (Sanitas)
- Depression-era economic recovery (numerous recreational shelters, roads, Sunrise Circle Amphitheater, Green Mountain Lodge built by the Civilian Conservation Corps/ CCC)
- Transportation (roads leading to mines and other settlements, bridges, rock walls, trails)
- Water transmission (ditches and pipelines)

Information on the current physical condition of many of the Euro-American sites, buildings, and structures will be updated with field work in 2009. Previous cultural resource inventories completed in the 1990s provided an assessment of the condition of Historic Buildings and Historic Structures. Results for Historic Building showed that 54% of Historic Buildings were in excellent or good condition and 46% were in fair, deteriorated or ruins condition. Results for Historic Structures showed that 31% were in excellent or good condition: and 69% in fair, deteriorated or ruins condition.

A large proportion (73%) of the Euro-American sites, buildings, and structures are in close proximity (100 feet) to roads, trails, trailheads, and other visitor use areas. This proximity provides opportunities for interpreting the resources to enhance visitor appreciation of them and also provides, in some cases, the need to secure these resources from the impacts of visitor use.

Recreational Resources

Visitation Patterns

- **Visitation Numbers.** The Visitation Study conducted in 2004-05 estimates that system-wide there were approximately 4.7 million person visits annually on OSMP (compared to about 3 million visits in 1996), with 40-45% of the visits in the West TSA.

- **Visitor Activities.** In the 2004-05 Visitor Survey, the activities that were most reported by respondents as the purpose of their visit to OSMP (not just the West TSA) were as follows:
 - Hiking 55%
 - Viewing scenery 52%
 - Dog walking 32%
 - Running 24%
 - Wildlife viewing 24%
 - Meditation 15%
 - Biking 13%
 - Social gatherings 12%

Note that respondents could select more than one activity, so the total exceeds 100%.

- **Regional Destination for Recreation.** System-wide, 81% of the survey respondents were Boulder County residents (57% were city residents and 24% other cities plus unincorporated), 8% Denver metro residents, and 11% other residents. The percent of out-of-county visitors may be higher in the West TSA because Boulder Mountain Parks is well-known nationally and even internationally as a destination.
- **High-Use Areas.** Of the 236 designated access points system-wide thought to have at least three or more visitors per day, 42% (100) of them are in the West TSA. In the West TSA, undesigned trail density was found to be the highest in the vicinity of Chautauqua Meadow, Flagstaff, the 1st and 2nd Flatirons, and Settlers Park.
- **Seasonality of Use.** Some sites see their biggest visitation in the summer followed by spring and fall. Other sites, such as the Chautauqua and Sanitas areas, see regular visitation year-round.

Recreational Opportunities

- **Types of Recreational Activities.** The West TSA offers a wide range of passive recreational activities from hiking, contemplation, and nature study to rock climbing, horseback riding, picnicking and social gatherings, and dog walking. Some activities are currently prohibited, most notably bicycling and paragliding / hang gliding.
- **Comparison to Other Peer Agencies.** OSMP was compared to other similar front-range open space agencies with respect to recreational opportunities and management strategies (Boulder County, Jefferson County, Larimer County, Douglas County, Golden Gate Canyon State Park, and Eldorado Canyon State Park). Some results:
 - OSMP offers more off-leash dog walking opportunities compared to other agencies, with 31% of OSMP's trails requiring dogs to be on-leash (26% for the West TSA); all other agencies require dogs to be on-leash on 100% of the trails that allow dogs.
 - OSMP offers both fewer and more trail miles that prohibit dogs compared to other agencies, with 10% no-dog trails for OSMP and 5% for the West TSA; the range of no-dog trails for three of the peer agencies is 10-39%, but for the other three peer agencies the range of no-dog trails is 0-2%.
 - OSMP offers fewer bike opportunities than other agencies, with 34% of the trails allowing bikes in the system; the comparable number for the other agencies ranged from 55% to 92%.
- **Dog Walking.** Dog walking in the West TSA is primarily off-leash under voice and sight control. Considering dog walking regulations on the West TSA trails, the current situation is: 70% are off-leash under voice-and-sight control (55 miles), 25% on-leash year-round or seasonally (25 miles), and 5% no dogs (4 miles).
- **Accessibility.** In the West TSA, there are 1.1 miles of trails accessible to people with disabilities. Seven trailheads are accessible.

Access to Destinations

- **Key Visitor Destinations.**
 - In the West TSA OSMP has identified 106 key destinations (visitor facilities, natural features, popular gathering spots, and popular rock climbing and bouldering areas).
 - 81 (76%) of the key destinations are served by a designated trail, with all key destinations served in the Habitat Conservation Area, 55% in the Natural Area, and 82% in the Passive Recreation Area.
- **Trail Mileage.** The West TSA has 78 miles of designated trails (13.1 miles in the Habitat Conservation Area, 24.9 miles in the Natural Area, and 33.2 miles in the Passive Recreation Area;; other trail miles are on NCAR, NIST, and the Boulder Creek Path). These trails provide visitors access to a variety of destinations, provide connections within the trail system, and offer quality recreational experiences. Some of these trails may not be physically or environmentally sustainable.
- **Undesignated Trails.**
 - The West TSA has 58 miles of undesignated trails. Split out by VMP management area:
 - Habitat Conservation Area: 3.5 miles
 - Natural Area: 27.7 miles
 - Passive Recreation Area: 20.9 miles
 - NIST and NCAR: 6.2 miles
 - Undesignated trails result from a variety of causes, including: users creating access to destinations or links between designated trails; users avoiding muddy areas which results in trail braiding; and neighbors accessing OSMP lands from a host of undesignated access points.
 - Often multiple undesignated trails go to the same destination.
 - Most undesignated trails have significant problems with physical sustainability or are located in sensitive habitat. 36% of the undesignated trails are in the very high to high impact (on natural resource) rating category, 58% are in the moderate impact rating category, 6% are in the mid-low-least impact rating category.
 - Most undesignated trails are in close proximity to designated trails and roads, with the highest undesignated trail densities found in Chautauqua Meadow, Flagstaff Mountain, and Settlers Park.
 - Some undesignated trails are caused by missing key trail connections.
- **Designated and Undesignated Access Points.**
 - Visitor access to the West TSA is widely dispersed along its boundaries.
 - There are 51 designated access points (including trailheads and other signed entry points) in the West TSA.
 - There are 129 undesignated access points (and undesignated trails leading from them) along the western edge of the city, primarily originating from neighborhoods.
 - The 51 designated access points provide convenient access to adjacent neighborhoods, with almost 80% of them located within ½ mile of another access point.
 - Eight of the designated access points are within ¼ mile of a bus stop.
- **Wayfinding Signs.** Intended to guide visitor travel, wayfinding signs are provided at about 2/3 of the designated trail intersections. There are very few signs indicating to visitors that an undesignated trail is not a designated trail to discourage trail use.

Lack of Conflict

- **Visitor Conflict.**
 - On any give day, most OSMP visitors on OSMP do not experience conflict or unpleasant circumstances.
 - The 2004-05 Visitor Survey reports that system-wide 96% of visitors did not experience conflict with other visitors on the day they completed the survey. Some visitors, however,

- experience visitor conflicts that occur when they encounter other visitors whose behaviors are annoying or unpleasant.
 - About 4% of visitors system-wide reported they had experienced conflict on the day they were surveyed. With 4.7 million annual person visits to OSMP, this percent could result in almost 200,000 yearly conflict incidents system-wide.
 - Visitors reported system-wide that 60% of the conflicts involved dogs and dog excrement, 17% involve management-related concerns, and 15% involve inconsiderate behavior.
- A different survey, the 2004-05 Citizen Survey, shows that bikes and dogs were the greatest source of conflicts (37% and 23% respectively).

Connection with the Land

- **Interpretive Hikes.** OSMP offers hundreds of natural and cultural history interpretive hikes every year, and participant feedback surveys show that a very high degree of satisfaction with them (average rating of 9.2 out of 10).
- **Educational Events.** In the 2004-05 Citizens Survey, 47% of the respondents said they had participated in an OSMP educational event, including guided hikes but also a wide range of other events (such as in-school programs, Farmer's Market, and educational and outreach information provided on-line and in the media).
- **Volunteer Opportunities.** A wide range of volunteer opportunities are offered (15 programs, resulting in 25,000 volunteer hours per year), and OSMP volunteers report they are very satisfied with their volunteer experience.

Safety

- **Perception of Safety.**
 - The 2004-05 Citizens Survey indicates that 95% of participants consider their OSMP visits safe, with 74% rating their visits as "very safe".
 - The most reported reasons in the 2004-05 Citizens Survey for not feeling safe were:
 - Presence of mountain lions / fear of being killed by a bear
 - Concerns about being alone / not knowing who else is visiting
 - Security gaps / not enough rangers / car break-ins
- **Law Enforcement Incidents.** Rangers respond to many different types of law enforcement incidents in the West TSA. In 2008 the most numerous incidents were dog related (268) and illegal camping (68).

Remoteness

- **Perception of Remoteness.** Visitors to the West TSA have numerous opportunities to experience the feeling of remoteness and escape from the built environment on designated trails and off-trail. There are several factors that create this feeling of remoteness in the Western Mountain Parks Habitat Conservation Area (HCA) and other areas in the West TSA, including the large physical size of the area, steep topography and forested landscape, significant time required to access more distant trails, and low visitation on many trails.
- **Undesignated Trails.** There are 3.5 miles of undesignated trails in the Western Mountain Parks HCA, which may detract from some visitors' perceptions of remoteness.
- **Trail Signs.** Sign structures along a trail can detract from a sense of remoteness. The HCA and Natural Areas in the West TSA have about 3 ½ sign structures per mile.
- **Trail Conditions.**
 - OSMP manages 78 miles of designated trails in the West TSA over many different kinds of terrain.
 - Many of the West TSA mountain backdrop trails were built in the early 20th century and were not located or built to be physically and environmentally sustainable.

- OSMP has established trail construction and maintenance guidelines and standards that are designed to match different classes of trails, which vary based on the allowed uses on the trail and the level of development. These standards set the benchmark to assess the condition of the trails over time and determine appropriate trail management actions.
- Each trail is assigned a trail class and is rated against its appropriate standards, which are factored into its Trail Management Objective (TMO) Index. A determination can then be made on whether any given trail is in or out of compliance with its TMO Index.
- A current inventory of the condition of trail segments in the West TSA reveals that 63% are in Very Good or Good condition (49 miles), and 29% are in Fair, Poor, or Very Poor condition (23 miles). The inventory has not yet been completed for 8% (6 miles).
- Of the West TSA trail segments that do not comply with their TMOs, 81% of the trails are out of compliance due to grades being too steep, and 14% due to trails being too wide.
- **Trail Maintenance.**
 - Erosion is the primary maintenance problem, with the most eroded trails in the Kohler Mesa, mountain backdrop, Flagstaff Road, Red Rocks, and Mount Sanitas areas.
 - Several reasons are behind the fact that over 1/3rd of the West TSA Trails are not sustainable and are in fair or poor condition, including: unsustainable location or design, steep grades and erodible soil substrates, high levels of use, and long-term lack of regular maintenance.
- **Concentrated Use Area Conditions.** Examples of concentrated use areas include trailheads, access points, road crossings, overlooks, amphitheaters, picnic areas, and large group areas. There are 51 Concentrated Use Areas in the West TSA, fourteen are trailheads, 33 are access points, and four are recreational facilities. OSMP has established Classes and Standards for trailheads, access points and recreational facilities, which are used to evaluate the conditions, determine whether they are in or out of compliance, and identify necessary upgrades. None of the Trailheads in the West TSA are in compliance, around 67% (22 of 33) of the Access Points comply, and 33% (1 of 3) of the Recreational Facilities comply.

West TSA Basemap with Subareas

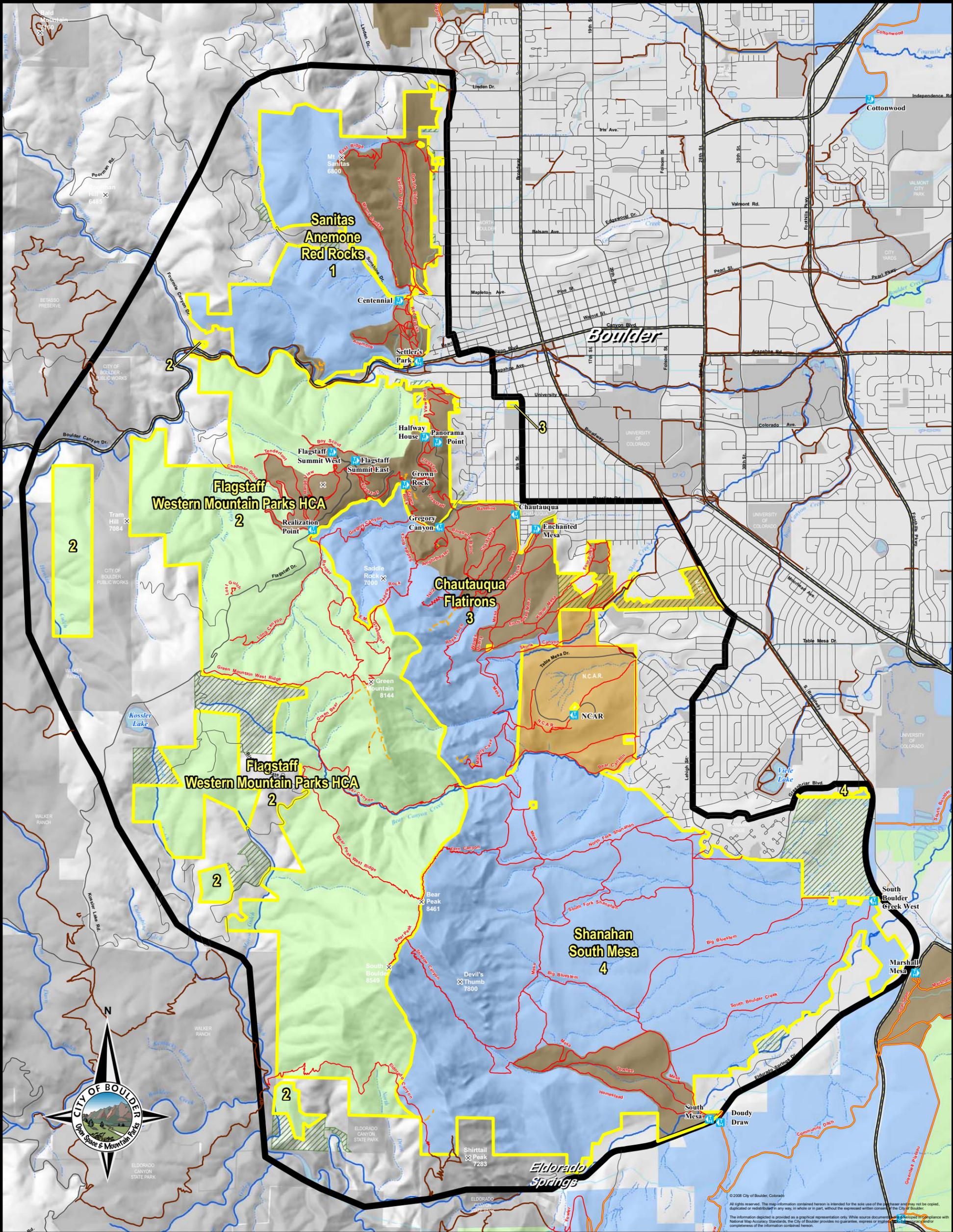
-  West TSA Boundary
-  West TSA Subareas
-  OSMP Conservation Easement
-  Other Government Lands
-  Trailheads

- Trails Managed By OSMP**
-  Hiking Trail
-  Multi-Use Trail
-  Paved Path
-  Climbing Access
-  Service Road
-  Trails Not Managed By OSMP

- Management Zone Designations**
-  Habitat Conservation Area
-  Natural Area
-  Passive Recreation Area
-  To Be Determined



revised: 8/13/2010



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Appendix A: Summary Table of West Trail Study Area Targets, Attributes, and Indicators

Natural Resources

6/14/09

Target	Attribute	Indicator
Mixed Conifer Forests	Vegetation Composition	Coverage of weeds (Percentage of target with a prevalence of management priority weed species)
		Rare plants and communities (Number of populations and subpopulations of local suite of rare species and communities)
	Wildlife and Habitat Effectiveness	Northern goshawk habitat (Percentage of target with highly suitable northern goshawk habitat)
Ponderosa Pine Woodlands and Savannahs	Vegetation Composition	Coverage of weeds (Percentage of target with a prevalence of management priority weed species)
		Rare plants and communities (Number of populations and subpopulations of local suite of rare species and communities)
	Wildlife and Habitat Effectiveness	Abert's squirrel habitat (Percentage of target with highly suitable Abert's squirrel habitat)
Cliffs and Talus	Vegetation Composition	Rare plants and communities (Number of populations and subpopulations of local suite of rare species and communities)
	Wildlife and Habitat Effectiveness	Protection of raptor nest sites (Percent of highly suitable falcon nest sites protected)
Foothills and Montane Riparian Areas	Vegetation Composition	Rare plants and communities (Number of populations and subpopulations of local suite of rare species and communities)
		Coverage of weeds (Percentage of target with a prevalence of management priority weed species)

Target	Attribute	Indicator
	Wildlife and Habitat Effectiveness	Shrub-nesting bird habitat (Percentage of target with highly suitable shrub-nesting bird habitat)
		Bear habitat quality (Trail density in critical bear foraging habitat)
Foothills and Montane Forest Openings	Vegetation Composition	Rare plants and communities (Number of populations and subpopulations of local suite of rare species and communities)
		Coverage of weeds (Percentage of target with a prevalence of management priority weed species)
	Wildlife and Habitat Effectiveness	Wild turkey habitat (Percent of target with highly suitable brood-rearing wild turkey habitat)
Mixedgrass Prairie Mosaic	Animal Species Composition	Percent of target with acceptable bird conservation score
	Habitat Effectiveness	Proportion of habitat blocks over 100 hectares with singing male grasshopper sparrows
	Vegetation Composition	Percent of target with prevalence of exotic species
Xeric Tallgrass Prairie	Animal Species Composition	Percent of target with acceptable bird conservation score
	Vegetation Composition	Percent of target with prevalence of exotic species
	Vegetation Composition	Size of dwarf leadplant (<i>Amorpha nana</i>) populations
	Vegetation Composition	Size of prairie violet (<i>Viola pedatifida</i>) populations
Mesic Big Bluestem Prairie	Animal Species Composition	Species richness of sensitive breeding birds
	Vegetation Composition	Percent of target with prevalence of exotic species

Target	Attribute	Indicator
Wetlands	Connectivity	Buffer width (vegetated area within 100m of the wetland)
	Vegetation Composition	Percent of target with prevalence of exotic species
Plains/ Foothills Transitional Riparian	Connectivity	Buffer width (vegetated area within 100m of a creek)
	Habitat Structure	Physical instream and riparian habitat metric
	Vegetation	Percent of target with prevalence of exotic species

Cultural Resources

Target	Attribute	Indicator
Paleontological Sites and Features	Condition	Undisturbed paleontological sites and features (Percentage of paleontological sites which remain in “Undisturbed” condition)
Aboriginal Prehistoric Archaeological Sites	Condition	Undisturbed prehistoric archaeological resources (Percentage of sites and isolated finds in “Undisturbed” condition)
Historic Archaeological Sites	Condition	Undisturbed historical archaeological sites (Percentage of sites which remain in “Undisturbed” condition)
Historic Buildings, Structures, and Objects (BSOs)	Integrity of high priority BSOs significant to the <i>nation</i> (see glossary for definition of integrity)	High priority BSOs in Excellent to Good condition (Percentage of high priority BSOs preserved in Excellent to Good Condition)
	Integrity of high priority BSOs significant to the <i>State</i> of Colorado (see glossary for definition of integrity)	High priority BSOs in Excellent to Good condition (Percentage of high priority BSOs preserved in Excellent to Good Condition)
	Integrity of high priority BSOs with <i>local</i> significance (see glossary for definition of integrity)	High priority BSOs in Excellent to Good condition (Percentage of high priority BSOs preserved in Excellent to Good Condition)

Recreational Resources

Target	Attribute	Indicator
Visitor Experience	Recreation Opportunities	There will be no indicators associated with this attribute.
	Access to Destinations	Undesignated Trails (Miles of undesignated trails in each management area.)
		Access Points (Percent of designated access points along the urban interface that are within ½ mile of another designated access point.)
		Key destinations served by a designated trail (Proportion of key destinations served by a designated trail in each management area.)
		Wayfinding signs at designated trail intersections (Percent of designated trail intersections with wayfinding signs.)
		Signs at the intersection of designated and undesignated trails (Percent of intersection between designated and undesignated trails that have signs.)
	Lack of Conflict	Visitor Conflicts (Percent of Visitor Survey respondents who answered “yes” to the question “Did you encounter any conflicts or unpleasant experience today?”)
		Recreation Conflicts (Percent of Visitor Survey respondents who answered “yes” to the question “Did you experience recreation conflict in the past year?”)
		Perception of conflict with dogs today (Percent of Visitor Survey respondents who answered “yes” for the question “Did you experience recreational conflict with dog walkers or dogs today?”)
		Perception of conflict with mountain bikes today (Percent of Visitor Survey respondents who answered “yes” for the question “Did you experience recreational conflict with mountain bikes today?”)

Target	Attribute	Indicator
Visitor Experience (cont.)		Perception of conflict with mountain bikes within the past 12 months (Percent of Visitor Survey respondents who answered “yes” for the question “Did you experience recreational conflict with mountain bikes within the past 12 months?”.)
		Perception of conflict with dogs within the past 12 months (Percent of Visitor Survey respondents who answered “yes” for the question “Did you experience recreational conflict with dogs within the past 12 months?”.)
		Visitor Displacement (Percent of Citizen Survey respondents that answered “less often” or “stopped entirely” to the question “Are you using a particular Boulder Open Space and Mountain Parks area less often or even stopped entirely?” when the reason was related to OSMP management.)
	Connection with the Land	Awareness of OSMP educational opportunities (Percent of Citizen Survey respondents who answered “yes” to the question “Were you aware of OSMP education opportunities?”.)
		Participation in OSMP educational opportunities (Percent of Citizen Survey respondents who participated in nature education and outreach opportunities conducted by OSMP at various locations.)
		Perception of OSMP interpretive programs (The average overall satisfaction score (1-10) on feedback forms given at interpretive hikes and presentations.)
		Volunteer Satisfaction (The average overall satisfaction score (1-5) on annual Volunteer Survey administered to OSMP volunteers.)
	Safety	Response time to safety calls (Percent of public safety service calls rangers responded to within 24 hrs of OSMP being notified.)
		Response time to hazards (Percent of hazards that are responded to within 72 hrs of OSMP being notified)
		Patrol frequencies (Percent of properties, trailheads & trails patrolled at established frequencies.)
		Perception of safety (Proportion of Visitor Survey respondents who said they felt “safe” during their visit to OSMP.)

Target	Attribute	Indicator
Visitor Experience (cont.)		Perception of rule enforcement (The average letter grade of Visitor Survey respondents to the question “enforcement of rules”.)
	Remoteness	Undesignated trails in Habitat Conservation Areas (Miles of undesignated trails in HCAs)
		Sign Structures in Habitat Conservation Areas (The number of sign structures/ trail mile in HCAs.)
		Sign Structures in Natural Areas (The number of sign structures/ trail mile in Natural Areas.)
Visitor Infrastructure	Condition of Concentrated Use Area	Service level compliance (Proportion of sites that meet the established Site Classification standard.)
		Infrastructure maintenance (Proportion of infrastructure maintained on established maintenance frequency.)
		Replacement of infrastructure (Percent of infrastructure replaced on schedule.)
	Condition of Trails	Trail Management Objective compliance (Percent of trail segments in each category – Very Good, Good, Fair Poor and Very Poor.)
		Trail Maintenance (Percent of trails that receive light maintenance each year.)

Appendix B

Summary Information on Legal Agreements and Past Planning Affecting West TSA Recreational Access

6/10/09

AGREEMENTS WITH STATE AND FEDERAL AGENCIES

Eldorado Canyon State Park

- City of Boulder (COB) and the State of Colorado (State) lease (2006-2016) to allow the State to develop, construct and manage the Cadillac Crag cliffs trail and climbing access corridor on Open Space and Mountain Parks (OSMP) land; corridor to have 1 access trail only; State to review and approve placement of any fixed climbing hardware, written notice of fixed hardware permits to COB; hiking, leashed dog walking, and rock climbing allowed

National Institute for Standards and Technology (NIST)

- “Shall be open to public access and use at all times, except when and to the extent that use is reasonable restricted by NIST and the City Manager to protect the public safety, ecology or wildlife or permit maintenance activities”
- “No road shall be constructed through the Protected Area connecting the property with the adjoining parcel of land currently occupied by the National Center for Atmospheric Research”
- NIST reserves right to use and maintain Kusch Road in a useable condition and to construct or improve the existing bridge over Skunk Creek, Kusch Road and bridge to remain in current state unless and until NIST Director determines for environmental or operational reasons that road must be paved or the bridge improved
- COB may install pedestrian and bicycle paths
- COB to maintain all paths and underpasses it constructs
- Federal government is proposing to build a security fence around the NIST complex, security fence might not be in the Protected Area; “additional deterrents, such as boulders or bollards, should be added along Broadway” which could be in Protected Area

National Center for Atmospheric Research (NCAR)

- Agreement for Hiking Access -- Bear Creek Canyon Trail primary connection on NCAR to OSMP, map of location of designated routes across NCAR, hiking and other pedestrian use only, dogs on leash, can use OSMP signs & trail management, parking lot informal trailhead, UCAR can deny access in event of emergency

ROAD ACCESS

Chapman Drive

- COB has right of access from Boulder Canyon to property for COB emergency and maintenance vehicles along Chapman Drive

- Flagstaff Assoc. v. COB, et al court ruling that Chapman Dr. is a private roadway and not a public highway

Cathedral Drive

- Easement 20' wide for ingress and egress to Flagstaff Assoc. from COB; COB may install and maintain gate and lock across easement at Cathedral Park
- Easement and right of way 60' wide to COB for the purposes of public, maintenance, patrol and emergency access and utilities; public hiking on easement has not been encouraged

Bison Drive

- Private road
- Easement and right of way 60' wide for ingress and egress, describes Bison Dr.
- Not COB plan to encourage public use of Bison Dr. "as a point of access to City Park land"
- To make Bison Dr. public the City "would have to give it to the County and we'd have to accept it as public [and the County is not] going to do that."

Kneale Road

- COB acknowledges and understands Kneale Road "is a gated, private road and that it is not available to or accessible by the general public;" "so long as Kneale Road remains a private road that is will not be available to or accessible by the general public"

ACCESS EASEMENTS

0 Linden Conservation & Access Easement

- COB "shall have the right to construct, maintain, repair, and replace trails for public pedestrian and bicycle access traversing the Property in an east-west and north-south orientation"

0 Linden Public Access Easement

- Easement for public access purposes, for the purposes of ingress and egress

Young Access Easement

- Easement 12' wide for the installation, construction, maintenance, repair, and use of a public pedestrian access way to OSMP

Alvin New

- Fire road/trail is platted 2nd St. and Hawthorn Court

Grape Lane

- Grape Lane is a private drive

Farrow Access Easement (Evergreen Ave. vacation)

- Pedestrian access and utility easement 10' wide to COB, south 10' of north half of vacated Evergreen Ave.
- Vacating portion of Evergreen Ave. to owner(s) of abutting land "reserving therefrom the north 10' of the vacated areas as a public access easement"
- Subdivider shall provide "a 3' wide, soft surface pedestrian path from the westerly edge of 3rd St., south of the Silver Lake Ditch, traversing the hillside to the north to the public access easement in vacated Evergreen Ave."

Calderon

- Fire access road within easement

Community Hospital

- Lower part of Sanitas Valley Trail is within street right of way for Mt. Sanitas Heights subdivision

Seventh Day Adventist

- Easement for access purposes to COB, no permanent structures or improvements, public use shall not be obstructed or interfered with, right to move and relocate easement reserved by Seventh-day Adventist Assoc. of Colorado subject to COB approval, Assoc. to pay for resurveying of easement and construction of comparable improvements within relocated easement

Macfarlan

- Easement and right of way for existing horse trail and footpath located within 250' of the centerline of Sunshine Canyon Rd. approximately 30 yards off the roadway
- Permanent 20' wide vehicle and pedestrian easements and right of way to COB for ingress and egress for official City purposes only, "access by the public in general shall specifically be prohibited"

Canyonside Subdivision (The Park) and Moniz

- No public access through Canyonside Subdivision to this parcel

Moniz

- "Should the City decide to establish any trail on this parcel it will use its best efforts to locate this trail so as to minimize the impact on the residential structures in the Canyonside Subdivision balancing that impact with the potential impact on wildlife specifically, and the resource in general."

Flagstaff subdivision (Douglas)

- Easement for installation, construction, repair, maintenance and reconstruction of a trail to COB not to exceed 8' wide for maintenance, patrol, and emergency access and public pedestrian access (no public bike or equestrian access)

Bunch and Johnson, Julia

- Easement and right of way agreement made between owners of Parcel 1, Parcel 2, Parcel 3, and Parcel 4; 60' wide for ingress, egress; private road; road has entry gate; COB to limit use of road "to vehicles owned by the City or its agents and will be restricted to parks management, patrol, and emergency purposes;"

SUBDIVISION SPECIFIC ACCESS ISSUES

Pine Brook Hills

South Cedarbrook Rd.

- South Cedarbrook Rd. easement to COB for emergency vehicular access limited to fire, ambulance, emergency rescue and law enforcement vehicles
- Boulder County Encroachment Permit for South Cedarbrook Road (Tract A), to allow public pedestrian and equestrian use and access, may be revoked with 30 days written notice to COB

Alder Lane

- Easement for emergency vehicular access to COB; limited to fire, ambulance, emergency rescue and law enforcement vehicles; across Tract "C" Pine Brook Hills Unit 7

Devil's Thumb

- Agreement in Settlement of Dispute Between the City of Boulder and The Devil's Thumb Homeowners' Association (DTHOA) -- DTHOA agrees to public access at #2, #3, and #9; #2, #3, and #9 "will not be developed into 'trail heads,' in that no rest room or picnic facilities will be constructed in conjunction with these Access Points ... City...shall not construct off-street parking facilities on or adjacent to these Access Points"

Shanahan Ridge

McStain/Shanahan #6

- COB approved permanent, split rail fences along OSMP boundary, OSMP requested Planning Department have Homeowners' Association (HOA) remove private property signs had installed by Lehigh Ave.

PAST PLANNING & MANAGEMENT ACTIONS

- 1985 -- Boulder Valley Comprehensive Plan (BVCP) Trails Plan amendments included "Dakota Ridge Pedestrian and Fire access system," public hearing to be held to approve design standards for each section prior to construction, Sunshine Canyon Dr. to Linden Ave.
- 1996 -- Mount Sanitas Management Process and Recommendations -- Mt. Sanitas area proposed management actions: maintain designated trails; reclaim selected undesignated trails and direct access to designated accesses -- Dakota Ridge Trail/Sanitas Valley Trail southern junction undesignated switchback trails (#1), undesignated trails between Valley View Dr. and Hawthorn St. (#2), undesignated trails in Mt. Sanitas Trail climbing area (#3), undesignated trails on Witemyer from Boulder Rural Fire Protection District property (#4); new trails -- designate and maintain Hawthorn Trail connection from Forest St. (north #7), designate and maintain Dakota Ridge Trail connection from Valley View Dr.(south #7); #8 Sunshine Canyon Dr. parking; undesignated trails to be addressed during Area Management Plan process #5 Quarry area and #6 Linden Ave.
- 1997 -- Eldorado Springs Transportation Taskforce recommended: no parking signs along State Hwy. 170 (Eldorado Springs Dr.); shuttle from Boulder to Eldorado Springs (Memorial Day to Labor Day); "lot full" signs at entrance to Eldorado Springs Dr.; and "shoulder trails" along Hwy. 170, 4' soft surface trail on one side and 4' hard surface trails on each side
- 1999 -- Boulder Mountain Parks Resource Protection and Visitor Use Plan -- Recommended a set of nine strategies to meet Plan goals: promote long-term sustainability of resources; utilize an adaptive natural resource management program; work with neighbors to maintain natural functions; utilize a system of management areas; manage recreation to protect natural resources and enhance visitor experience; improve interpretive, educational and research opportunities and engage the community in a cooperative stewardship program; improve the safety of Boulder Mountain Parks; improve core park management and maintenance; enhance park funding and staffing