

CITY OF FORT COLLINS NATURAL AREAS DEPARTMENT



FIRE MANAGEMENT PLAN

12/12/12

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Section 1: Background

1.1 Purpose of Fire Management Plan

The City of Fort Collins Natural Areas Department (NAD) Fire Management Plan (FMP) provides a comprehensive document guiding the use of fire on City of Fort Collins Natural Areas Department lands. The FMP will assist the Natural Areas Department in prioritizing and planning prescribed fires as the NAD works to use fire as an ecological restoration tool. Additionally, the FMP identifies wildland–urban interface areas wherein hazardous fuel reduction may be warranted.

A. Resource Management Planning

The Natural Areas Department recognizes the role prescribed fire can serve in an overall plan to increase biodiversity and native habitats. The FMP will allow the NAD to institute a systematic approach to using fire as one element of a broader plan to return disturbed lands back to native habitat and maintain existing healthy landscapes. The FMP derives overall programmatic guidance from the following:

- September 2003 “City of Fort Collins Natural Areas Program Interim Fire Management and Control Guidelines”
- 2004 Bobcat Ridge Natural Area Management Plan
- April 2005 Fossil Creek Natural Areas Management Plan
- March 2007 Foothills Natural Areas Management Plan
- September 2007 Soapstone Prairie Natural Area Management Plan
- November 2006 Poudre Fire Authority Community Wildfire Protection Plan
- August 2010 Colorado Air Pollution Control Division Applying Ozone Alert Information to Prescribed Fire Smoke Permits

In general, all management plans advise the use of prescribed fire to mimic natural disturbances for the purposes of maintaining a natural and diverse plant community. In addition prescribed fires can be used to help convert non-native old agricultural fields to native grasslands.

B. Wildland Urban Interface Identification

The Fire Management Plan also identifies Wildland-Urban Interface lands. The Natural Areas Department owns and manages over 182 miles of boundary adjacent to private property. 117 miles of this is in an area considered urban. While our natural areas are often resilient to fire, the management of fire on these lands must account for public perception and public safety. To this end, the FMP identifies specific wildland-urban interface areas and guides NAD staff to implement public safety actions in order to reduce the likelihood of fire crossing onto private property.

1.2 Fire Use: a Cooperative Approach

Successful planning and implementation of fire use requires a cooperative approach on the part of many agencies. The Natural Areas Department works closely with fire protection districts, public health agencies, and non-profits to ensure that fire objectives are met while ensuring public safety. The Nature Conservancy currently assists the NAD with fire operations planning and overhead personnel under a contract agreement. This cooperation allows the NAD to conduct prescribed fires

in multiple fire districts including the Poudre Fire Authority District, the Loveland-Rural Fire Protection District, and the Wellington Fire Protection District without requiring district resources. Public health agencies at both the state and county level require permits to ensure that air quality is not adversely affected by fire operations. Strict adherence to predetermined allowable weather conditions is required as burning in an urban area carries special concerns to public health and air quality.

1.3 Natural Areas Department Policy Statement on Wildland Fire and Use of Prescribed Fire

The September 2003 *City of Fort Collins Natural Areas Program Interim Fire Management and Control Guidelines* underscores that safety and the protection of human life, welfare and property are paramount. The Natural Areas Department recognizes that local fire protection districts Poudre Fire Authority (PFA), or their designee as the City's primary fire control and management agency.

To that end, it is understood that all fire activities (prescribed fires, controlled burns, and wildland fires) on City of Fort Collins Natural Areas Department urban lands and Gateway Natural Area are the jurisdiction of the Poudre Fire Authority. In the case of Bobcat Ridge and Soapstone Prairie, the overseeing jurisdiction is Loveland Fire and Wellington Fire District respectively. In these instances all fire activities shall be coordinated with them.

Other important policies adopted in the 2003 interim guidelines include:

- Adoption of National Wildfire Coordinating Group (NWCG) standards and practices for the control and management of all wildland fires unless otherwise directed by Poudre Fire Authority.
- Direction to Poudre Fire Authority and Poudre Emergency Communication Center to immediately notify Natural Areas Rangers Staff of any wildfire ignition on Natural Areas Department managed lands.
- Direction to all three jurisdictions to suppress all wildfires on natural areas especially those that (1) threaten public health, welfare, or adjacent private land; (2) threaten natural area structures including wooden fences, interpretive signs, kiosks, wildlife viewing platforms, restrooms, "Art in Public Places"; or (3) threaten known sensitive habitat (nests, dens, prairie dogs burrows, etc).
- Coordination of all prescribed fires with Poudre Fire Authority or their designee. Implementation of such fires shall carefully follow stated plans and not be conducted if objectives specified in the prescribed burn plan cannot be met. All required permits (State of Colorado, PFA, etc.) shall be acquired in advance of prescribed burning and all essential agencies and appropriate publics shall be notified.

A. Wildland Fire Suppression Policy

Natural Areas Department policy directs all fire agencies to suppress all wildfires on natural areas properties, especially those that (1) threaten public health, welfare, or adjacent private land; (2) threaten natural area structures including wooden fences, interpretive signs, kiosks, wildlife viewing platforms, restrooms, "Art in Public Places"; or (3) threatened known sensitive habitat (nests, dens, prairie dog burrows, etc).

B. Use of Prescribed/Controlled Burns

The City of Fort Collins Natural Areas Department in coordination with Poudre Fire Authority and The Nature Conservancy shall use prescribed fire as a vegetation management tool on City – managed natural areas. Prescribed fires may be used for the purpose of (but not limited to): fuels reduction, weed control, habitat enhancement, and biomass removal. Natural Areas Department staff will conduct all prescribed and controlled burns in accordance with required permits.

C. Personnel Training and Equipment Preparedness

The Natural Areas Department will ensure its capability to provide safe, effective fire management planning and coordination with appropriate fire agencies. All personnel participating in wildland fire activities are required to obtain a valid, nationally-recognized red card. The educational and physical requirements for red card certification and refresher training will be provided on an annual basis by Poudre Fire Authority and administered by the Natural Areas Department. Equipment and materials used in fire operations will be inventoried routinely and maintained in good and safe working condition.



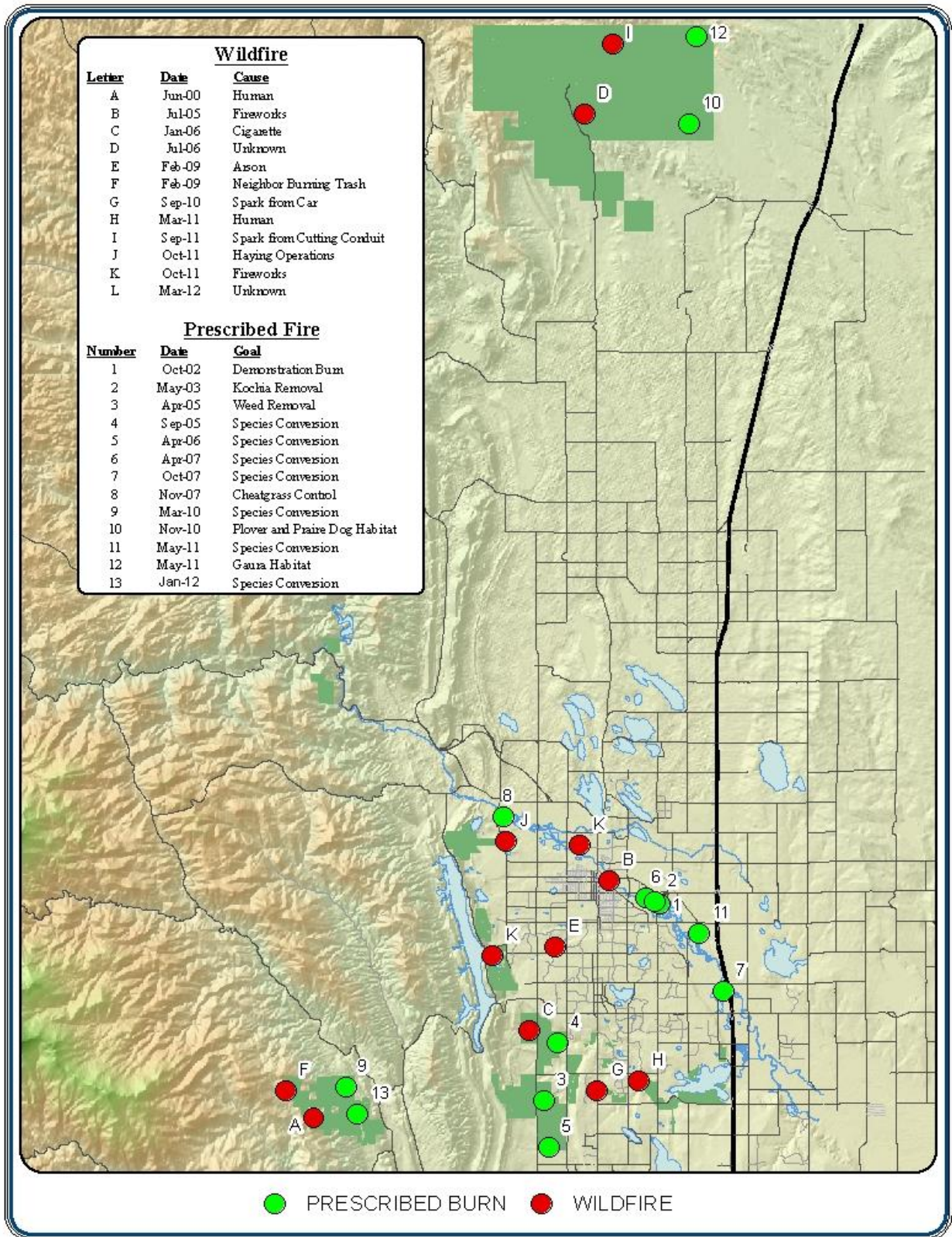


Figure 1. Natural Areas Department Wildland and Prescribed Fire History

1.4 Wildland-Urban Interface (WUI) Fire Management

The Natural Areas Department owns and manages over 10,000 acres within the urban growth area. As the population of the urban area continues to grow the risk fire presents to homes and property increases. The NAD seeks to identify those areas that present the greatest risk and mitigate conditions that present an increase in fire danger.

A. General Management Considerations

The Natural Areas Department will not engage in wildland fire suppression. Suppression of wildland fire is the responsibility of the responding fire protection district. Natural Areas Staff may provide assistance in accordance with Natural Areas guidance. The Natural Areas Department will work cooperatively with fire protection districts to mitigate the risk associated with the management of natural areas in a wildland-urban interface.

B. Wildland Fire Mitigation in the Urban Interface

A significant portion of Natural Areas properties are within the wildland urban interface. Recently adjacent homeowners have raised concerns regarding the potential of wildfire traveling from natural area properties to private lands. In response, natural area staff performed a system-wide wildfire risk assessments in 2010. Assessments included an in-field evaluation of environmental factors (fuel type, loading, continuity, and topography) that could contribute to fire spread. Additionally, staff considered visitor use at a site as a factor as human ignition rather than lightning ignition is most frequently the cause of a fire.

Upon the completion of the assessment the natural areas were assigned a hazard risk rating and classified into three categories as follows:

Low-Risk WUI Areas:

- No structures/residences present along boundaries
- Little or no fuels present at interface
- Adequate trails, drainages, roads, and other fuel breaks present
- Low visitor use

Medium-Risk WUI Areas:

- Presence of structures adjacent to natural area boundaries, regardless of fuel breaks
- Pasture between residence and natural area boundary fence
- Mow lines established by individual homeowners or HOAs
- Medium number of complaints
- Medium visitor use

High-Risk WUI Areas:

- High fuel loading / continuous fuels adjacent to residences/fences
- High visitor use
- Proximate to major roads
- >20% slope at interface
- High amount of complaints

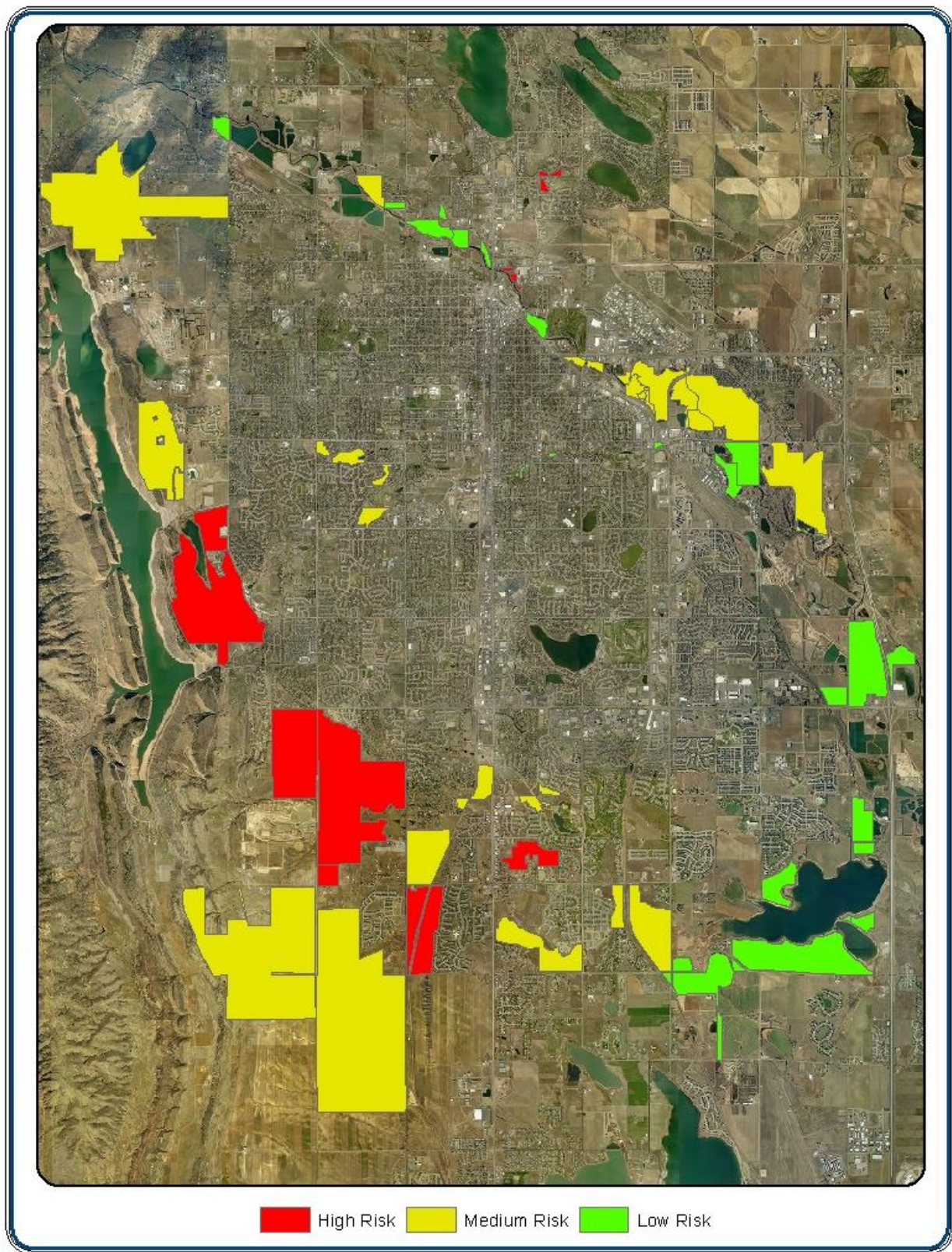


Figure 2. Natural Areas Wildland Urban Interface Risk Map

Natural Area Name	H	M	L	Natural Area Name	H	M	L
Arapaho Bend			x	North Shields Pond			x
Bobcat Ridge		x		Pelican Marsh		x	
Butterfly Woods			x	Picnic Rock		x	
Cathy Fromme Prairie	x			Pineridge	x		
Cattail Chorus			x	Prairie Dog Meadow	x		
Colina Mariposa	x			Prospect Ponds			x
Cottonwood Hollow			x	Red Fox Meadow		x	
Coyote Ridge		x		Redtail Grove		x	
Eagle View			x	Redwing Marsh	x		
Fischer		x		Reservoir Ridge		x	
Fossil Creek Reservoir			x	River's Edge			x
Fossil Creek Reservoir Regional Open Space			x	Riverbend Ponds		x	
Fossil Creek Wetlands		x		Ross		x	
Gateway	x			Running Deer		x	
Gustav Swanson	x			Salyer			x
Hazaleus		x		Soapstone Prairie		x	
Kingfisher Point		x		Springer		x	
Magpie Meander			x	Sterling		x	
Mallard's Nest			x	The Coterie			x
Maxwell		x		Two Creeks		x	
McMurry			x	Udall			x
Nix		x		Williams			x

Figure 3. Natural Areas WUI Risk Categories (High, Medium, Low)

In order to reduce the risk of wildfire spread and address the concerns of neighbors, the Natural Areas Department will maintain fire mitigation lines along pre-identified boundaries. These fire mitigation lines exist on both high and medium risk natural areas. The Natural Areas Department will initiate the maintenance of these lines during any Open Fire Ban as declared by the Larimer County Commissioners. It is important to note that these fire mitigation lines are intended solely to slow the progress of fire across the landscape. These lines are not designed to extinguish a fire moving towards values at risk.

As of 2012 the following fire mitigation mow lines are being maintained by natural areas staff:

- Pineridge – Along the north boundary of Burns Ranch HOA
- Cathy Fromme – North boundary west of Taft Hill Road along Taft Canyon HOA
- Colina Mariposa – East boundary on ridge along extended fence line
- Prairie Dog Meadows – East boundary along Brittany Knolls HOA, West boundary along Huntington Hills West HOA
- Fossil Creek Wetland – West boundary along Stanton Creek HOA

While conducting WUI assessments staff noted that several HOAs and homeowners had established mowed lines along the boundaries of natural areas. It is important to note that these mowed lines

could change on a yearly basis and continued monitoring will be required. See Appendix A for maps of Fire Mitigation mow lines.

The following areas have mow lines maintained by HOA's and homeowners:

- Pelican Marsh – North boundary along Provincetowne HOA
- Redwing Marsh – South boundary of northern section of the natural area
- Coyote Ridge – East boundary along Registry Ridge HOA.

1.5 Administration of Prescribed and Controlled Burns

The Natural Areas Department will conduct burn operations under the jurisdiction or authorization of a variety of agencies including the Larimer County Department of Health and Environment, local fire districts, and/or the Colorado Department of Public Health and Environment. All prescribed fire and agricultural burns conducted by the Natural Areas Department require a general open burn permit from the local fire jurisdiction and/or local or state health department. The jurisdiction and permitting authority differs according to the type and/or size of the burn project.

A. Prescribed Fire

A prescribed fire project is the largest, most complex, and most highly regulated burn project the Natural Areas Department will conduct. A prescribed fire requires significant overhead positions (i.e. NWCG Qualified Burn Boss and associated positions) as well as a formal prescribed fire plan including detailed information on operations and risk mitigation tactics. The NAD works closely with The Nature Conservancy's Southern Rockies Wildland Fire Module to carry out larger, more complex prescribed fires that cannot be achieved by NAD staff alone. This on-going partnership is crucial to the success of the NAD prescribed fire program. The Natural Areas Department can independently carry out small agricultural burns (ditch burns, small-scale weed burning, etc.) as defined by the State Pollution and Air Control Division, but is largely dependent on Poudre Fire Authority, Larimer County Emergency Services, and The Nature Conservancy for execution of the prescribed fire program.

B. Open Burning/Agricultural Burns

The Natural Areas Department will conduct small (less than 10 acres of grassland) agricultural burn projects. The NAD works closely with Poudre Fire Authority to ensure that conditions are appropriate for such burns and that smoke impacts are minimized. These projects often succeed in removing undesirable vegetation species, creating conditions for improved vegetation management, and clearing debris from agricultural irrigation ditches. .

C. Burn and Smoke Permit Requirements

All fires conducted by the Natural Areas Department must obtain a required permit from the fire protection district within which the project area lies. All urban properties, including Gateway Natural Area, require a permit from PFA. Projects within Bobcat Ridge Natural Area require a permit from the Loveland Rural Fire Protection District. Soapstone Prairie Natural Area is within the Wellington FPD. The permit process for each of these district starts with the Larimer County Department of Health (LCDH). As of 2012 the LCDH website is point of contact for obtain required smoke permits, the LCDH then routes the permit request to the appropriate fire protection district.

As of 2011, small-scale prescribed and agricultural burns within PFA's jurisdiction have been authorized through a single, annual burn permit for all properties managed by the Natural Areas

Department. The annual PFA permit authorizes burns ten acres or less in grass fuels or five or less acres in non-grass fuels. Any burn not falling within these limits require a separate permit. All controlled burns greater than ten acres in grass fuels and greater than five acres in non-grass fuels are required issuance of a Colorado Department of Public Health and Environment air quality smoke permit. The following is a binomial key to assist in understanding permit requirements:

Permit Requirement Key

1. Is the controlled burn intended to facilitate agricultural production?
 - a. *Yes – Larimer County Open Burn Permit required; Colorado DPHE Air Quality Smoke Permit NOT required*
 - b. *No – Go to Question 2*
2. Is the controlled burn for grassland or forest management, including vegetative, habitat, or fuel management AND includes only clean, unprocessed wildland fuels?
 - a. *Yes – Go to Question 3*
 - b. *No – Contact Colorado DPHE Smoke Management Program*
3. Is the project small enough for general open burning? Piles: <50 piles and cold by sunset . . .
. . . . Broadcast < 10 acres of grass or < 5 acres of any other fuel type.
 - a. *Yes – Larimer County Open Burn Permit required*
 - b. *No - Larimer County Open Burn Permit required; Colorado DPHE Air Quality Smoke Permit required*

Permit Requirement and terms defined by the State of Colorado

The following terms were formulated from terms defined from the Colorado Department of Public Health and Environment. <http://www.cdphe.state.co.us/ap/smoke/Index.html>

Prescribed Fire: These are fires intentionally used for grassland or forest management, including vegetative, habitat, or fuel management. Prescribed fire does not include open burning in the course of agricultural operations. A prescribed fire is a type of open burn, except the size limits have exceeded that of the open burn threshold.

- Piles: >50 piles in one burn period and cold by sunset.
- Broadcast: >10 acres of grass fuels OR >5 acres of non-grass fuels.

Examples of Prescribed Fires: vegetation

- 400-acre burn in order to improve habitat for conservation targets at Soapstone Prairie.
- 50-acre burn carried out to clear vegetation in order to initiate a restoration site.

Agricultural Burn: Regulation 9 of the Department of Public Health and Environment Colorado Air Quality Control Commission defines agricultural open burning as 'the open burning of cover vegetation for the purpose of preparing the soil for crop production, weed control, maintenance of water conveyance structures related to agricultural operations, and other agricultural cultivation purposes. Controlled burns conducted for agricultural operations are exempt, and do not require a state permit.

Examples of agricultural burns:

- Removal of stubble remaining from crops after harvest or from crops rendered useless due to the destruction caused by severe weather or the infestation of insects or disease.
- Removal of brush for land clearing operations.
- Removal of tree trimmings from commercial orchards.
- Ditch burn
- Use of fire to remove debris impeding agricultural irrigation water

Open Burn: Open burning is the burning of any material or substance, including rubbish, wastepaper, wood, vegetative material or any other flammable material, in the ambient air on any open premises, or any public street, alley, or other land adjacent to such premises, or in a receptacle where emissions are released directly into the air without passing through a chimney or stack.

Generally, anytime you light a fire outdoors, you are open burning. Size limits are as follows:

- Piles: <50 piles in one burn period and cold by sunset
- Broadcast: grass burns ≤ 10 acres in a burn period.

Examples of Open Burns:

- Thatch row burn
- Broadcast prescribed fire ≤ 10 acres of grass fuels OR ≤ 5 acres of non-grass fuels.



Section 2: Ecology and Fire Effects

2.1 Ecology of the Northern Front Range

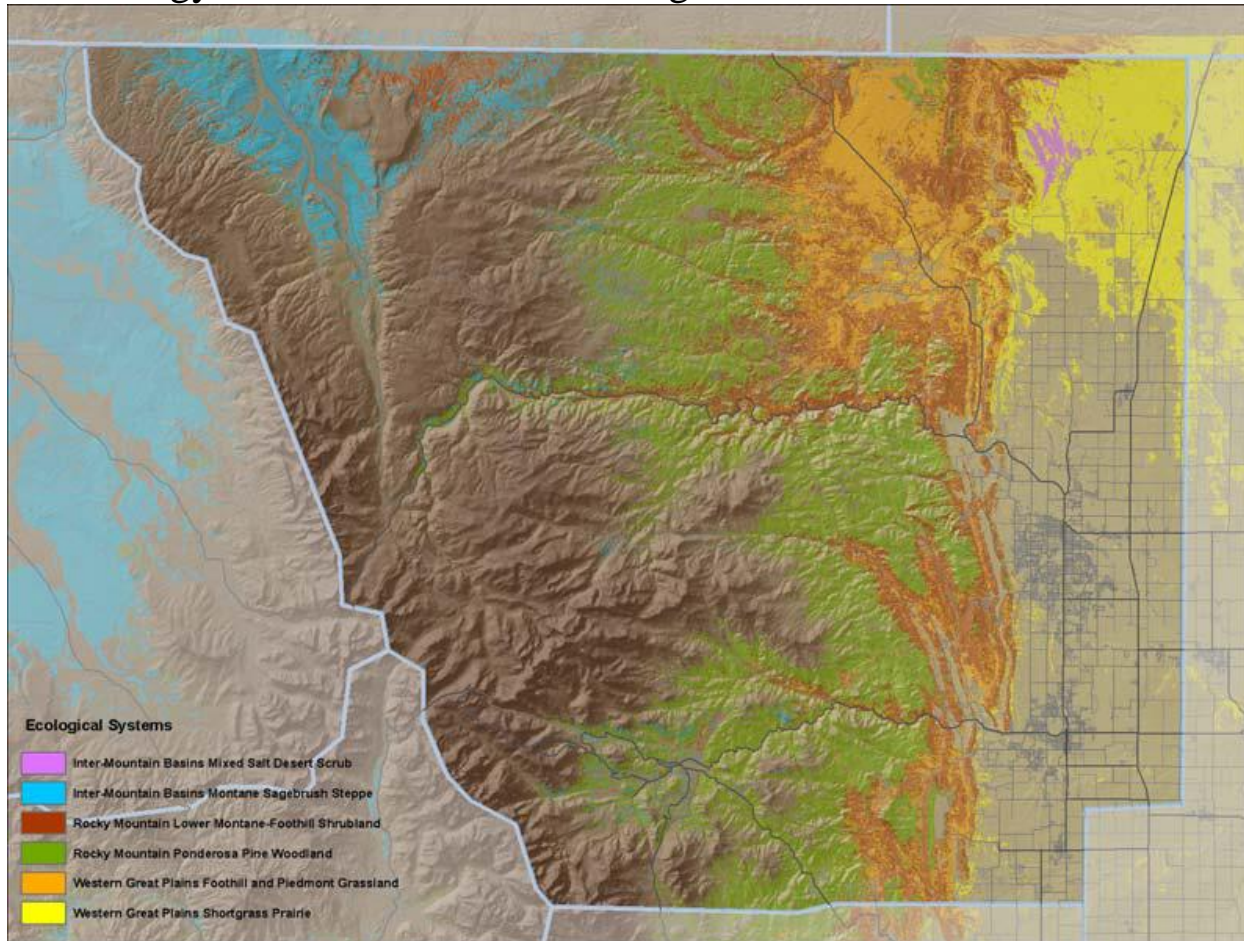


Figure 4. Northern Front Range Vegetation Types¹

The City of Fort Collins Natural Areas Department owns and manages lands that exist in a transition zone between the Rocky Mountains and the Great Plains. Each vegetation community type interacts with fire uniquely both in the historical role of fire and in how fire can be used as an element of the restoration process.

A. Grasslands

Grasslands in the Fort Collins region generally fall into lower elevation, short-structured shortgrass prairie or the mid-structured foothills grassland. The Central Shortgrass Prairie system occupied the low, rolling topography east of the Rocky Mountains in Colorado. This system is defined by sod-forming short grasses, especially buffalograss (*Buchloe dactyloides*) and blue grama (*Bouteloua gracilis*), although tallgrass and mixed grass species may be locally present, especially where there is more moisture. This system occurs where there is relatively little moisture (due to the rainshadow of the mountains to the west) and has been maintained by grazing. Within the rain shadow of the Rocky Mountains, the shortgrass prairie covers much of the rolling topography. This is an ecological system driven by the general lack of moisture, cyclical severe droughts, grazing, and occasional fire.

Historically dominated by buffalograss and blue grama, non-native grasses such as smooth brome (*Bromus inermis*) introduced into the system for agricultural purposes now dominate the majority of the grass uplands.

Fire records in the shortgrass prairie are difficult to determine due to the absence of tree ring data. However, the fire return interval for short grass prairie is generally understood to be every 3-35 years². The Natural Areas Department recognizes an opportunity to use fire to assist in maintenance of healthy grassland species and to initiate restoration of native grasslands.

Grasslands occurring along the foothills fall into the *Lower Montane-Foothills Shrubland* community profile. The foothills grassland system is a highly altered system due to a long history of conversion to row-crop agricultural at the bottom edge, and the continual encroachment of shrub and forest lands from the top edge. The grassland valley at Bobcat Ridge is an excellent example of foothills grassland that was historically plowed and seeded to non-native smooth brome. This area is a current focus of restoration using prescribed fire.

B. Shrublands and Woodlands

Lower-Montane Foothill Shrublands are typically found on dry slopes within the hogback system and set between the grasslands to the east and forests to the west. This shrubland community is dominated by mountain mahogany (*Cercocarpus montanus*), three-leaf sumac (*Rhus trilobata*), and antelope bitterbrush (*Purshia tridentata*). Use of prescribed fire in this community is complex due to the fuel loading, the topography, and the inability to employ alternative restoration treatment measures.

Salt Desert Scrub

This is a system typified by salt-tolerant species such as four-winged salt bush (*Atriplex canescens*) and winterfat (*Krascheninnikovia lanata*), as well as a suite of native grasses. Due to the limited nature of this community in Larimer County and the uniqueness of the community within natural areas, careful consideration will be taken prior to using fire.

Ponderosa Pine Woodland

Although the ponderosa pine (*Pinus ponderosa*) woodland is the most common woodland system in Larimer County, it comprises a relatively small proportion of Natural Areas vegetation communities; primarily in the foothills properties and regional properties. Ponderosa pine grows on warm dry slopes, is intolerant of shade, and grows well in full sun from bare mineral soil for germination and establishment (Mutel and Emerick 1992). Historically Ponderosa Pine forests were characterized by widely spaced trees within grassland parks or shrublands. A high frequency, low intensity surface fire regime promoted the forest structure described above. Fire return intervals in this ecosystem are estimated between 5 and 20 years³. A moist tree core and fire-resistant bark has provided Ponderosa Pine with a defense mechanism that has allowed it to persist in this disturbance regime. Well-spaced seedlings and pole-sized trees will survive a low-intensity fire whereas intense fires can cause mortality of these size classes in contrast. Data suggests that past land uses in the region combined with regional changes in local climate are contributing to a shift in stand structure which exhibits increasingly dense stands with a tighter canopy structure and proliferation of an understory growth^{4, 5}.

Riparian Woodland

The Lower Montane Riparian Woodland system occupies the immediate floodplain areas adjacent to river and stream drainages in Larimer County. Riparian woodlands are characterized by a canopy of narrowleaf cottonwood (*Populus angustifolia*) and occasionally Plains cottonwood (*Populus deltoides*) over groves of willows (*Salix* spp.), tall shrubs (*Prunus* sp, box elder maple, etc.), and a surface cover of non-native grasses and mesic forbs. While dominated by narrowleaf and plains cottonwoods, additional species have colonized a river bottom that is in a state of continual hydrologic change due to diversions and flood protection projects. Historically, these forests were shaped by regular flood events. Fuel loads would have been minimal as debris was entrained and transported from the floodplain into the channel during periods of flooding. Virtually no research has been conducted on the fire history in riparian cottonwood forests along the Front Range, research done in the Northern Great Plains estimate a fire return interval in cottonwood forests between 20 to 30 years. Fire most likely occurred in the late growing season where the fuels in the understory are dry enough to burn⁶.

C. Emergent and Riverine Wetlands

Emergent wetlands comprising of wet meadows, groundwater seeps and depressional areas and wetland areas around the margin of gravel ponds are found throughout Natural Areas properties. Fire incidence in wetlands and riparian areas depends on fuel loading, continuity, and drought conditions. It is likely that fire regimes in wetlands and riparian areas are dictated by the fire regimes of surrounding upland communities. Fire may be beneficial to allow certain plants access to sunlight and nutrients. An example of this Ute ladies' tresses (*Spiranthes diluvialis*), which is a Federally Threatened wetland plants found on some Natural Areas properties.

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2.2 Fire effects of common native and non-native species

Below is a list of native and non-native plant species that the NAD would utilize prescribed fire to modify the plants population. This is not a comprehensive list and does not include all plant species that prescribed fire could be used for. This list describes associated fire effects of each plant, for example how does fire kill the plant and what will the plants response to fire be. All information shown below was gathered from the United State Department of Agriculture Fire Effects Information website (<http://www.fs.fed.us/database/feis/plants/index.html>).

A. Fire Effects of Common Non-Native Species

Reed canary grass (*Phalaris arundinacea*) – This plant is top- killed by fire however, studies have shown the rhizomes likely survive most low – to moderate severity fires. Studies and observations indicate that reed canary grass sprouts after fire suggesting that its rhizomes likely survive the fire if they are buried deep enough in the soil.

Cheatgrass (*Bromus tectorum*) – Live cheatgrass plants are susceptible to heat kill however they do not burn well while green. When cheatgrass plants are dry enough to burn they are dead, and have already set seed. The seeds can survive low severity fires if they are buried deep enough into the litter and duff layers. The amount of litter and duff left after a fire is a good indicator of how much cheatgrass seed will survive. Cheatgrass establishes after fires through a seed bank or transported seeds.

Crested wheatgrass (*Agropyron desertorum*) – Researchers characterize crested wheatgrass as "slightly damaged" or "undamaged" by prescribed fire since coarse stems and sparse leafy parts inhibit heat transfer down into the culms or soil. Crested wheatgrass has been used as "greenstrip" or fuel breaks in semi-arid rangelands to help control wildfire. Studies have shown fall burns will reinvigorate the stand while spring burns have decreased its populations.

Smooth brome (*Bromus inermis*) – Most smooth brome cultivars are rhizomatous and survive fire by sprouting from rhizomes. Research has shown that prescribed fire has had only marginally effects on reducing the population while burning in late spring. Early season or late season (late summer – fall) burns have increased smooth brome production especially when it has become sod-bound.

B. Fire Effects of Common Native Species

Western wheatgrass (*Pascopyrum smithii*) – Western wheatgrass is generally unharmed by fire and cover usually increases or changes little after fires. Fall burns can stimulate productivity of western wheatgrass, but sometimes to a lesser degree than can spring burns.

Rabbitbrush (*Chrysothamnus spp.*)– Rabbitbrush is often top-killed by fire, because of relatively high resin content, both foliage and stems may be consumed, even at fairly high moisture content. Mortality after fire is variable but is often very low Fire effects may depend on subspecies, season of burn, and condition and vigor of plant. After fires with high fireline intensities or a long residence time, buds located at or near the root crown may be killed, limiting ability to resprout. Recovery of rabbitbrush after fire is described as "rapid" or "very rapid. Recovery may occur by means of vigorous sprouting or through an abundance of wind-dispersed seed. Resprouting may be aided by

the release of nutrients after fire. Most postfire sprouting is epicormic (stem) and not root or root crown sprouting. Sprouting response depends on burning conditions, weather, season of burn, subspecies, and ecotypic variation.

Blue grama (*Bouteloua gracilis*)—Blue grama is top-killed and has variable fire tolerance; it has fair tolerance when dormant but experiences some damage if burned during active growth, especially during drought. Fire favors blue grama, generally increasing its occurrence, production, and percent cover. Blue grama frequency may increase but productivity may decrease for a few years following fire. Blue grama has on-site surviving rhizomes that may be stimulated by fire. Response of blue grama to fire may be dependant on precipitation following the fire; "wet" years tend to increase blue grama yield. Blue grama seed and seedstalk production may also be stimulated by fire.

Mountain mahogany (*Cercocarpus montanus*) – Mountain mahogany is typically top-killed by fire. "Light" burning or scorching is considered sufficient to top-kill shrubs; however, some report that partially burned shrubs have survived. True mountain-mahogany sprouts from the root crown and/or from rhizomes following fire. Sprouts from rhizomes may appear ~3 feet (1 m) away from the main stem. Postfire sprouting is often described as "vigorous" and "rapid" and is common under a range of fire regimes. Fire severity, degree of soil heating, soil and duff moisture, and the physiological stage of plant development will likely affect the post-fire sprouting response.

2.3 Targeted Plant Species for Prescribed Fires

Below is a list of plant species both native and non-native; that natural area’s staff has determined that prescribed fire can either help eradicate in the case of non-native species or help enhance or maintain in the case of native species. Next to the plant name is the desired outcome for that plant and the strategy in which to achieve that desired outcome.

Plant Name	Desired Outcome	Strategy
<i>Gaura neomexicana</i> spp. <i>Coloradensis</i> Colorado butterfly plant	Improve Habitat	Reduce aerial coverage and remove exotic species like Canada Thistle therefore allowing the Colorado butterfly plant to better compete for sun and soil nutrients.
<i>Pascopyrum smithii</i> Western wheatgrass	Increase Population	Use dormant season burns in conjunction grazing to rejuvenate these grasses
<i>Krascheninnikovia lanata</i> winterfat	Increase Population	Use dormant season burns in conjunction grazing to rejuvenate these grasses
<i>Atriplex canescens</i> Fourwing saltbush	Increase Population	Use dormant season burns in conjunction grazing to rejuvenate these grasses

<i>Bromus tectorum</i> cheatgrass	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread of cheat grass
<i>Linaria dalmtica</i> Dalmatian Toad flax	Reduce and ultimately eliminate	Until more research and or a test fire is done in mountain mahogany fire should be excluded from this area. If and when it's found that fire is not detrimental to the mahogany it could be useful in conjunction with sheep.
<i>Bouteloua gracilis</i> Blue grama	Increase Population	Use fire to mimic a natural disturbance to create openings for the plant to grow
<i>Buchloe dactyloides</i> Buffalograss	Increase Population	Use fire to mimic a natural disturbance to create openings for the plant to grow
<i>Bouteloua curtipendual</i> Sideoats grass	Increase Population	Use fire to mimic a natural disturbance to create openings for the plant to grow
<i>Bromus inermis</i> Smooth brome	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread of smooth brome
<i>Agropyron cristatum</i> Crested wheatgrass	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread of crested wheatgrass
<i>Spiranthes diluvialis</i> Ute's ladies-tresses orchid	Improve Habitat	Reduce aerial coverage and remove exotic species therefore allowing the Ute's ladies-tresses orchid plant to better compete for sun and soil nutrients.
<i>Convolvulus arvensis</i> Bindweed	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to remove the plant
<i>Aegilops spp</i> Jointed goatgrass	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread jointed goatgrass
<i>Kochia scoparia</i> Kochia	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread kochia
<i>Phalaris arundinacea</i> reed canary grass	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread reed canary grass

Figure 5. Targeted Plant Species for Prescribed Fires

Section 3: Fire Management Zones and Units

3.1 Development of Fire Management Zones

Description of Fire Management Zones

All Natural Areas properties are assigned to a specific Fire Management Zone (FMZ) and further divided into Fire Management Units (FMU's). Five Fire Management Zones were created and assigned based on geographic location, political boundaries and common resource characteristics.

Natural Areas Department Fire Zones:

- Soapstone Prairie Fire Zone
- Foothills Fire Zone
- Southwest Grasslands Fire Zone
- South Central Grasslands Fire Zone
- Southeast Grasslands Fire Zone



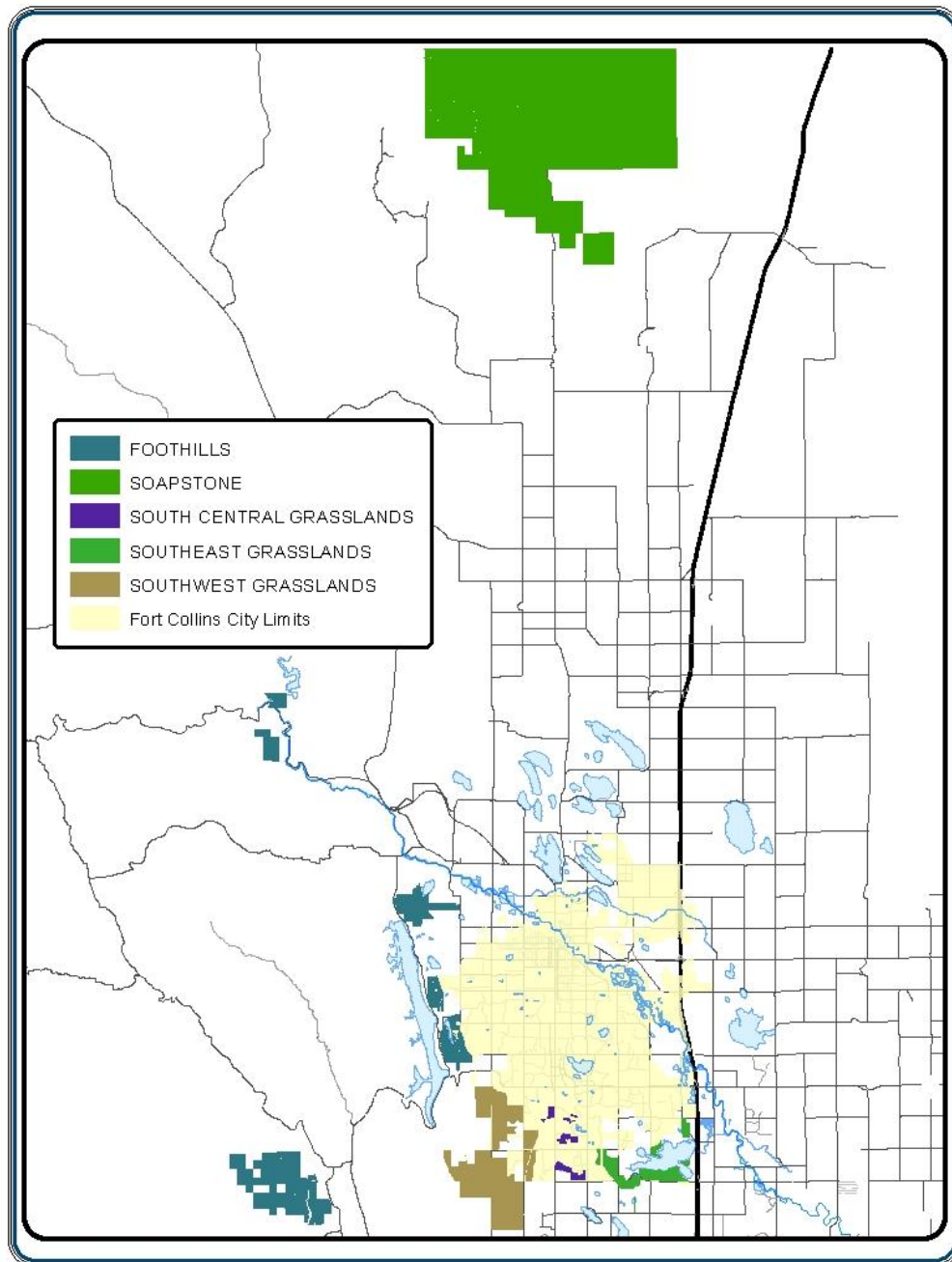


Figure 6. Natural Areas Department Fire Zones

The natural areas along the **Poudre River** corridor are not addressed in this fire management plan. A major goal for most of the natural areas along the river is to remove the non-native grass species. This may prove to be difficult because most of these grasses are in the understory of cottonwood stands. A trial plot has been established to examine the use of burning and herbicide application to remove smooth brome. Other factors such as lack of a native seed source, reduced spring flooding and/or very dry summers may factor to the lack of native plants reestablishment. One positive outcome of the prescribed fire was that it was conducted in a manner which did not harm the surrounding cottonwoods.

3.2 Development of Fire Management Units

A. Description of Fire Management Units

The fire management units generally were formed based on common geography, resource characteristics, and areas with common restoration objectives.

B. Fire Management Units without Restoration Plans

Not all of the lands within the Fire Management Units have underlying ecological restoration plans. Before burn plans are prepared or implemented, efforts should be made to determine if a restoration plan or goals for the area exists. This is essential as prescribed burns alone often will not accomplish resources objectives. Additional treatments like herbicide application, seedbed preparation and drill seeding used in conjunction with prescribed fire most often result in successful outcomes.

C. Objective and Strategies

Each fire management zone has overarching objectives that can be applied to the whole zone. To achieve these objectives natural areas staff determined that there were seven different ways prescribed fire could be used. They are as follows:

1. **Initiate Restoration Process** – Prescribed fire will be utilized as the first tool to be used in the process of species conversion from non native species to native. This step can be followed by either herbicide application or seed plantings or both. It is important to note that this whole process may have to be repeated until process of conversion is complete.
2. **Specific timing burn used to affect species composition** – Prescribed burns may be used to enhance growth, vitality, and populations of plants by burning at specific times during the year. Cool season grasses will benefit from burns in the fall and warm season grasses will benefit from burns during the spring.
3. **Specific timing burn to maintain health and vigor of existing composition** – Prescribed fire can be used to mimic natural disturbances to maintain the health and vigor of an ecosystem and to maintain species diversity.
4. **Alter vegetation structure to support specific faunal species** – Prescribed fire can be used to improve habitat for specific plants and animals. In many cases this is done for rare or threatened species that are currently being out competed by other plants and animals.
5. **Remove biomass to enable better on-going vegetation management** – In areas where complete species conversion is not necessary because of great numbers of native species use prescribed fire in the smaller scale in order to increase the chances of native species to take hold.
6. **Assist with grazing management** - Based on natural areas staff observations we have seen that cattle along with Antelope have been attracted to recently burned areas. Therefore we can use prescribed fire to help move cattle around by burning in areas where the cattle have not grazed in the recent years. This will help ensure that the pastures are more evenly grazed. This process will consider grazing rotations and drought conditions to ensure there is enough food for the grazing animals.

7. Fire Exclusion – At this time prescribed fire would not be a recommended tool for managing a specific site. There are some areas where fire would be detrimental to the existing plant or animal community.

Each fire management unit was then assigned one or more of the 7 different prescribed fire methods. These assignments can be found in tables listed with each fire management zone.

However, during the examination of the fire management units some of the units had strategies unique to only them. These strategies and other notes for individual fire management units can be found in section f of their respected fire management zone. Those units not found in section f did not have unique strategies or notes.

As shown above in section 2.2 natural area staff have identified 15 different target species that prescribed fire could either enhance in the case of native species or help convert in the case of non-native species. The table below now shows these plants and their associated fire management unit where they will be targeted.

D. Targeted Plant Species for Prescribed Fires

Plant Name	Desired Out Come	Strategy	Fire Management Unit
<i>Gaura neomexicana</i> spp. <i>Coloradensis</i> Colorado butterfly plant	Improve Habitat	Reduce aerial coverage and remove exotic species like Canada Thistle therefore allowing the Colorado butterfly plant to better compete for sun and soil nutrients.	SSN FMU 01, 02, 03, 04, 05,
<i>Pascopyrum smithii</i> Western wheatgrass	Increase Population	Use dormant season burns in conjunction grazing to rejuvenate these grasses	SSN FMU 01, 02, 03, 04, 05, 06, 07, 08, 09 CFP FMU 04 FCR FMU 03
<i>Krascheninnikovia lanata</i> winterfat	Increase Population	Use dormant season burns in conjunction grazing to rejuvenate these grasses	SSN FMU 01, 02, 03, 04, 05, 06, 07, 08, 09
<i>Atriplex canescens</i> Fourwing saltbush	Increase Population	Use dormant season burns in conjunction grazing to rejuvenate these grasses	SSN FMU 01, 02, 03, 04, 05, 06, 07, 08, 09
<i>Bromus tectorum</i> cheatgrass	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread of cheat grass	SSN FMU 10, 11, 12, 13, 14, 15, 16 RRN FMU 01, 09, 10 CRN FMU 05, 06, 08 BCR FMU 01,

			03
<i>Linaria dalmtica</i> Dalmatian Toad flax	Reduce and ultimately eliminate	Until more research and or a test fire is done in mountain mahogany fire should be excluded from this area. If and when it's found that fire is not detrimental to the mahogany it could be useful in conjunction with sheep.	SSN FMU 10, 11, 12, 13, 14, 15, 16
<i>Bouteloua gracilis</i> Blue grama	Increase Population	Use fire to mimic a natural disturbance to create openings for the plant to grow	RRN FMU 03 CFP FMU 04 FCR FMU 03
<i>Buchloe dactyloides</i> Buffalograss	Increase Population	Use fire to mimic a natural disturbance to create openings for the plant to grow	RRN FMU 03 CFP FMU 04 FCR FMU 04
<i>Bouteloua curtipendul</i> Sideoats grass	Increase Population	Use fire to mimic a natural disturbance to create openings for the plant to grow	RRN FMU 03 CFP FMU 04 FCR FMU 03
<i>Bromus inermis</i> Smooth brome	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread of smooth brome	RRN FMU 04, 05 CRN FMU 03, 04 CMN FMU 01, 02 HAZ FMU 01 RTG FMU 01 FCR FMU 01, 02 BCR FMU 03, 05, 06
<i>Agropyron cristatum</i> Crested wheatgrass	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread of crested wheatgrass	RRN FMU 05 CRN FMU 03 CMN FMU 01, 02 HAZ FMU 01 RTG FMU 01 FCR FMU 01, 02 BCR FMU 03, 05
<i>Spiranthes diluvialis</i> Ute's ladies-tresses orchid	Improve Habitat	Reduce aerial coverage and remove exotic species therefore allowing the Ute's ladies-tresses orchid plant to better compete for sun and soil nutrients.	RRN FMU 04, 05
<i>Convolvulus arvensis</i> Bindweed	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to remove the plant	CFP FMU 03

<i>Aegilops spp</i> Jointed goatgrass	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread jointed goatgrass	CRN FMU 04, 06, 08
<i>Kochia scoparia</i> Kochia	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread kochia	CRN FMU 04
<i>Phalaris arundinacea</i> reed canary grass	Reduce and ultimately eliminate	Use prescribe fire in combination of mowing and herbicides to slow the spread reed canary grass	BCR FMU 06

Figure 7. Targeted Plant Species for Prescribed Fires with Fire Management Units



3.3 Fire Management Zones

Soapstone Prairie Fire Management Zone

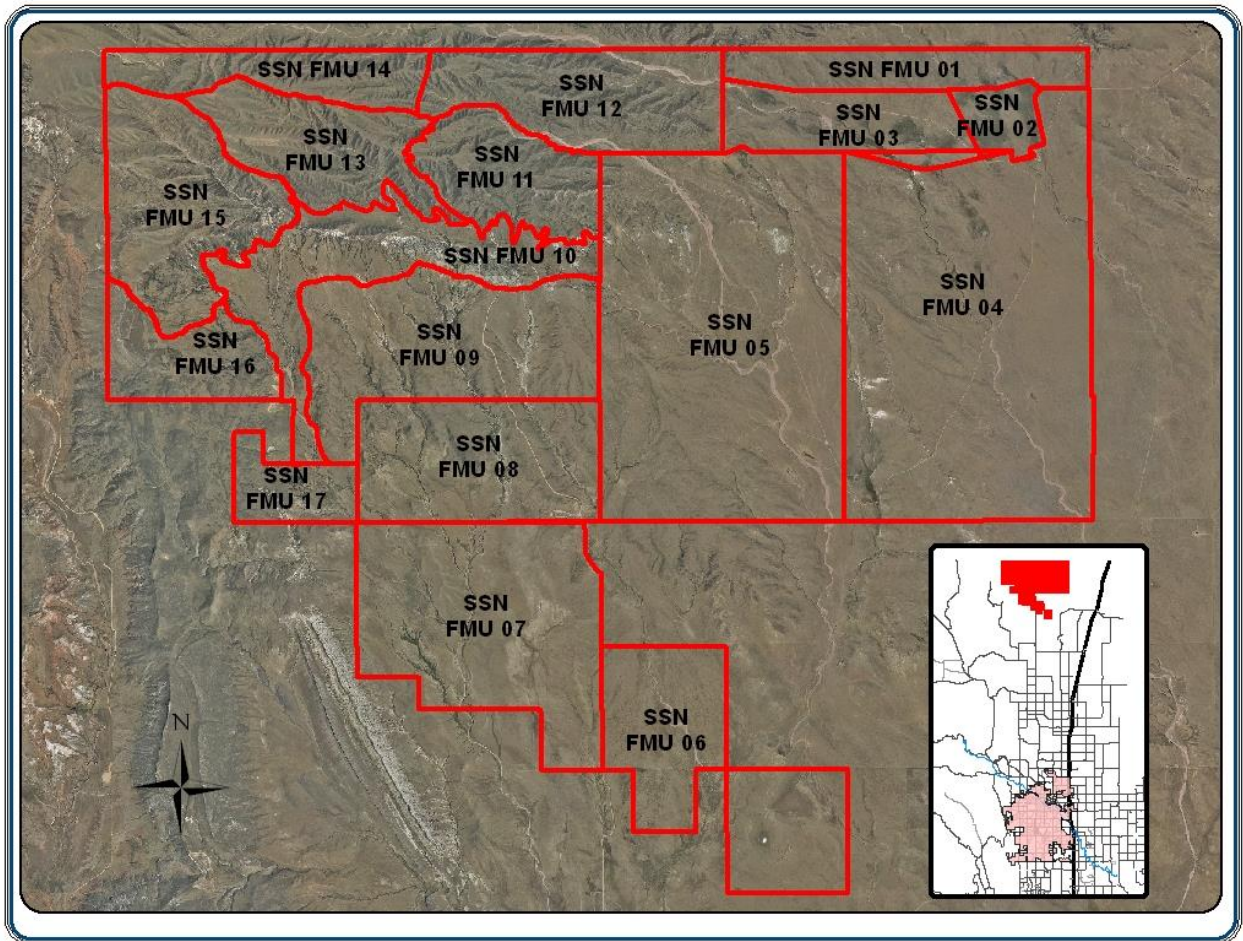


Figure 8. Location of the Soapstone Prairie Fire Management Zone

A. Location

Soapstone Prairie Fire Management Zone (FMZ) includes Soapstone Prairie Natural Area, Bernard Ranch and Round Butte Ranch properties. This FMZ is located in northern Larimer County, approximately 25 miles north of Fort Collins, five miles west of Interstate 25, and adjacent to the eastern border of Larimer County's Red Mountain Open Space. Soapstone Prairie Fire Management Zone is subdivided into 17 Fire Management Units.

B. Characteristics

Soapstone Prairie Natural Area encompasses roughly 22,000 acres. Deep washes and arroyos cut to the south and east, trending downward from the ridges and out towards the plains. Intermittent and ephemeral drainages originate on or cross the natural area. Moderately rugged hills and shallow canyons are present in the western part of Soapstone Prairie, with the remainder consisting of the

eastward-sloping grasslands. Hiking trails and two-track roads are located throughout the property. There are two parking lots located on the property; one at the south entrance and another in the northern portion that allows access to the Lindenmeier Overlook.

Soapstone Prairie Fire Management Zone is divided into 17 Fire Management Units (FMUs) based on pasture delineation, vegetation type, and unique resource characteristics. There are opportunities for broadcast burning throughout Soapstone Prairie Natural Area. On a year-to-year basis, prescribed fire planning at Soapstone Prairie will consider anticipated grazing rotations and the status of drought conditions.

Vegetation Types at Soapstone Prairie

Short grass prairie - Short grass prairie is characterized by grama grasses (*Bouteloua* spp.) and buffalograss and occupies 10,472 acres (48 %) gently rolling terrain on the southern and eastern portions of the property. Remnant and existing prairie dog colonies are present throughout the area. Fenced pastures are currently grazed in rotations by cattle and sheep. The short grass prairie is considered to be in high-quality condition despite small areas where cheatgrass and other noxious weeds have invaded.

Foothills shrublands – Foothills shrublands dominate the northwest quadrant of the property. This area totals 6,481 acres (29%) and is a mosaic of mountain mahogany shrublands and mixed grass prairie. There are several rare plants in this community and they include slender wildparsley (*Musineon tenuifolium*), Large Indian breadroot (*Pediomelum esculentum*) and Rocky Mountain phacelia (*Phacelia denticulate*). Slender wildparsley occurs in the cracks of rocks along the cliff band and fire is not likely to occur there. During a fire Large Indian breadroot would not be affected in a low intensity fire because it has large root system.

Wetland and Riparian Areas - Wetland and riparian areas at Soapstone Prairie are characterized by the presence of spring seeps, springs, and other groundwater-fed systems. Associated vegetation includes diverse native wetland forbs and grasses, exotic agricultural grasses, and Canada thistle (*Cirsium arvense*). Riparian areas and wetlands total 1,811 acres (8%) and are located in the northeast and south portions of the property. One of the rare plants found in this community that the Natural Areas Department is actively trying to improve habitat for is the Colorado butterfly plant (*Gaura neomexicana coloradensis*). In the spring of 2010 a 35 acre burn was implemented to reduce aerial coverage and remove exotic species like Canada thistle therefore allowing the Colorado butterfly plant to better compete for sun and soil nutrients. The Natural Areas Department staff performed a survey of the area in the growing season following the burn and did not find any definitive evidence that fire increased the number of bolted plants. It did however, appear that plant biomass including Canada thistle decreased significantly. This information was derived from a visual assessment and was not qualitative. There was also no evidence showing that the fire did any damage to the butterfly plant.

Ponderosa Pine Forest - A 30-acre, isolated, nearly pure stand of Ponderosa pines is located on east-facing, rocky hillsides in the southwest portion of the property. Some of these trees exhibit tree rings dating to 1462 A.D. through last century (1902). Understory vegetation within this stand is characterized by skunkbrush (*Menisia ferruginea*), sand cherry (*Prunus pumila*), and prairie golden banner (*Thermopsis rhomifolia*). This is the only stand of trees within Soapstone Prairie. In 2009 pine beetle was detected within the population of ponderosa pines as has been present through 2011.

Aspen Woodland - This ¼ acre area is a unique, isolated stand of Aspen (*Populus tremuloides*) growing in a low-lying area located in the western-central portion of Soapstone Prairie. This stand is believed to be a relict population. It is considered unusual for aspen trees to grow naturally at this relatively low elevation of 6,300 feet. Generally the stand is healthy, subsurface moisture is apparent, and new shoots continue to emerge.

C. Wildland/Prescribed Fire History –

- Prior to 2006 the wildland and prescribed fire history of Soapstone Prairie is unknown.
- July 2006, Soapstone Prairie Natural Area: A 48 acre wildfire occurred in the south central section of the natural area burning mostly in short grass. The cause is unknown most like a lightning strike.
- November 2010, Soapstone Prairie Natural Area: TNC and NAD implemented the Plover RX a 400 acre burn. Primary objective for the burn was to improve mountain plover habitat and expand prairie dog colonies. The objectives were met.
- May 2011, Soapstone Prairie Natural Area: TNC and NAD implemented the Gaura RX a 35 acre burn. Objective was to reduce overall biomass of Canada thistle and other species to reduce species competition in the Gaura habitat. This burn provided a baseline for future burns to examine effectiveness of fire as a tool.
- September 2011, Soapstone Prairie Natural Area: The Tower wildfire was ignited by two radio tower workers while cutting conduit with a metal blade. The fire was contained to two acres with no damage to property.

D. Resource Protection Considerations

The items listed below include flora and fauna as well as the landscapes there are found in. In the case of a wildfire or prescribed fire these areas would be identified as areas to protect.

- Grassland production as native grazers (pronghorn) and domesticated cattle.
- Relict Ponderosa Pine stand.
- Isolated stand of aspen woodland.
- Wetland areas supporting the federally-threatened Colorado butterfly plant.
- Isolated cottonwood trees as habitat (slow replacement / serve as raptor nest sites).

E. Values at Risk

The items listed below include private dwellings, entire HOA's and cultural resources that may be at risk within this fire management zone.

- Roman House city maintenance facility area.
- Ranch Manager's house and surrounding agricultural buildings and structures.
- Private properties adjoining the natural area (fenceline, forage, etc.).
- Historic sites including homesteads, stone buildings, Soapstone Springs School, livestock camps, and rock cairns.

F. Soapstone Prairie Fire Management Zone Strategies

The Soapstone Prairie fire management zone is the largest of the five zones with more than 22,000 acres. The zone consists of 17 different fire management units. The vast majority of the vegetation is comprised of native plant communities. Therefore, the primary objective of prescribed fires will be to maintain and enhance these native species. Areas of interest include:

- SSN FMU 04 – 08 will see extensive use of fire as we continue to try and improve mountain plover habitat and expand existing prairie dog colonies
- SSN FMU 1 – 3 will utilize prescribed fires for the improvement of Colorado butterfly plant populations.
- SSN FMU 10 – 16 Until more research and or a test fire is done in mountain mahogany fire should be excluded from this area. If and when it’s found that fire is not detrimental to the mahogany it could be useful in conjunction with sheep grazing for the reduction and ultimately the eradication of Dalmatian Toad flax.
- SSN FMU 17 Due to the existence of a small Ponderosa Pine stand in this unit, prescribed fire should be excluded until a time in which mitigation steps can be taken which secure the safety of the stand.

Fire Management Unit	Initiate restoration process; significant restoration follow-up needed	Specific timing used to affect species composition; follow-up needed	Specific timing to maintain health and vigor of existing composition	Alter vegetation structure to support specific faunal species	Remove biomass to enable better on-going vegetation management	Assist with grazing management	Fire Exclusion Area
SSN FMU 01		•					
SSN FMU 02		•					
SSN FMU 03		•		•			
SSN FMU 04		•		•		•	
SSN FMU 05		•		•		•	
SSN FMU 06		•				•	
SSN FMU 07		•				•	
SSN FMU 08		•		•		•	
SSN FMU 09		•				•	
SSN FMU 10					•		
SSN FMU 11					•		
SSN FMU 12					•		
SSN FMU 13				•	•		
SSN FMU 14					•		•
SSN FMU 15					•		•
SSN FMU 16					•		•
SSN FMU 17							•

Figure 9. Soapstone Prairie FMZ Strategies per Fire Management Unit

Foothills Fire Management Zone

Bobcat Ridge Natural Area
Gateway Natural Area
Reservoir Ridge Natural Area
Maxwell Natural Area
Pineridge Natural Area

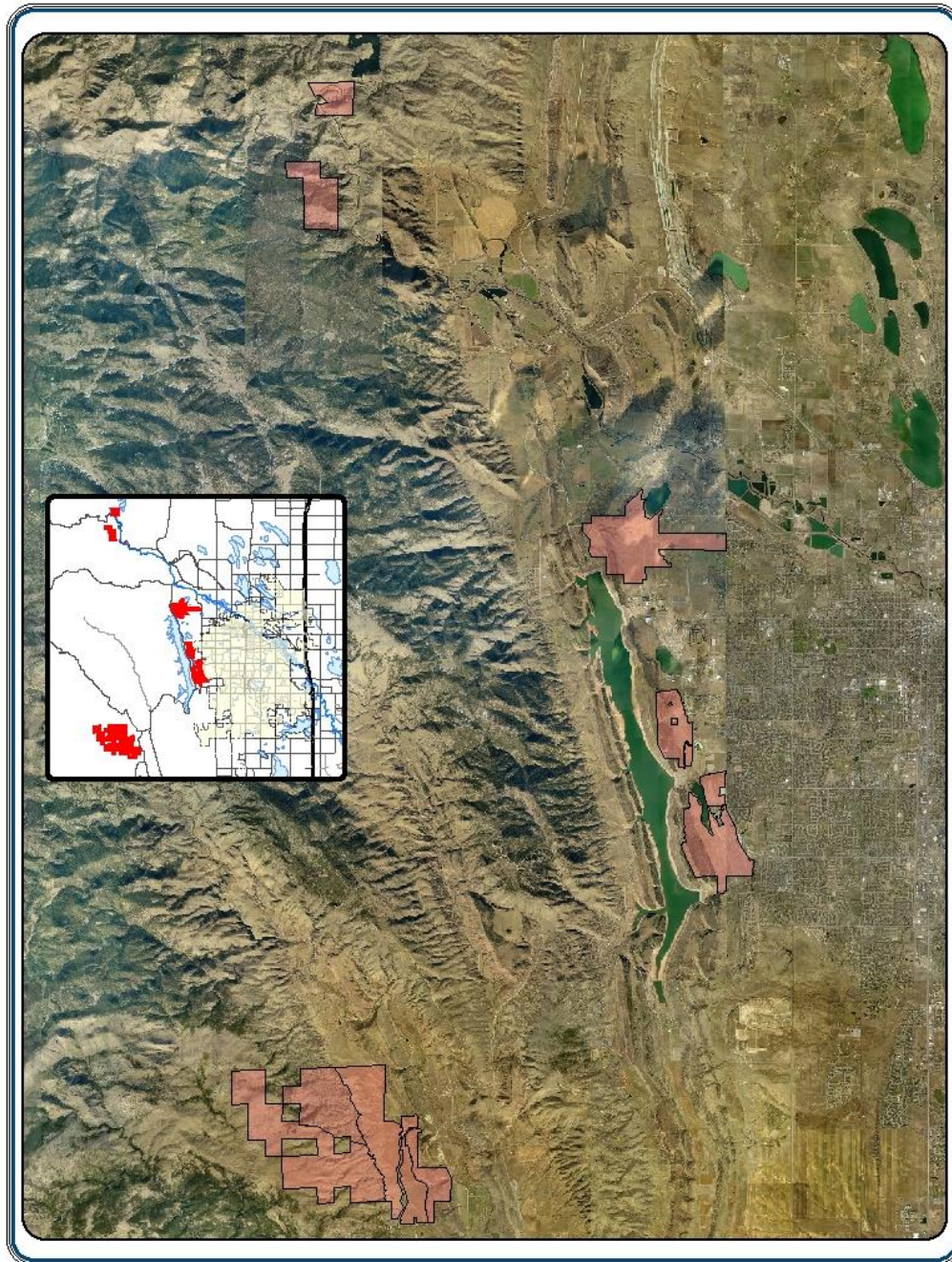


Figure 10. Location of Foothills Fire Zone

A. Location

The Foothills FMZ includes a core area on the western edge of the City of Fort Collins Growth Management Area as well as two non-contiguous areas in the foothills west of the GMA. The core area includes Reservoir Ridge Natural Area, Maxwell Natural Area, and Pineridge Natural Area and is bound by Bingham Hill Rd on the north and Harmony Rd. on the south. Overland Trail is the eastern boundary while Horsetooth Reservoir serves as the western boundary of the core area. Bobcat Ridge Natural Area and Gateway Natural Area lie to the west and north respectively.

B. Characteristics

Vegetation communities in the Foothills FMZ are dominated by mixed and shortgrass prairie, foothill shrublands, and Ponderosa pine forests with occasional wetlands associated with small seep springs or irrigation canals. Two floral species of note are known to exist in the Foothills FMZ; the federally-threatened Ute ladies' tresses occupies wet meadows and wetlands, particularly at Reservoir Ridge Natural Area, and Bell's Twin Pod which can be found on the shale ridges, particularly at Pineridge and Bobcat Ridge Natural Areas. Problematic weed species targeted for control include Dalmatian toadflax, leafy spurge (*Euphorbia esula*), Canada thistle, hoary cress (*Cardaria spp.*), and cheatgrass.

C. Wildland/Prescribed Fire History

- June 2000, Bobcat Ridge Natural Area: Bobcat Gulch fire burned 1000 acres and severely altered the landscape. The fire burned approximately two-thirds of the forested area of the property which makes up about 70% of the natural area vegetation. Subsequently, cheatgrass, Canada thistle, and other weeds have greatly increased in numbers in the burned area.
- June 2004, Bobcat Ridge Natural Area: 10 acre wildfire in mostly grassland and woodland area resulting in the general conversion of non-native ground cover to native grasses and forbs.
- Fall 2006 to present, Bobcat Ridge Natural Area: Natural Areas staff created 150 slash piles from windblown ponderosa. Tree boles remnant from the 2000 Bobcat Ridge Wildfire. The intent of this project is to facilitate easier movement of deer and elk through burned areas. The Natural Areas Department continues to burn these piles as conditions permit.
- February 2009, Bobcat Ridge Natural Area: Wildfire started west of the property and carried onto BCR burning about 20 acres. This resulted from a un- extinguished slash pile on the private property west of Bobcat Ridge.
- March, 2010, Bobcat Ridge Natural Area: Staff in cooperation with The Nature Conservancy implemented a 48 acre prescribed fire in the valley portion of the property with the objective to remove surface biomass and prepare for conversion to native grassland.
- Spring 2011, Pineridge Natural Area: Wildfire started south of Pineridge parking lot. It burned less than ½ an acre and is believed to be caused by fireworks.
- Spring 2011, Reservoir Ridge Natural Area: Wildfire ignited at the Overland Trail gate entrance of Reservoir Ridge Natural Area by a contractual haying operation. Fire burned approximately ¼ acre with no property damage.

- January, 2012, Bobcat Ridge Natural Area: Staff in cooperation with The Nature Conservancy implemented a 50 acre prescribed fire in the valley portion of the property. The intent of this project was to remove surface biomass in preparation for conversion to native grassland.

D. Resource Protection Considerations

The items listed below include flora and fauna as well as the landscapes there are found in. In the case of a wildfire or prescribed fire these areas would be identified as areas to protect.

- Prebles jumping mouse habitat
- Migrating bird habitat along the foothills.
- Two – headed starwort (*Callitriche heterophylla*)
- Floodman’s thistle (*Cirsium flodmanii*)

E. Values at Risk

The items listed below include private dwellings, entire HOA’s and cultural resources that may be at risk within this fire management zone.

- Reservoir Ridge:
 - Primrose Studio
 - recreation infrastructure (trails, kiosks, fences)
 - Residences along Michaud Lane, Overland Trail Road, and just east of north parking lot at Reservoir Ridge.
- Maxwell
 - The City of Fort Collins Utilities Department owns critical water supply facilities.
- Bobcat Ridge
 - The Smith Cabin dates to circa 1870 - 1890 located on northeast corner of the property.
 - The headquarters and Ranger residence located at County Rd 8429
 - Other “historic” buildings and developed features near the Ranger residence
- Pineridge
 - Burns Ranch HOA located on Skimmerhorn Road.
 - Communities along Overland Trail Road and between Harmony Road and the south boundary of Pineridge.

F. Foothills Fire Management Zone Strategies

This zone consists of 20 fire management units that total 4,761 acres. Prescribed fire will play an integral role in accomplishing the primary objective of ongoing restoration of the shrublands and grasslands within the Foothills FMZ. Ponderosa pine stands throughout the FMZ are already relatively thinly stocked and do not require fuels reduction at this time. However, grasslands within the pine savannah may be a target for restorative efforts. Areas of interest include:

- BCR FMU 01 - Most of this unit was burned in the 2000 Bobcat Gulch wildfire. Most of the vegetation was consumed in the fire and now what is left is mostly grass with standing and fallen snags. Prescribe fire may be used in the future to help combat the infestation of cheatgrass and Canada thistle, however there are no such plans as of 2012. Obstacles that would have to be overcome include finding good control lines and finding cost effective ways to apply the herbicide. Aerial application may be the best option due the rough terrain.

- BCR FMU 01 - In 2007 over 100 slash piles were created in this unit. Over the years the piles have been burned. As of February 2012 there are still around 60 left. Efforts to burn the rest will be based on the proximity to trails. Those closest to the trails shall be burned first. Additionally several piles which are farthest away from the trails will remain intact for wildlife use.
- BCR FMU 03 – Prairie dog colonies do exist in the northern and central part of the fire management unit. Use caution while burning near them so not to expand the colony.
- BCR FMU 03 - Will see extensive use of fire as we continue to convert non-native grasslands to a more diverse native composition. As of February 2012 burn unit's number one and five have been completed.
- BCR FMU 06 – Prescribed fire could be used in the Brooks Canyon area of this unit to help convert smooth brome and red canary grasses that are found here. The steep canyon walls and cottonwood trees may make it very hard to burn here.
- RRN FMU 01, 09, 10 – Cheatgrass and annual rye (*Lolium multiflorum*) are very common in this unit and would be the targeted species however; there are major constraints that would have to be overcome to conduct a prescribed burn. The areas' rough terrain makes it tough to apply herbicide that would be necessary after a burn. A possible solution would be an aerial application. Until more research and thoughts are put into this a prescribed burn would not be feasible for this FMU.
- RRN FMU 06, 07 – The two fields in these units are only a few years removed from cultivation. Fire management strategies will evolve as these fields mature and a more comprehensive resource management plan is developed for the area.
- RRN FMU 12 – Along the eastern edge of this unit there are several little drainages that have unique habitats and our botanist has recommended not using prescribed burns in this area. Also this area may have been used as a dump because there is a lot of buried debris.
- Significant acreage in this zone (large areas of Reservoir Ridge, Maxwell, and Pineridge) are dominated by native grass and therefore use of fire may be limited to the occasional introduction of fire without the need to convert species wholesale.

Fire Management Unit	Initiate restoration process; significant restoration follow-up needed	Specific timing used to affect species composition; follow-up needed	Specific timing to maintain health and vigor of existing composition	Alter vegetation structure to support specific faunal species	Remove biomass to enable better on-going vegetation management	Fire Exclusion Area
BCR FMU 01					•	•
BCR FMU 02			•		•	
BCR FMU 03	•		•		•	
BCR FMU 04						•
BCR FMU 05	•				•	
BCR FMU 06	•					•
GAT FMU 01						•
PIC FMU 01						•
RRN FMU 01		•		•		•
RRN FMU 02		•	•			
RRN FMU 03						•
RRN FMU 04		•	•		•	
RRN FMU 05		•	•			
RRN FMU 06	•					
RRN FMU 07	•					

MAX FMU 01		•				•
MAX FMU 02		•	•			
MAX FMU 03		•				•
PRN FMU 01			•			•
PRN FMU 02			•		•	•

Figure 11. Foothills FMZ Strategies per Fire Management Unit

G. Foothills Fire Management Zone Maps

This section depicts six different maps. The first three shows the individual fire management units. The fourth map shows the restoration status of each of the fire management units with the exception of Bobcat and Gateway natural areas because the restoration status has not been assigned to these two natural areas. The sixth map shows communities at risk.



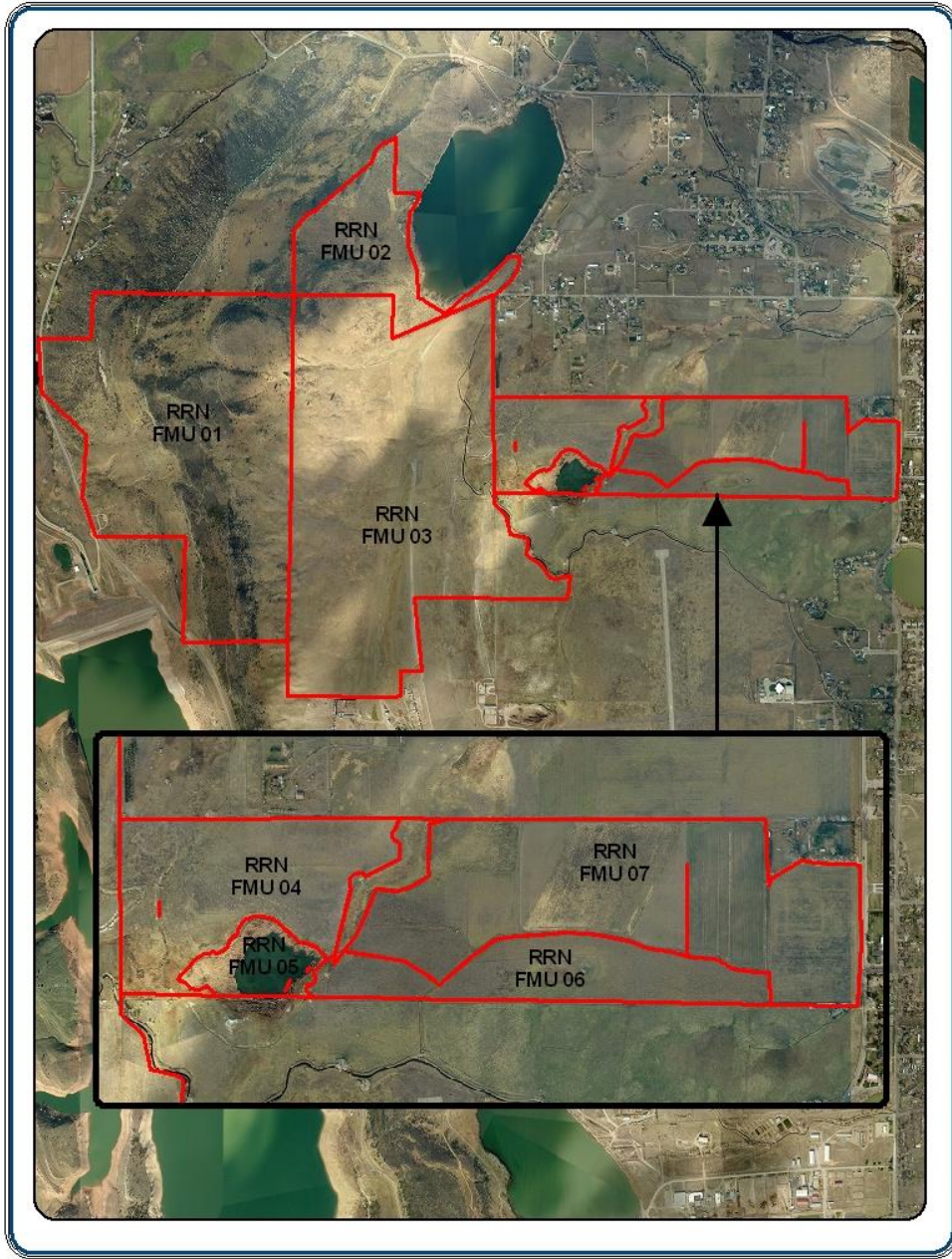


Figure 12. Foothills Fire Management Units Reservoir Ridge

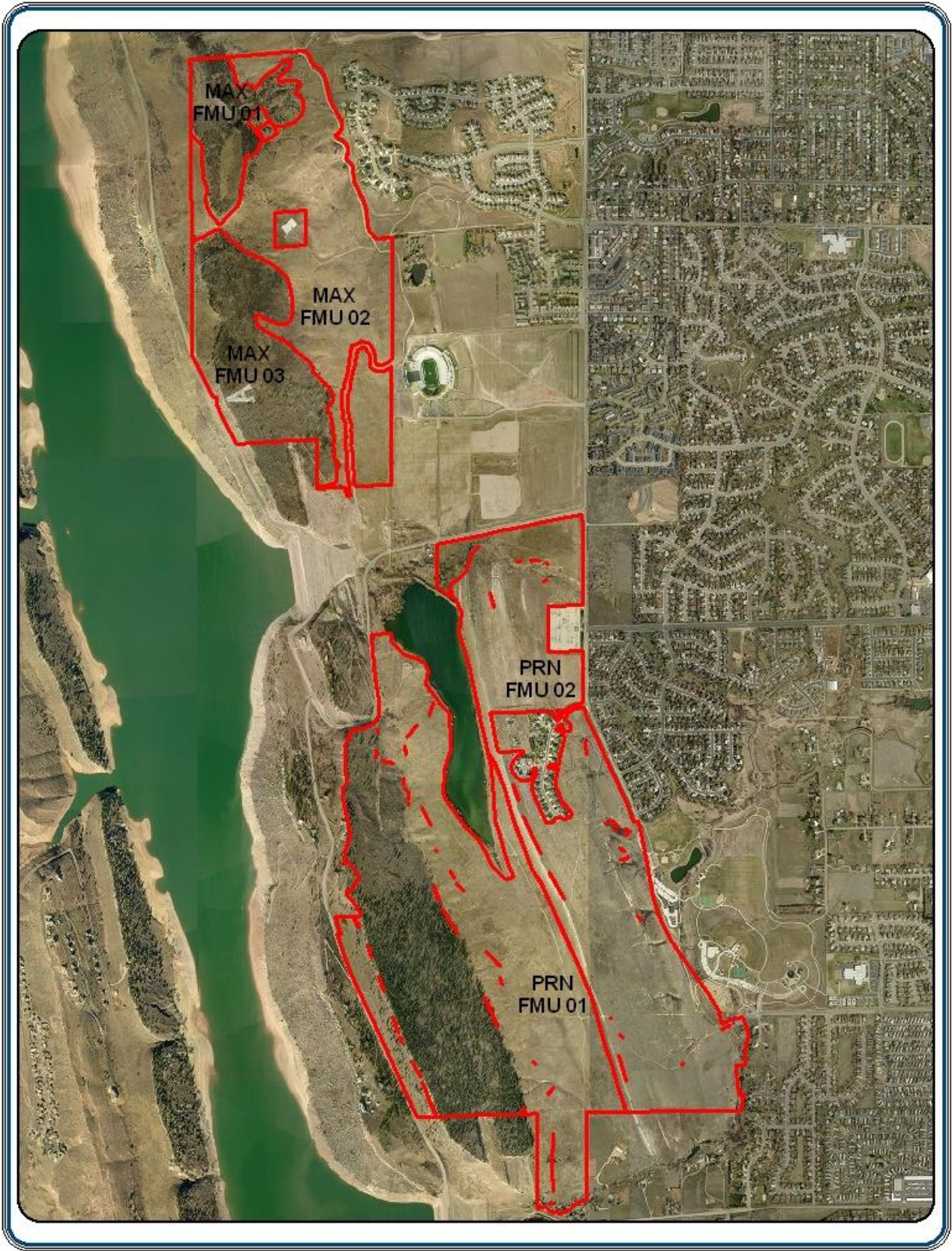


Figure 13. Foothills Fire Management Units Maxwell and Pineridge

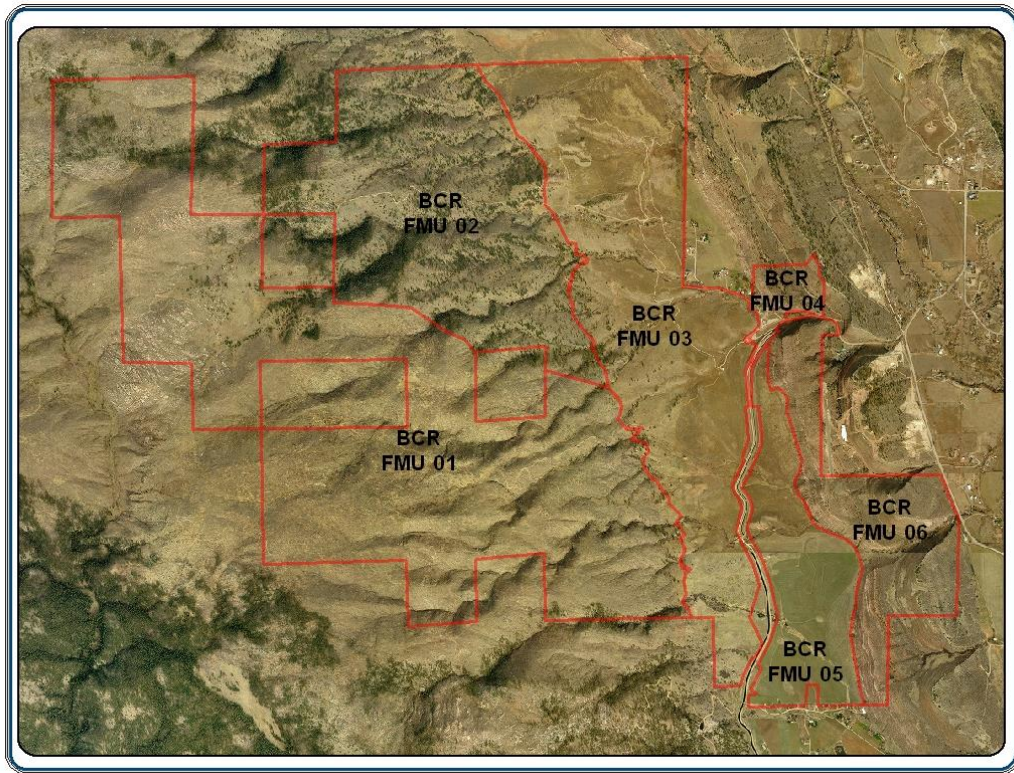


Figure 14. Foothills Fire Management Units Bobcat Ridge

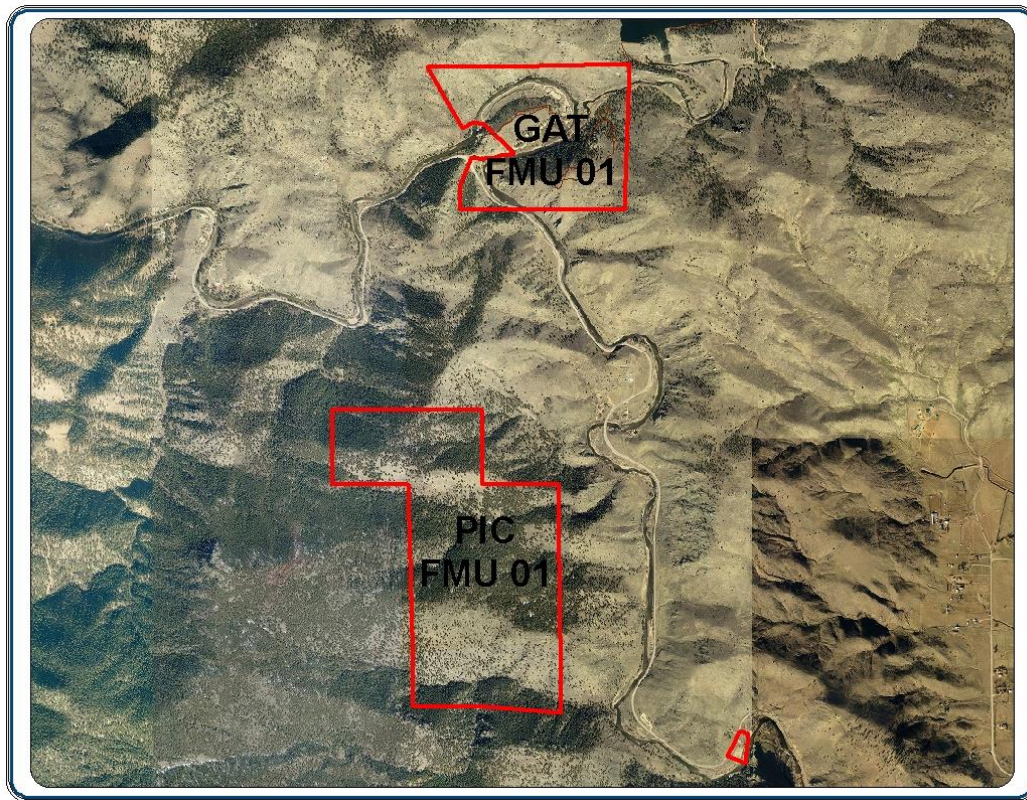


Figure 15. Foothills Fire Management Units Gateway and Picnic Rock

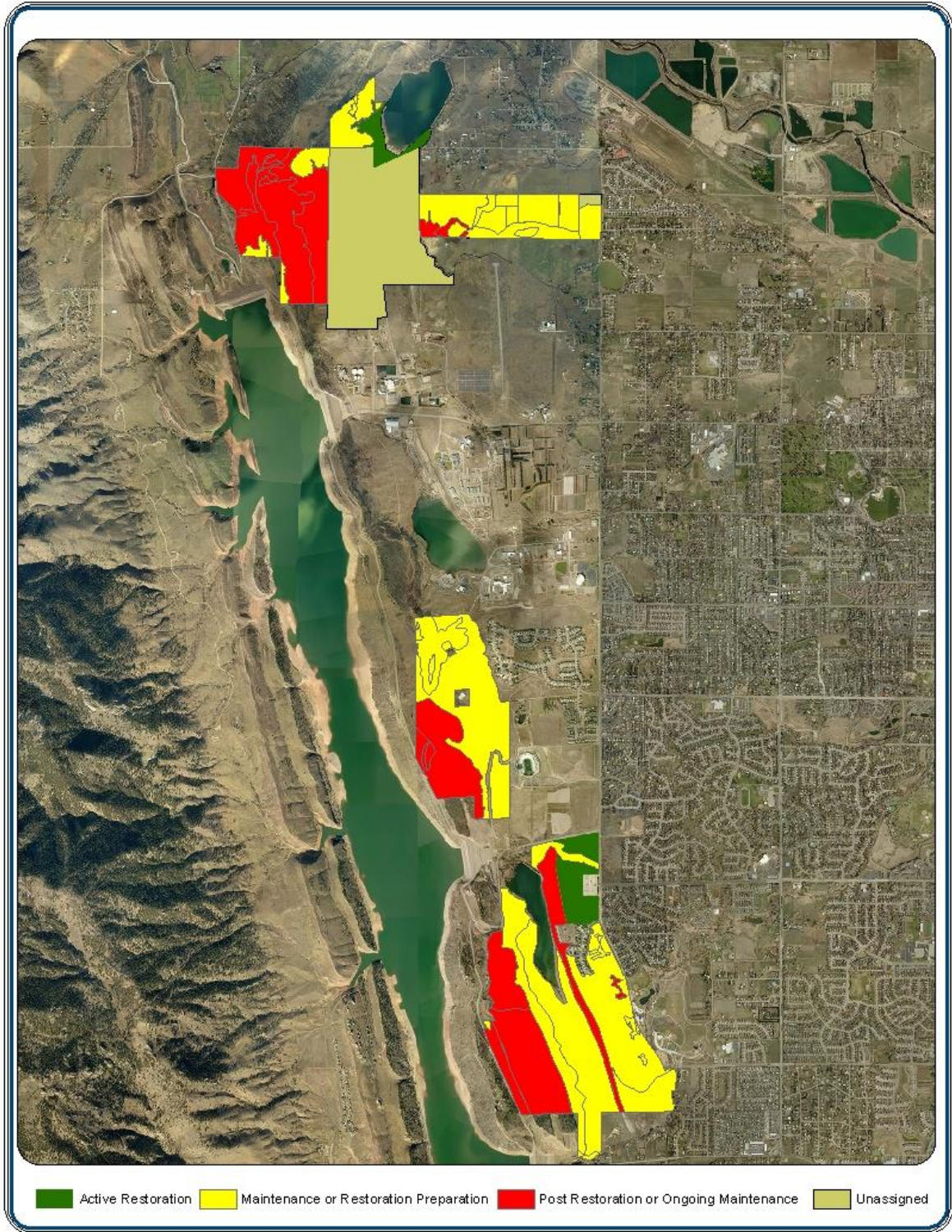


Figure 16. Foothills Fire Management Zone Restoration Status (not shown Gateway or Bobcat Ridge Natural Areas)



Figure 17. Foothills Fire Management Zone Communities at Risk (not shown Gateway, Picnic Rock or Bobcat Ridge Natural Areas)

Southwestern Grasslands Fire Management Zone

Cathy Fromme Prairie Natural Area

Coyote Ridge Fire Zone

Hazaleus Natural Area

Colina Mariposa Natural Area

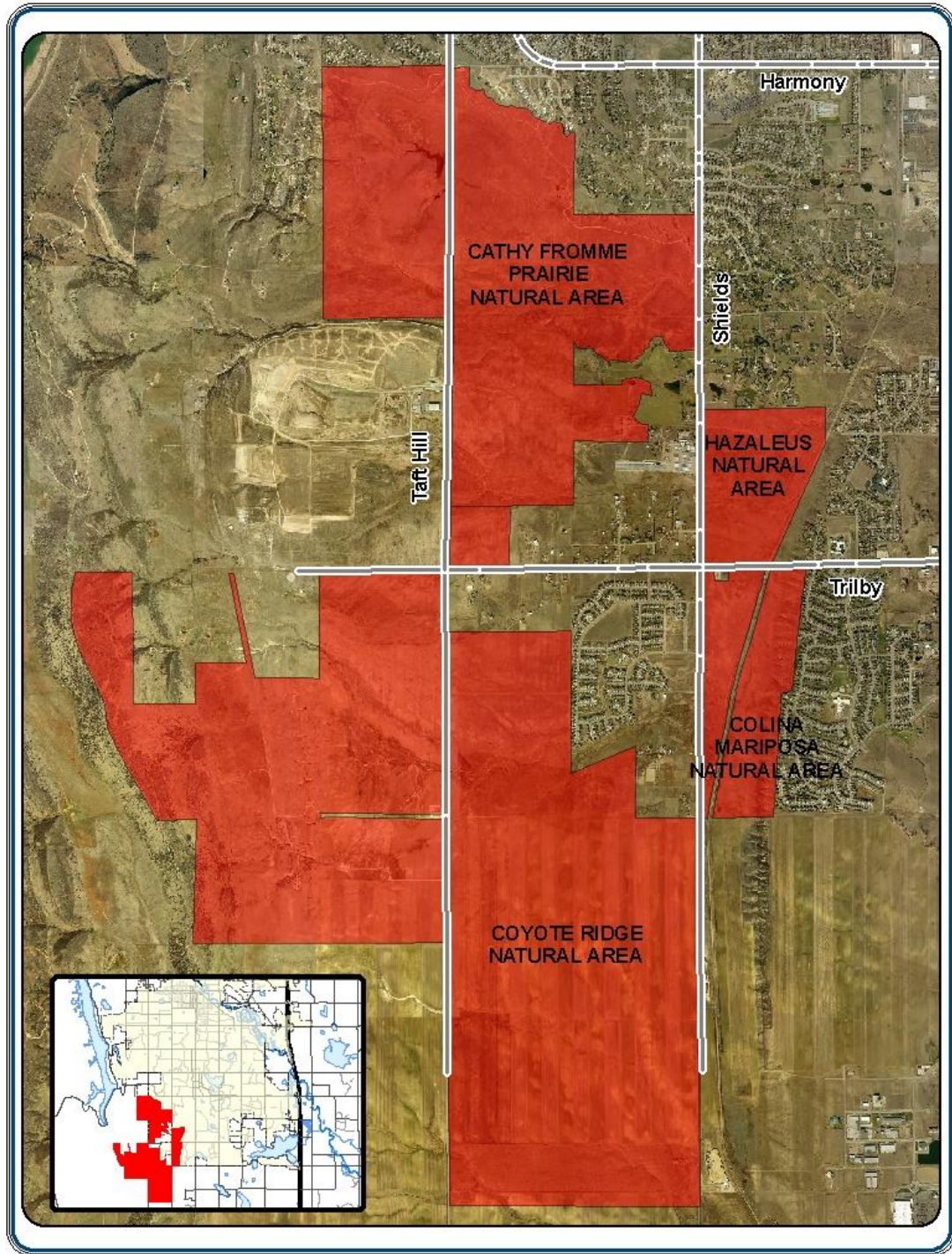


Figure 18. Location of the Southwestern Grasslands Fire Management Zone

A. Location

The Southwestern FMZ is bounded on the north by Harmony Rd., the south boundary is 57th St. in Loveland, and the eastern boundary is the railroad track just west of College Ave. The western boundary extends beyond Taft Hill Rd. in the areas of Cathy Fromme Prairie and Coyote Ridge Natural Areas.

B. Characteristics

Native shortgrass prairie is the predominant plant community with small areas of shrubland forming pockets of important wildlife habitat within the grassland matrix. The western area of Coyote Ridge Natural Area includes a large area dominated by mountain mahogany. Intermixed throughout the zone are patches of non-native grasses including smooth brome and cheatgrass. Prairie dog colonies have historically occupied a high percentage of the grasslands within this zone. Currently, colony size is relatively small (down from 561 acres in 2006 to 131 acres in 2011) and the dominant management goal is rest from intense grazing and grassland restoration.

C. Wildland/Prescribed Fire History

- September, 2005, Cathy Fromme Prairie Natural Area: NAD in conjunction with Poudre Fire Authority conducted an eight acre prescribed burn along Fossil Creek on the eastside of Cathy Fromme Natural Area just southeast of the wildlife observation structure.
- March, 2005, Coyote Ridge Natural Area: NAD in conjunction with PFA conducted a 74 acre burn on the southern end of CRN FMU 04
- January, 2006, Cathy Fromme Prairie Natural Area: A 94 acre wildfire was ignited west of Taft Hill Road. The fire was wind driven and burned through smooth brome. No property damage was reported.
- April, 2006, Coyote Ridge Natural Area: NAD in conjunction with PFA conducted a 120 acre burn on the southern end of CRN FMU 03.

D. Resource Protection Considerations

The items listed below include flora and fauna as well as the landscapes there are found in. In the case of a wildfire or prescribed fire these areas would be identified as areas to protect.

- Bell's twin pod at Coyote Ridge
- Forked threeawn (*Aristida basirama*)
- Jeweled blazingstar (*Mentzelia speciosa*)
- Ute ladies' tresses
- Burrowing Owls at Coyote Ridge
- Prairie Dog colonies on all FMU's in this zone

E. Values at Risk

The items listed below include private dwellings, entire HOA's and cultural resources that may be at risk within this fire management zone.

- Cathy Fromme
 - Taft Canyon HOA located along north boundary of CFP

- Fox Hills HOA located along north boundary of CFP
 - Westwood Estes located along western boundary of CFP
 - The Ridge HOA located along north boundary of CFP
 - Clarendon Hills HOA located along east boundary of CFP
 - Larimer County Landfill located along west and east boundary of CFP
 - Wildlife viewing platform along Fossil Creek bike trail
- Coyote Ridge
 - Residences along Trilby Road located along north boundary of CRN
 - Registry Ridge HOA located along east boundary of CRN
 - Coyote Ridge includes an education resource center within the valley between the Niobrara outcropping and foothills.
- Hazaleus
 - Residences along Plateau Ct. located along north boundary of HAZ
 - Train track right of way along east boundary HAZ
 - Residences along Fossil Crest DR. located along east boundary of HAZ
- Colina Mariposa
 - Ridgewood Hills HOA located along east boundary of CMN

F. Southwestern Fire Management Zone Strategies

This zone consists of 17 fire management units comprising 3,695 acres. This zone includes both large areas of non-native plants and large areas of native plant communities. Therefore the primary objective for prescribed fire is to select areas of non-native plant communities that are adjacent to areas of native plant communities resulting in larger continuous areas of native plant communities.

This fire zones shares boundaries with many different agencies and HOA's and it will be important to select areas that can benefit from the introduction of fire while remaining within smoke dispersal constraints. Areas of interest include:

- Many of the units have populated prairie dog colonies. Wide (50 – 100 ft.) strips of unburned vegetation need to remain around the colony to discourage colonies from expanding to unsuitable locations.
- Coyote Ridge FMU 01 is currently under lease for dryland wheat and is not considered for fire management. Each year, a 50 acre strip of CNR FMU 01 is abandoned from crop production and planted with native prairie seed. Those strips as a matter of practice will be incorporated into CRN FMU 02.
- CRN FMU 03 – Due to the great variety of birds and shrubs in the area, fire should not be used and continued monitoring of the area should be done to evaluate on-going wildlife use.
- CRN FMU 05 – The areas rough terrain makes it tough to apply herbicide that would be necessary after a burn. A possible solution would be an areal application. Thus, prescribed burning is not ideal until the herbicide application issue can be resolved.
- CMN FMU 02 – Prescribed fire is not recommended for the foothills portion of this unit at this time due to the presence of the good diversity of native forbs and the close proximity to the Ridgewood Hills HOA.

Fire Management Unit	Initiate restoration process; significant restoration follow-up needed	Specific timing used to affect species composition; follow-up needed	Specific timing to maintain health and vigor of existing composition	Alter vegetation structure to support specific faunal species	Remove biomass to enable better on-going vegetation management	Fire Exclusion Area
CFP FMU 01	•		•		•	
CFP FMU 02	•				•	
CFP FMU 03						•
CFP FMU 04			•			
CFP FMU 05	•				•	•
CFP FMU 06	•				•	•
CRN FMU 01						•
CRN FMU 02		•	•			
CRN FMU 03	•			•	•	
CRN FMU 04	•					
CRN FMU 05	•					
CRN FMU 06	•					
CRN FMU 07		•	•			
CRN FMU 08	•				•	
HAZ FMU 01	•		•			
CMN FMU 01	•				•	
CMN FMU 02	•				•	

Figure 19. Southwest Grasslands FMZ Strategies per Fire Management Unit

G. Southwest Grasslands Fire Management Zone Maps

This section depicts three different maps. The first map shows the 17 different fire management units. The second map shows the restorations status of each fire management unit. The third map shows communities at risk.



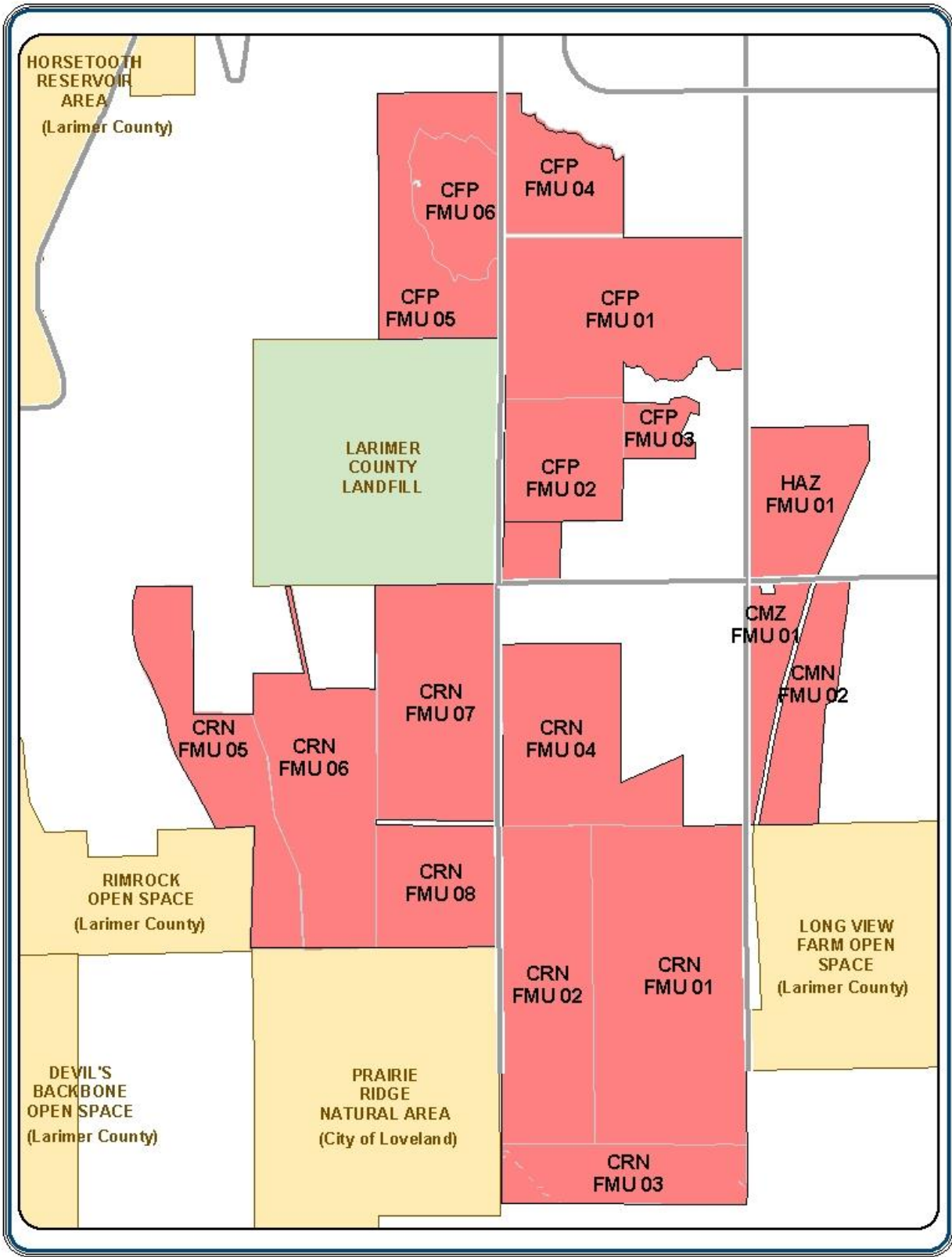


Figure 20. Southwest Grasslands Fire Management Units

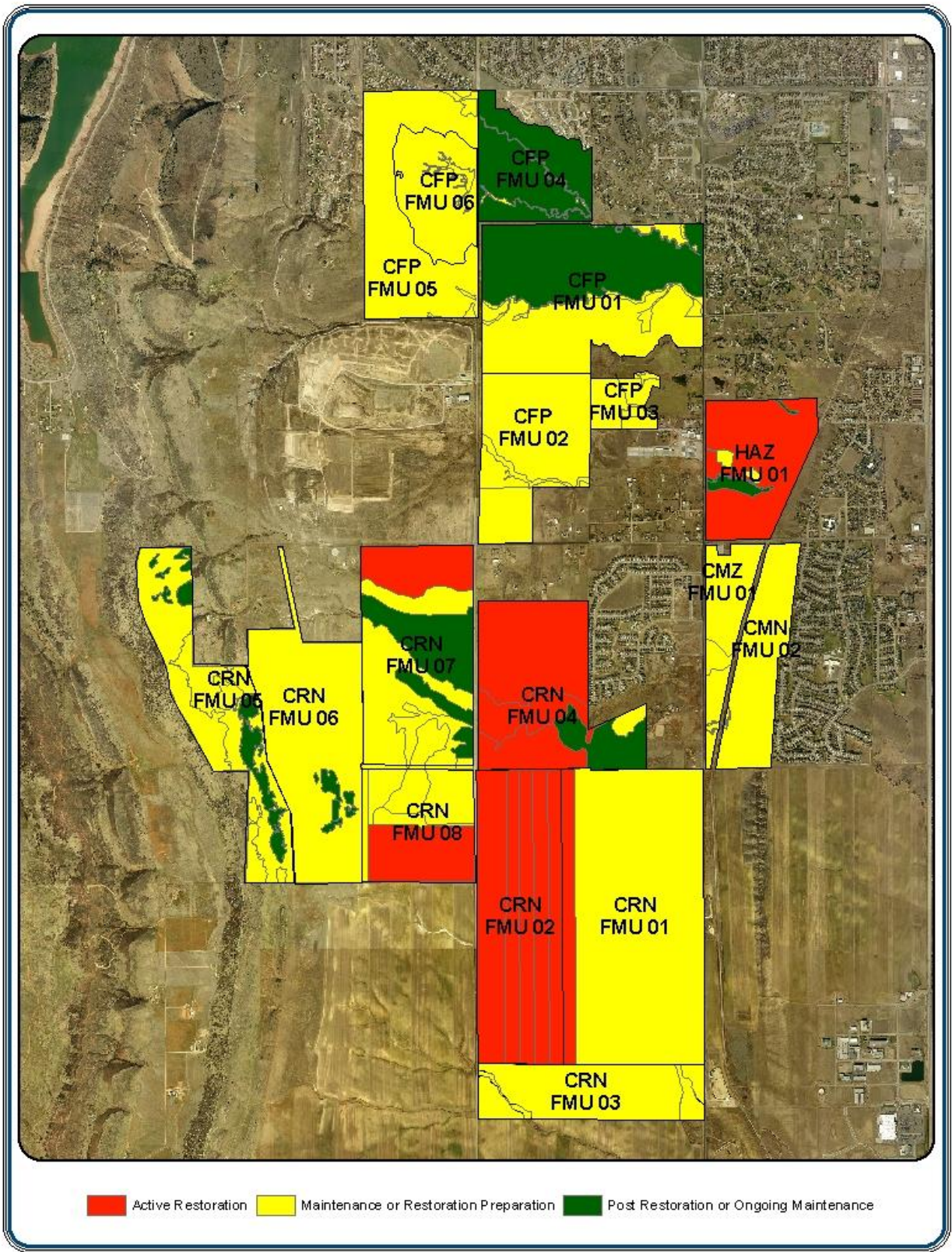


Figure 21. Southwestern Grasslands Fire Management Zone Restoration Status

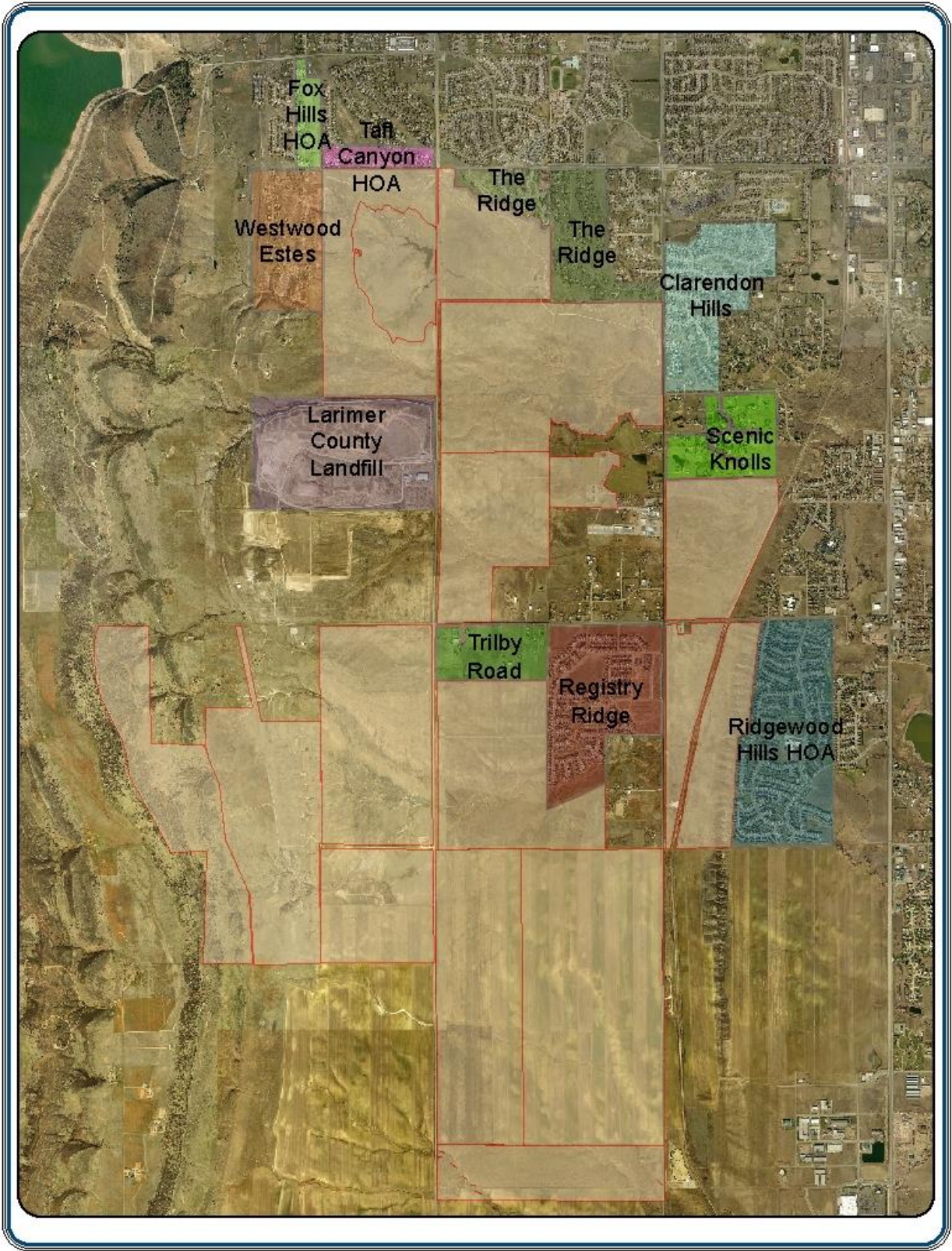


Figure 22. Southwest Grasslands Fire Management Unit Communities at Risk

South Central Grasslands Fire Management Zone

- Two Creeks Natural Area
- Prairie Dog Meadow Natural Area
- Pelican Marsh Natural Area
- Red Tail Grove Natural Area



Figure 23. Location of the South Central Grasslands Fire Management Zone

A. Location

This Fire Management Zone is anchored by its proximity to US HWY 287 (College Avenue). Generally the north boundary of this zone is Harmony Rd, with the south boundary being Carpenter Rd. The eastern boundary is Lemay Ave, and the western boundary is the railroad tracks just west of College Ave.

B. Characteristics

The total area of this zone is 316 acres of which 39% (126 acres) is an active restoration status. The area includes two distinct drainages; Mail Creek and Fossil Creek. Though relatively small in acreage and non-contiguous, this area composing this FMZ is integral to wildlife movement along these drainages connecting the foothills to the plains. Historically, black-tailed prairie dog colonies occupied much of the acreage within these natural areas. As much of this zone is in active restoration, only a small colony in the southeast portion of Prairie Dog Meadow Natural Area exists. The prior proliferation of prairie dog colonies in the area significantly reduced site biomass and thus fuel loading/fire hazard locally.

C. Wildland/Prescribed Fire History

- March of 2004, Two Creeks Natural Area: Natural Areas Department conducted 2.5 acre agricultural burn of the main ditch.
- September 2010, Pelican Marsh Natural Area: A vehicle driving northbound on College Avenue sparked several small wild fires including one on the eastern border of Pelican Marsh Natural Area. Poudre Fire Authority extinguished the fire and no property damage was reported.

D. Resource Protection Considerations

The items listed below include flora and fauna as well as the landscapes there are found in. In the case of a wildfire or prescribed fire these areas would be identified as areas to protect.

- The cottonwood grove within Red Tail Grove provides exceptional cover for mule deer moving along the Fossil Creek corridor.
- Fossil site at Red Tail Grove

E. Values at Risk

The items listed below include private dwellings, entire HOA's and cultural resources that may be at risk within this fire management zone.

- Red Tail Grove
 - Applewood Estes located along west boundary of RTG
 - Ader Estes located along west boundary of RTG
- Two Creeks
 - Miramont HOA located along north boundary of TCN
 - Fossil Creek Condos located along south and east boundaries of TCN
 - Huntington Hills HOA located along south boundary of TCN
- Prairie Dog Meadows
 - Huntington Hills HOA located along north boundary of PDM
 - Huntington Hills West HOA located along west boundary of PDM

- Lynn Acres located along west boundary of PDM
- Brittany Knolls HOA located along east boundary of PDM
- Fort Collins Transfort buildings located along south boundary of PDM
- Pelican Marsh
 - Provincetowne HOA located along north boundary of PMN
 - Victoria Estes HOA located along south and west boundaries of PMN

F. South Central Grasslands Fire Management Zone Strategies

This zone consists of 4 fire management units that total 316 acres. Use of fire as management tool is limited in this zone due to close proximity to developments and limitations of smoke dispersion. The primary objective for this zone will utilize fire on a much smaller scale to maintain species diversity and aid in species conversion. Within the South Central Grassland FMZ, three units present unique situations:

- Red Tail Grove Natural Area is of particular interest as it is a large property with both a fire exclusion area (the cottonwood gallery in the north central portion of the property) and an adjacent area that dominated by smooth brome and that would need to be burned off prior to species conversion..
- Prairie Dog Meadow is completely surrounded by development and is not considered a site suitable for use of fire.
- PMN FMU 01 – The area around the lake is a mitigation area for the dam that was rebuilt and is under review by the Army Corps of Engineers. Therefore no prescribed fires would be useful at this time for this area.

Fire Management Unit	Initiate restoration process; significant restoration follow-up needed	Specific timing used to affect species composition; follow-up needed	Specific timing to maintain health and vigor of existing composition	Alter vegetation structure to support specific faunal species	Remove biomass to enable better on-going vegetation management	Assist with grazing management	Fire Exclusion Area
RTG FMU 01	•						•
TCN FMU 01		•			•		
PDM FMU 01							•
PMN FMU 01		•	•				

Figure 24. South Central Grasslands FMZ Strategies per Fire Management Unit

G. South Central Grasslands Fire Management Zone Maps

This section depicts three different maps. The first map shows the 4 different fire management units. The second map shows the restorations status of each fire management unit. The third map shows communities at risk.

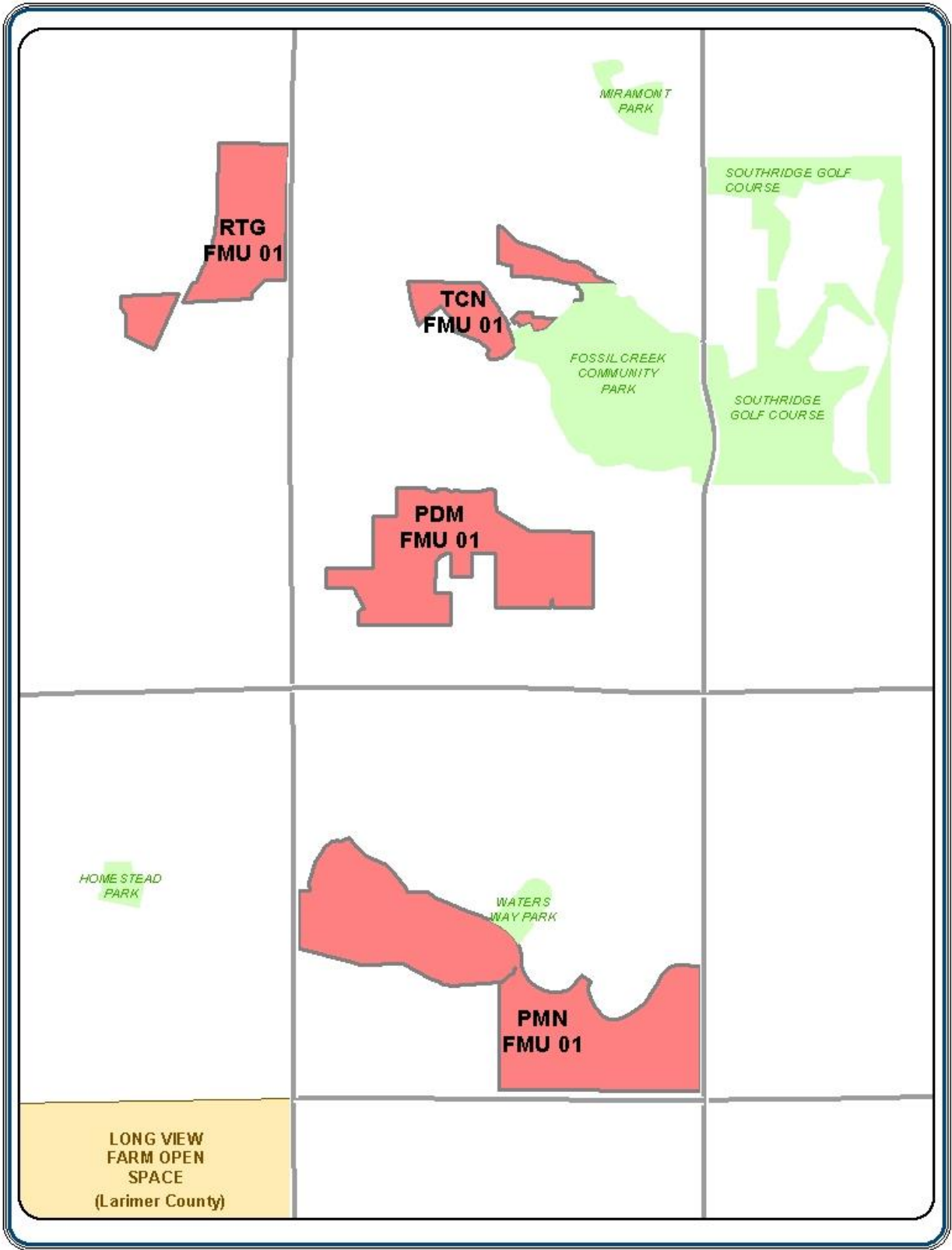


Figure 25. South Central Fire Management Units Map

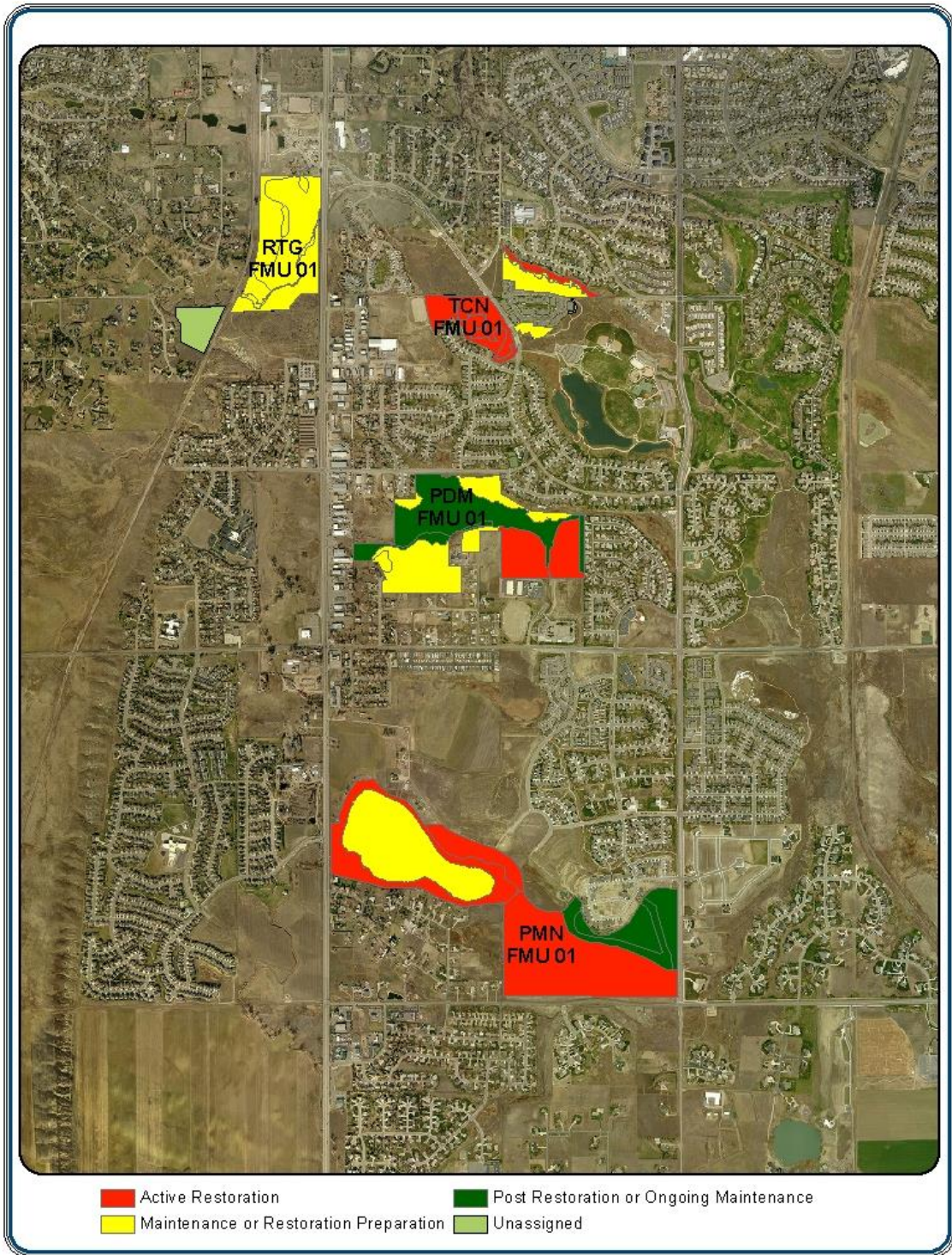


Figure 26. South Central Fire Management Zone Restoration Status

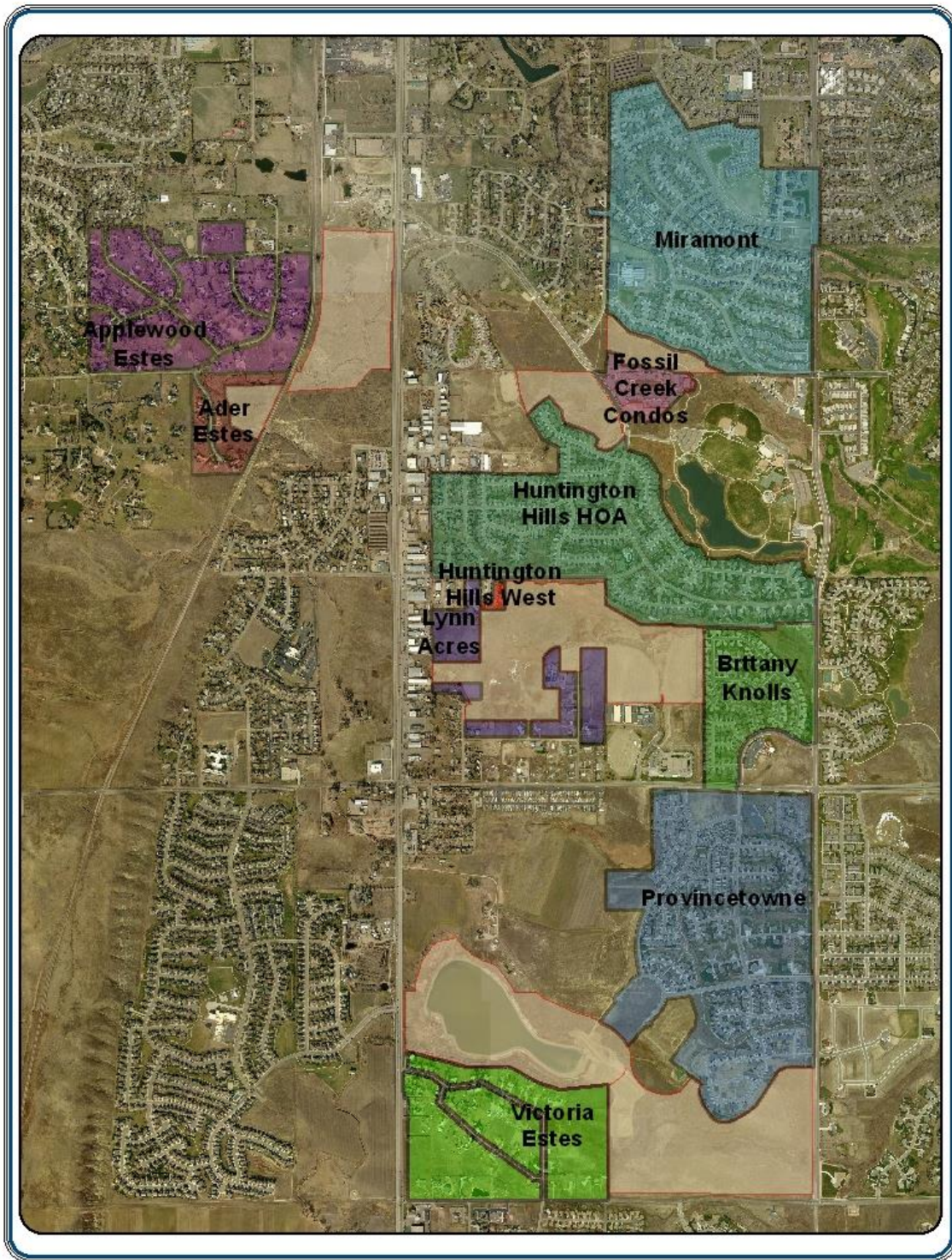


Figure 27. South Central Grasslands Fire Management Zone Communities at Risk

Southeast Grasslands Fire Management Zone

Fossil Creek Wetlands Natural Area

Fossil Creek Reservoir Natural Area

Eagle View Natural Area

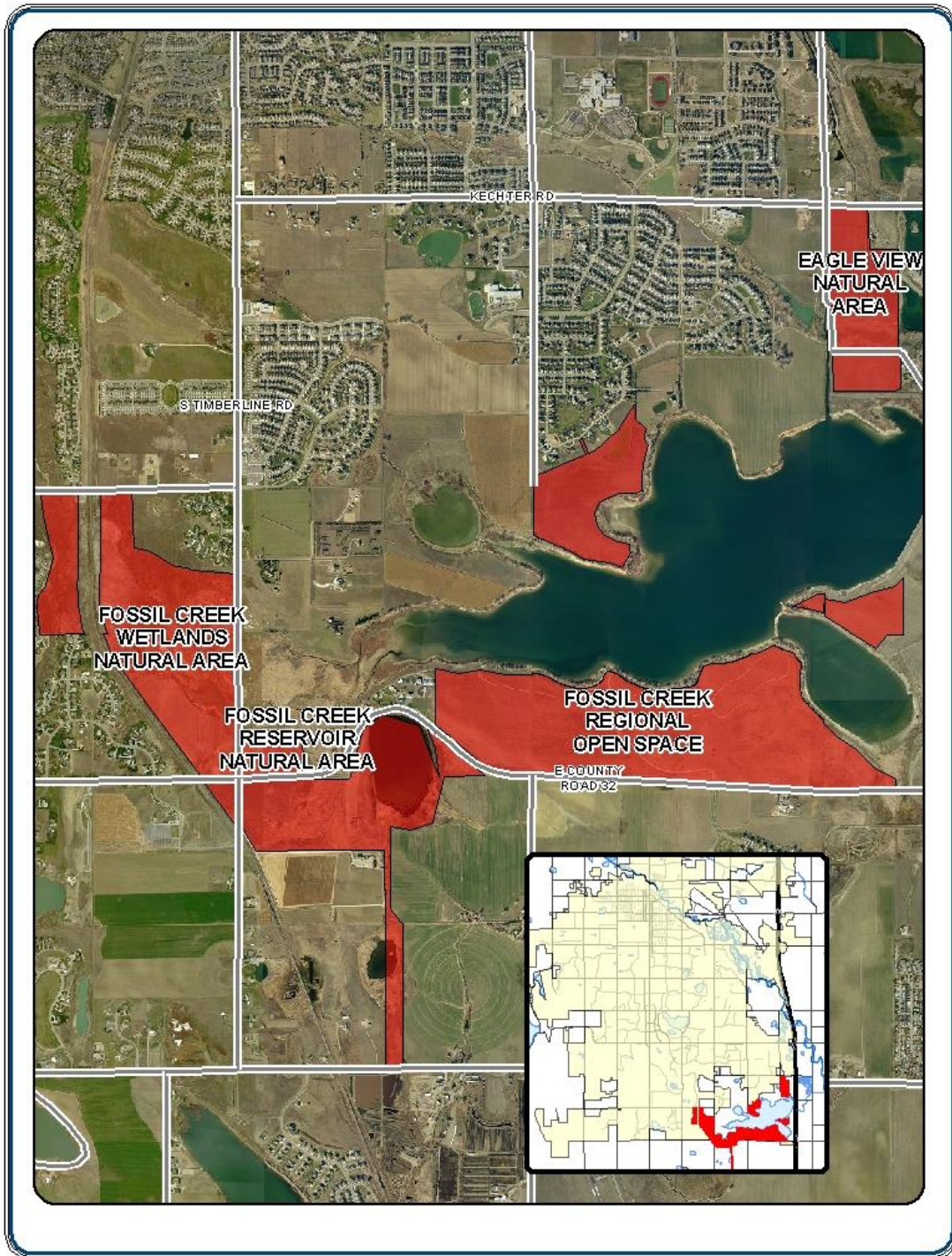


Figure 28. Location of the Southeastern Grasslands Fire Management Zone

A. Location

This fire zone is in the southeast quadrant of the city; bordered by Horsetooth Rd. to the north, Larimer County Road CR30 to the south, Lemay Ave. to the west, and CR5 to the east.

B. Characteristics

Sites within this zone are typically dominated by disturbance associated with gravel mining and agricultural history. Vegetation is dominated by non-native smooth brome and crested wheat. There are some restored areas that have native grasses like blue grama, buffalograss and, sideoats grama. The area surrounding the reservoir is composed of mature cottonwood trees and small woodlands. Currently, restoration projects are underway at each site with the exception of Eagle View Natural Area.

C. Wildland/Prescribed Fire History

- Winter 2011, Fossil Creel Wetlands: Human caused wildfire less than one acre.

D. Resource Protection Considerations

The items listed below include flora and fauna as well as the landscapes there are found in. In the case of a wildfire or prescribed fire these areas would be identified as areas to protect.

- Fossil Creek Reservoir provides critical stop over habitat for migrating waterfowl and eagles

E. Values at Risk

The items listed below include private dwellings, entire HOA's and cultural resources that may be at risk within this fire management zone.

- Fossil Creek Wetlands
 - Stanton Creek HOA located along west boundary of FCW
 - Greenstone HOA located along south boundary of FCW
 - Paragon Estes located along east boundary of FCW
- Fossil Creek Reservoir
 - Fossil Lake HOA located along north boundary of FCR
 - Several small farms surround FCR
- Fossil Creek Regional Open space
 - Shares borders with South Fort Collins Sanitation District, several small farms, agricultural, vacant land, and Fossil Creek Reservoir.
 - Larimer County Office Buildings
 - Several Picnic shelters, seven miles of trails, several small kiosks, bird blinds.
 - A prairie dog barrier is located on the western end of the property.

F. Southeast Grasslands Fire Management Zone Strategies

This zone consists of 6 fire management unit that total 906 acres. The four natural areas in this zone have restoration units established therefore the primary objective of prescribed fire will to aid the restoration effort. Areas of interest include:

- Western wheat in some areas of Fossil Creek Regional Open Space is becoming the dominant species and prescribed fire could be use to help create a more diverse species composition.

Fire Management Unit	Initiate restoration process; significant restoration follow-up needed	Specific timing used to affect species composition; follow-up needed	Specific timing to maintain health and vigor of existing composition	Alter vegetation structure to support specific faunal species	Remove biomass to enable better on-going vegetation management	Fire Exclusion Area
EVN FMU 01						•
FCW FMU 01						•
FCRROS FMU 01	•				•	
FCRROS FMU 02	•				•	
FCRROS FMU 03		•		•		
FCRROS FMU 04						•

Figure 29. Southeast Grasslands FMZ Strategies per Fire Management Unit

G. Southeast Grasslands Fire Management Zone Maps

This section depicts three different maps. The first map shows the 6 different fire management units. The second map shows the restorations status of each fire management unit. The third map shows communities at risk.



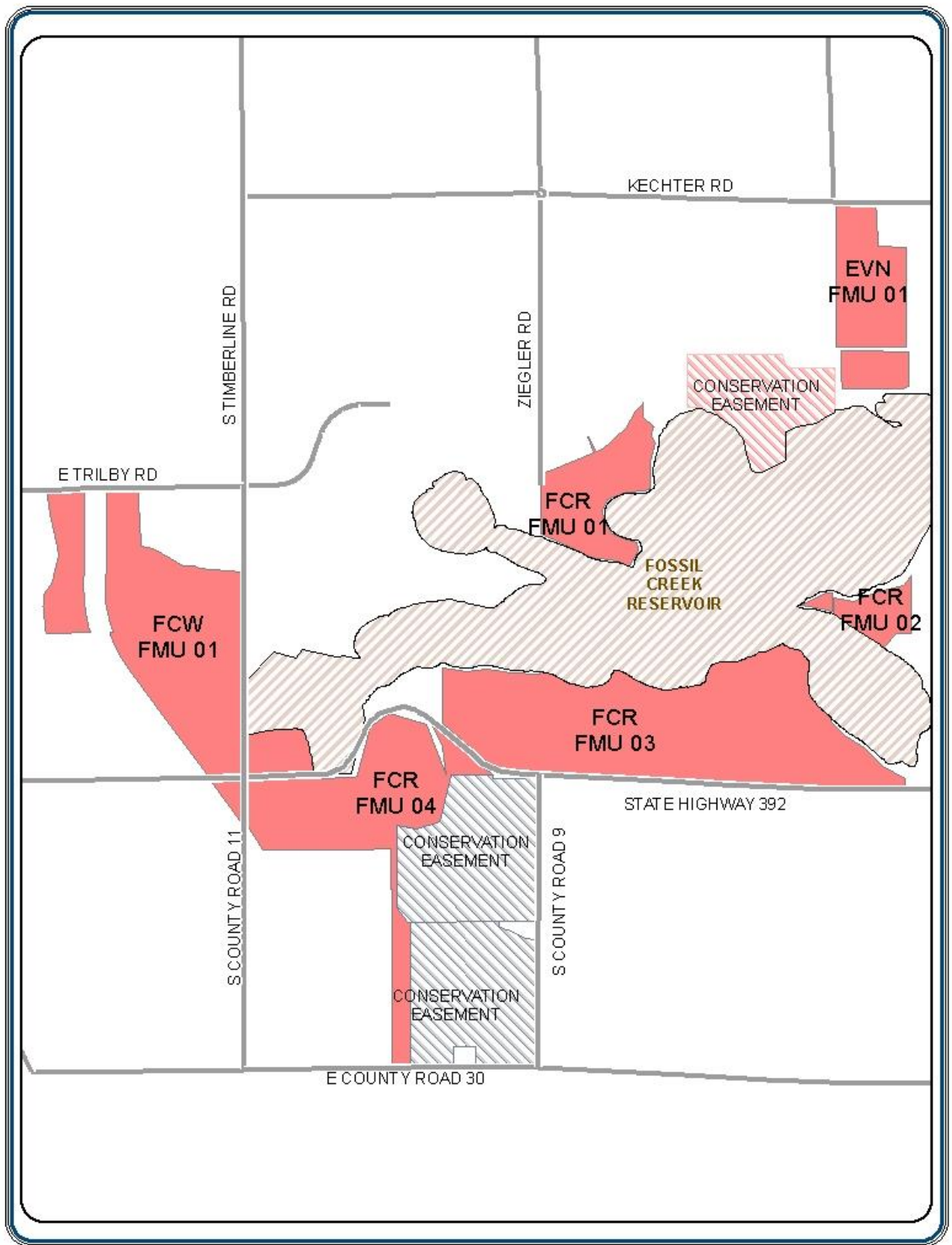


Figure 30. Southeast Grasslands Fire Management Zone Fire Management Units

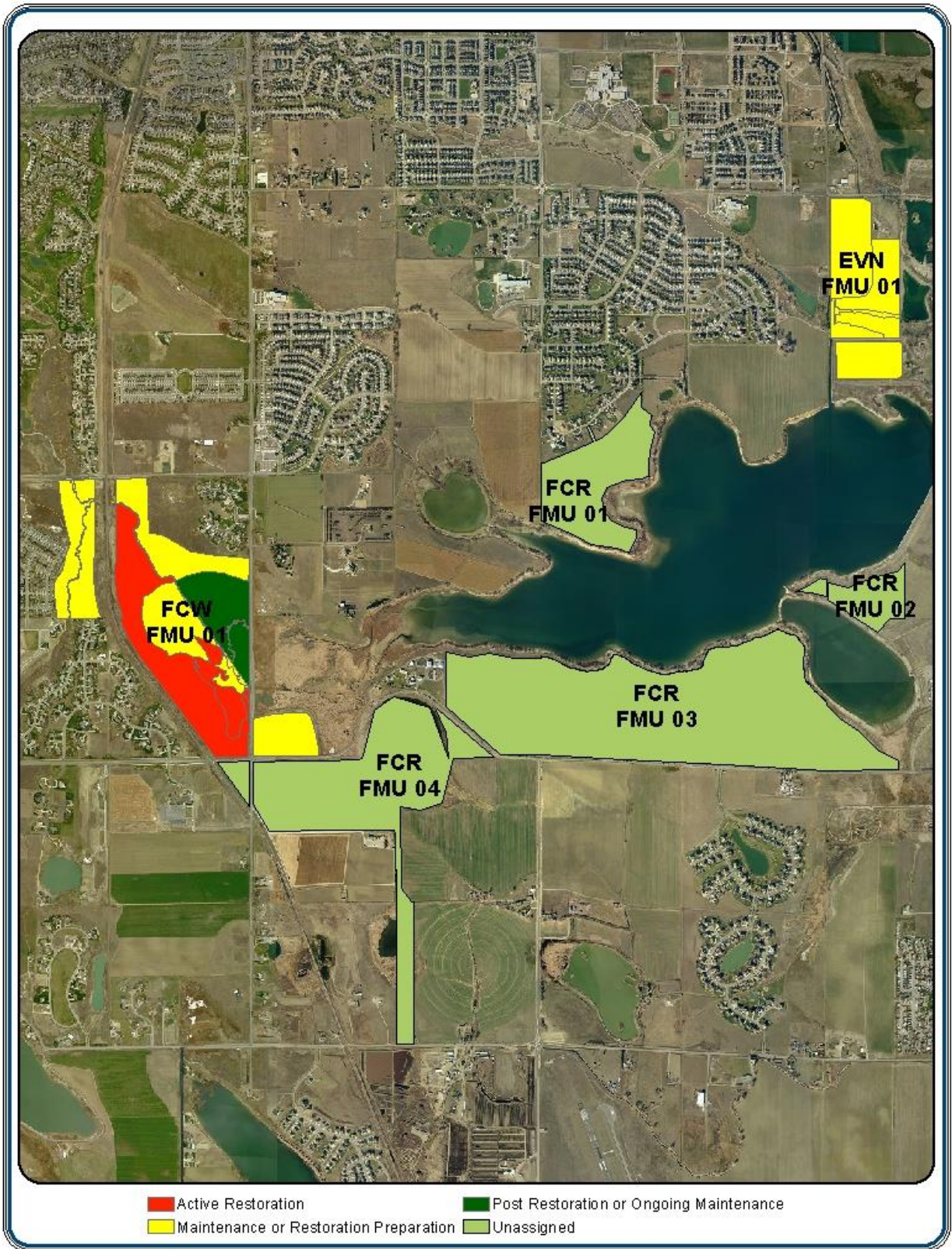


Figure 31. Southeast Grasslands Fire Management Zone Restoration Status

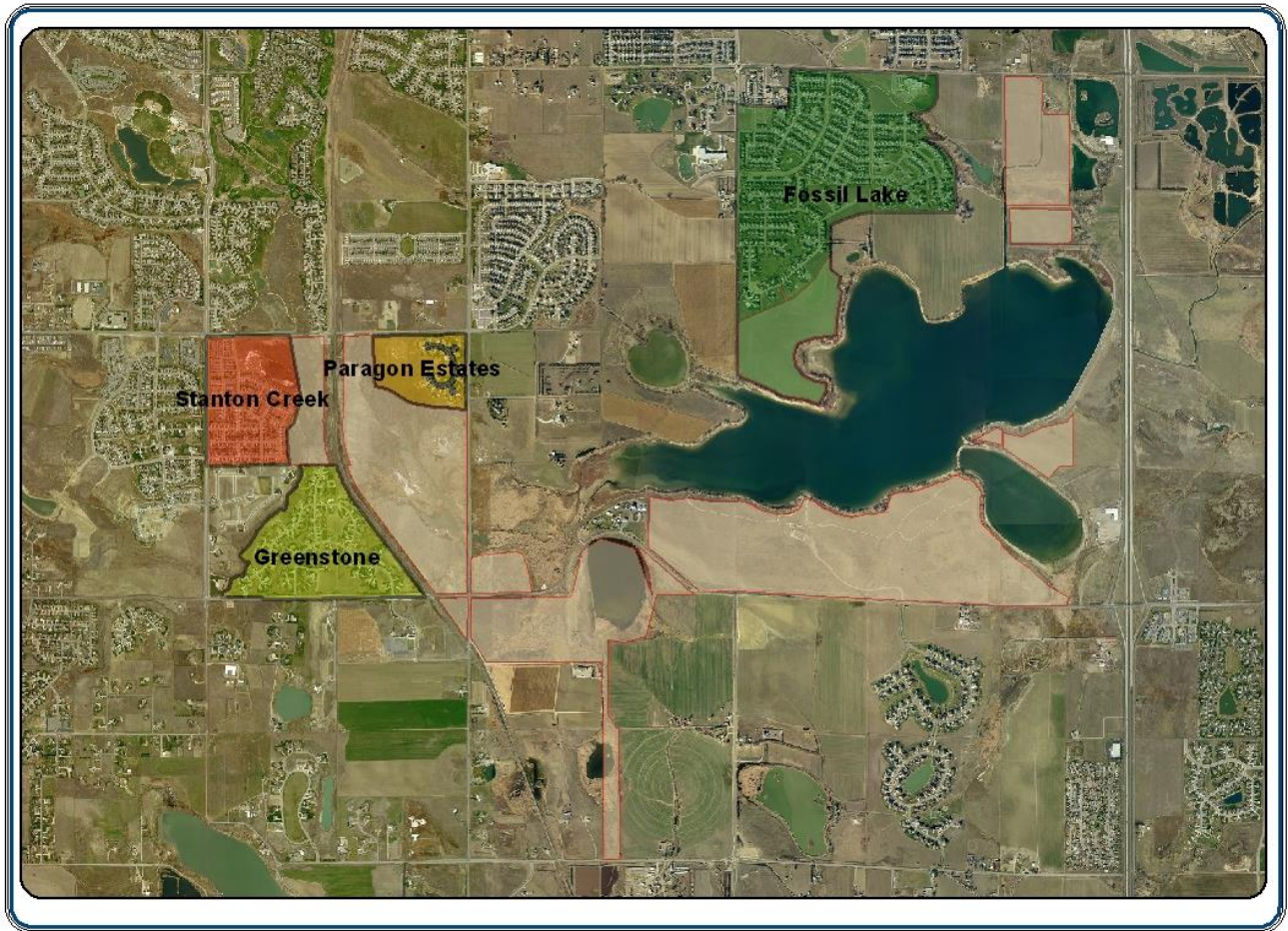


Figure 32. Southeast Grasslands Fire Management Zone Communities at Risk

Section 4: Major Prescribed Fire Projects 2002 - 2012

4.1 Past Projects

A. Kingfisher Point Natural Area Prescribed Demonstration Burn

This burn was implemented in January of 2003 within Kingfisher Point Natural Area. The primary objective of the burn was to eliminate kochia biomass. A secondary objective was to demonstrate to citizens and stakeholders in the Natural Areas Program that fire is a useful, responsible, and cost-effective tool for conducting vegetation management. Natural area staff along with Poudre Fire Authority (PFA) and Larimer County Sheriff Office (LCSO) successfully burned about 10 acres and consuming about 95 % of the kochia biomass.

B. Kingfisher Point Natural Area Prescribed Burn, Phase II

This burn was implemented in May of 2003 and was a continuation from the burn done in January. Again the primary objective was to eliminate kochia biomass. Several agencies including; PFA, LCSO, National Park Service (NPS), Platte River Power Authority, United States Forest Service (USFS), and Colorado State Forest Service (CSFS) helped natural areas staff with the burn. The burned consumed about 30 acres of kochia and other weeds and prepared the soil for seeding.

C. Coyote Ridge Natural Area Prescribed Fire

This burn was implemented in April of 2005 within Coyote Ridge Natural Area. The Objective of the burn was to removing existing biomass in order to prepare the ground for drill seeding. Natural area staff along with PFA, LCSO, and Boulder County successfully burned about 80 acres with greater than 50% biomass consumed.

D. Cathy Fromme Prairie Natural Area Prescribed Fire

This burn was implemented in September of 2005 within Cathy Fromme Prairie Natural Area.

E. Mckee Farm Prescribed Fire

This burn was implemented in April of 2006 within Coyote Ridge Natural Area. The primary objective for this burn was to start the conversion process of restoring a fallow pasture to more native grasses.

F. Kingfisher Point # 17 Prescribed Fire

This burn was implemented in April of 2007 in KFP restoration unit number 17 within Kingfisher Point Natural Area. The primary objective was to initiate native grassland restoration efforts by removing thick stands and dense mats of kochia. Natural Area staff along with PFA burned about 10 acres and greatly decreased the density and amount of kochia within the unit.

G. Arapaho Bend Prescribed Fire

This burn was implemented in October of 2007 within Arapaho Bend Natural Area. The primary objective for this burn was for weed control and conversion of habitats to healthy native vegetation. Natural areas staff along with PFA and CSFS carried out this 12 acre burned and achieved 70% biomass consumption.

H. Butterfly Woods Prescribed Fire

This burn was implemented in November of 2007 within Butterfly Woods Natural Area. The primary objective for this burn was to burn dense mats of smooth brome which will provide better access for herbicide treatments. Natural area staff along with PFA and CSFS carried out this 10 acre project and burned the majority of smooth brome and other exotics like cheatgrass within the burn unit.

I. Bobcat Ridge Unit 1

This burn was implemented in March of 2010 within Bobcat Ridge Natural Area. The primary objective for this burn was species conversion from nonnative plants like intermediate wheat and cheatgrass to native grasses like buffalograss and blue grama. This burn represents the first time that The Nature Conservancy (TNC) was used as overhead for the burn. TNC along with natural area staff and Loveland Fire and Rescue burned approximately 50 acres and consumed 75% of grass cover.

J. Plover Prescribed Fire

This burn was implemented in November of 2010 in the southeast corner of Soapstone Prairie Natural Area. The primary objective for the burn was to improve Mountain Plover habitat while also helping to expand existing prairie dog colonies within the burn unit. Natural Areas staff along with TNC and LCSO carried out this 400 acre burn. Rocky Mountain Bird Observatory conducted a line of sight survey within the burn unit and observed two birds which was deemed a success. In addition the prairie dog colonies grew substantially when compared to previous years.

K. Running Deer Prescribed Fire

This burn was implemented in May of 2011 within Running Deer Natural Area. The primary objective for this burn was to start the process of species conversion. NA staff and TNC completed 15 acres of the original 50 acres proposed for the burn. Due to weather fire operations had to be stopped. As of May 2012 no plans have been made to go back and complete the unburned units.

L. Gaura Prescribe Fire

This burn was implemented in May of 2011 in the northwest corner of Soapstone Prairie Natural Area. The objective for this burn was to reduce overall biomass of Canada thistle and other species to reduce species competition in the Gaura habitat. This burn provided a baseline for future burns to examine effectiveness of fire as a tool. NA staff along with TNC and LCSO completed this 35 acre burn and although there is not enough evidence now to show that fire had a direct correlation to the increased population of Gaura, fire did not harm the individual plants nor the overall population.

M. Bobcat Ridge Unit 5

This burn was implemented in January of 2012 within Bobcat Ridge Natural Area. The primary objective for this burn was species conversion from nonnative plants like smooth brome and cheatgrass to native grasses like buffalograss and blue grama. TNC along with natural area staff, Loveland Fire and Rescue, and LCSO burned approximately 50 acres and consumed 75% of grass cover.

4.2 Current Projects 2012

A. Bobcat Ridge RX Units 2 – 10

This project will continually be worked on over the next several years. The primary objectives for the remaining 9 burn units is the removal of plant biomass in preparation of herbicide treatment for all units which is approximately 320 acres.

B. Spiranthes RX

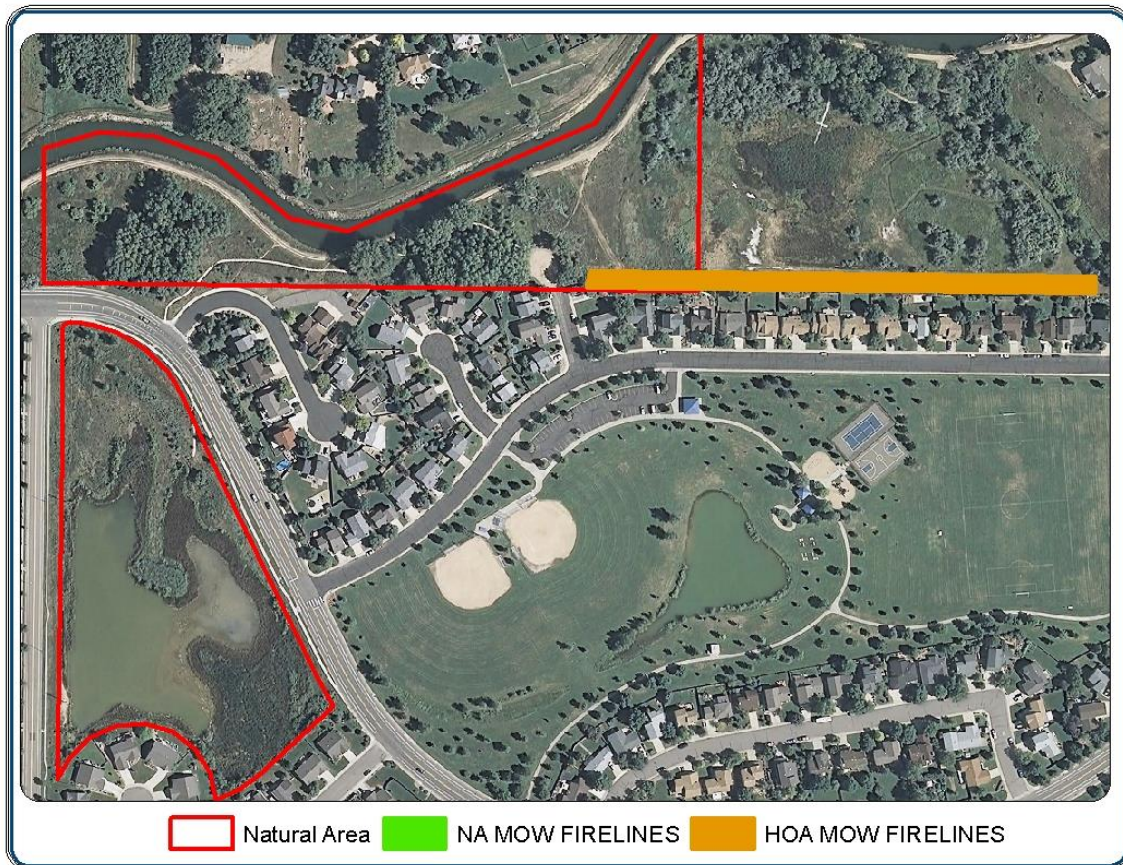
The primary objective for this burn will be to improve for Ute's ladies-tresses orchid. This will be done by the removal of plant biomass therefore allowing the Ute's ladies-tresses to better compete for soil nutrients and sun light. This burn will be approximately 100 acres.

C. Soapstone Canyon RX

The primary objective for this burn will be the removal of plant biomass in preparation for herbicide treatment for cheatgrass. This burn will be approximately 50 acres.

Appendix A: Wildland Urban Interface Mow Line Maps

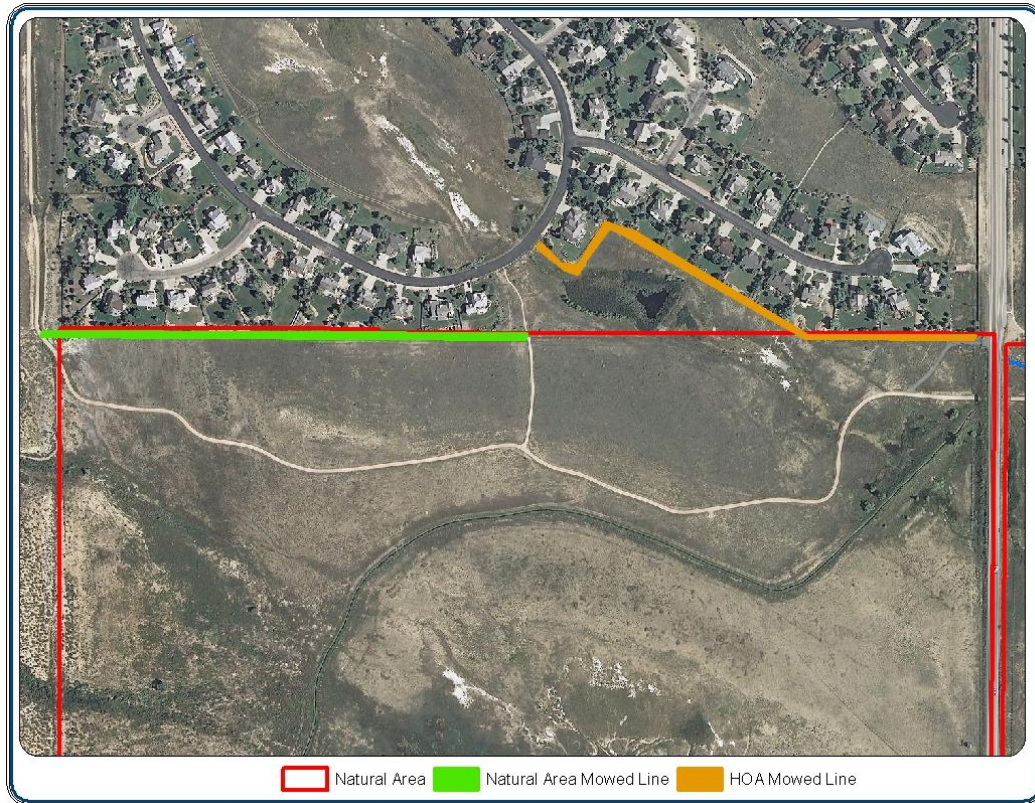
The maps shown below represent mowlines maintained by NAD or HOA's as of April 2012. It will be the fire techs job to monitor the lines however any employee can mow them. Notes on where when and how the mowed lines should be maintained, can be found in the resource management crew's mow book.



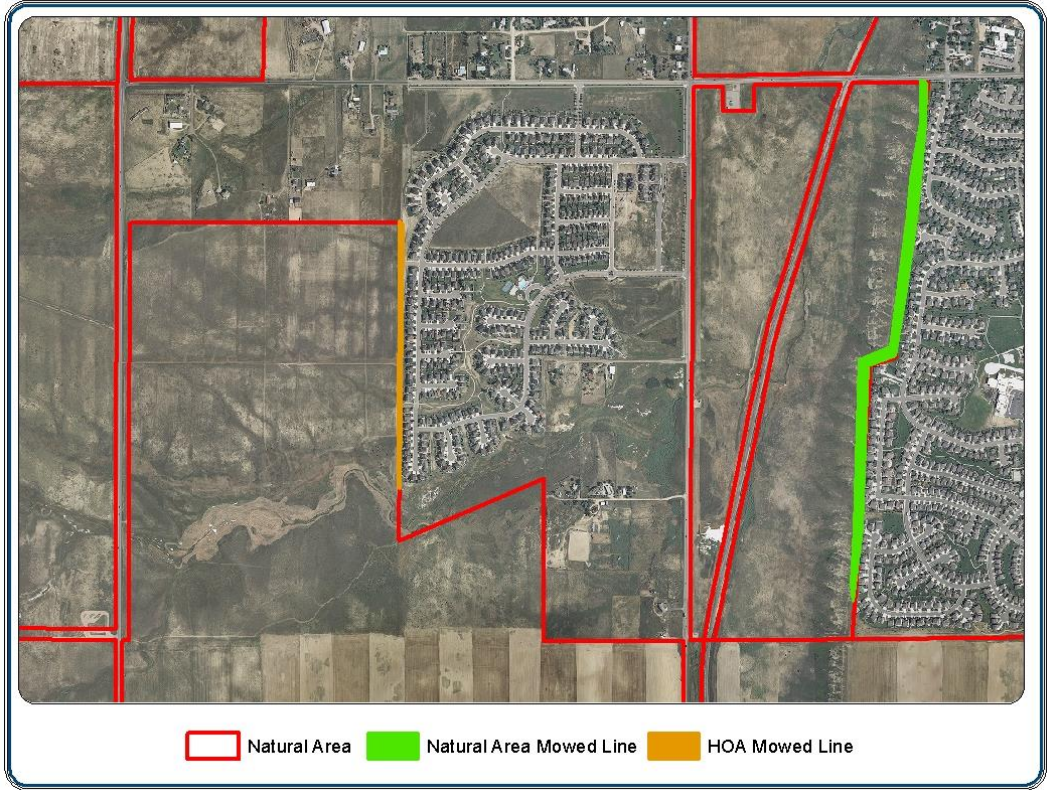
Redwing Marsh Natural Area Fire Mitigation Mow Lines



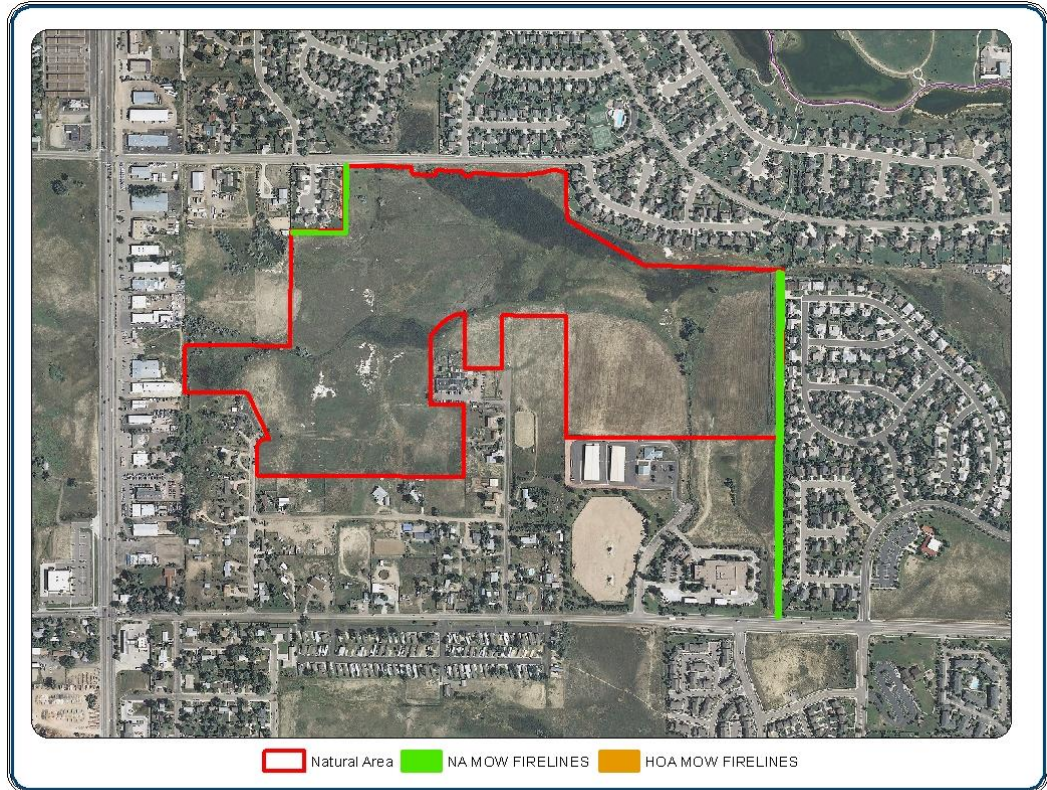
Pineridge Natural Area Fire Mitigation Mow Line



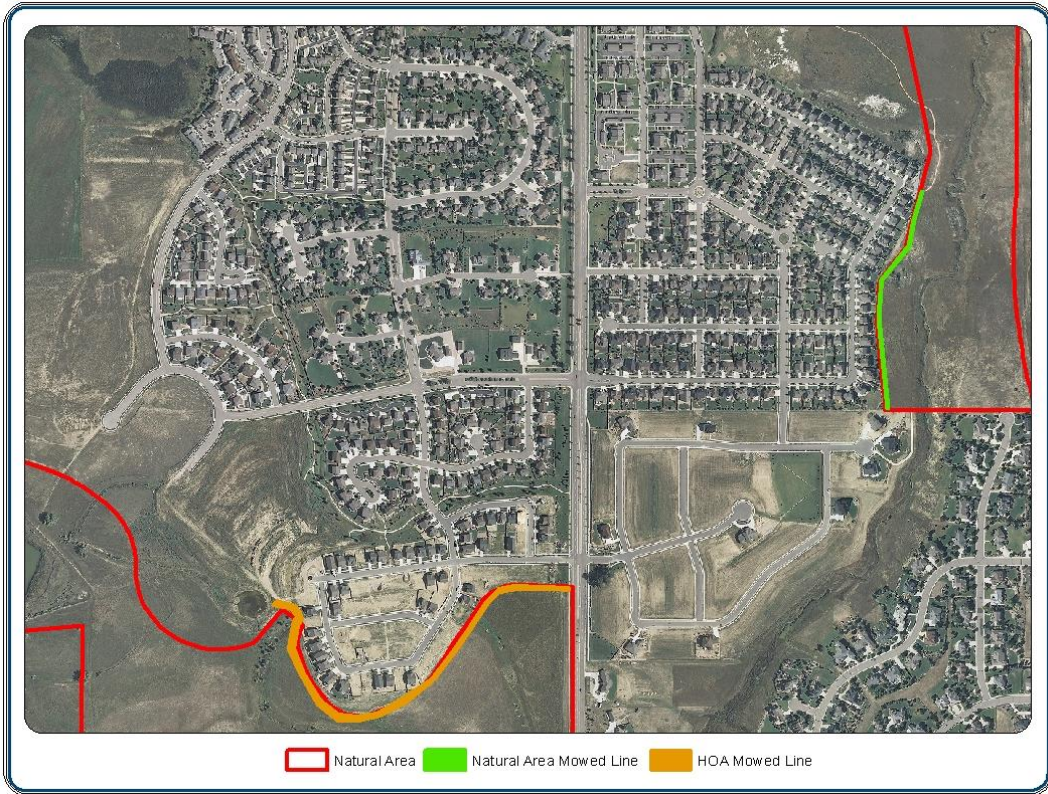
Cathy Fromme Natural Area Fire Mitigation Mow Lines



Coyote Ridge and Colina Mariposa Natural Areas Fire Mitigation Mow Lines



Prairie Dog Meadow Natural Area Fire Mitigation Mow Lines



Pelican Marsh and Fossil Creek Wetlands Natural Areas Fire Mitigation Mow Lines

Appendix B: Plant Index

Fort Collins Fire Management Plant Species List

A

annual rye · 32, 63, 66
annual ryegrass · 74
antelope bitterbrush · 14
aspen · 26

B

bindweed · 65
blue grama · 13, 14, 17, 54, 60
buffalograss · 13, 25, 54

C

Canada thistle · 25, 26, 30, 31, 60, 64
cheatgrass · 16, 17, 22, 25, 30, 31, 40, 60, 61, 64
Colorado butterfly plant · 17, 22, 25, 27, 61,
Crested wheatgrass · 16, 18, 23, 62

D

Dalmatian Toad flax · 18, 22, 27, 62, 63

F

Forked threeawn · 40
Fourwing saltbush · 17, 22, 61

H

hoary cress · 30

J

Jeweled blazingstar · 40
Jointed goatgrass · 18, 23, 62

K

Kochia · 18, 23, 62

L

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leafy spurge · 30

M

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P

Plains cottonwood · 15

Ponderosa pine · 14, 25, 30, 31

R

Rabbitbrush · 16

Reed canary grass · 16

Rocky Mountain phacelia · 25

S

sand cherry · 25

Sideoats grass · 18, 23, 62

skunkbrush · 25

slender wildparsley · 25

Smooth brome · 16, 18, 23, 62

T

three-leaf sumac · 14

Two – headed starwort · 31

U

Ute ladies' tresses · 15, 30, 40

W


Western wheatgrass · 16, 17, 22, 61


winterfat · 14, 17, 22, 61

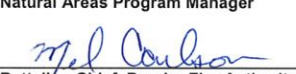
Appendix C: 2003 City of Fort Collins Natural Areas Program Interim Fire Management and Control Guidelines

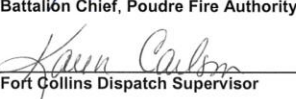
City of Fort Collins Natural Areas Program Interim Fire Management and Control Guidelines

September 22, 2003

Reviewed and Approved by: 
Natural Resources Director

Reviewed and Approved by: 
Natural Areas Program Manager

Reviewed and Approved by: 
Battalion Chief, Poudre Fire Authority

Reviewed and Approved by: 
Fort Collins Dispatch Supervisor

City of Fort Collins
Community Planning and Environmental Services
Natural Resources Department
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Fort Collins, CO 80522-0580
Phone: (970) 221-6600
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Background

The City of Fort Collins Natural Areas Program (NAP) currently manages 41 natural area sites comprising a total of over 7,600 acres. These sites vary highly in their size, location, and vegetation (fuel) types. Some are located within highly developed areas and are as small as 2 acres, while others located on the edge of Fort Collins' Growth Management Area are over 1,000 acres. Fire prone plant communities under NAP ownership include foothills grassland and shrubland, non-native grasslands and weedy fields, and drought stricken riparian forests along the Poudre River and other local waterways.

As of August 1, 2003, the NAP has documented seven summer wildfires ranging from $\frac{1}{4}$ to 4 acres in size on NAP lands since May 2003 (Reservoir Ridge, Nix, Salyer, Legacy, Coyote Ridge, Spring Creek Trail, Poudre Trail). In addition, the Program in coordination with Poudre Fire Authority (PFA) has conducted two prescribed burns (10 acres and 25 acres respectively) on Kingfisher Point Natural Area during the winter and spring of 2003. In light of this, NAP staff has identified the need to develop a series of interim fire management policies and guidelines while a comprehensive Fire Management Plan is being written and anticipated to be completed in 2004.

Today, both NAP and PFA staff acknowledge the judicious use of prescribed fire as a vegetation management tool on City natural Areas. Likewise, both organizations recognize the desire to decrease the build up of vegetation litter and woody debris within natural areas contiguous to developed areas of the city. Toward that end, this document offers a series of interim fire management policies and guidelines for the management and control of all fires on natural areas managed by NAP.

Purpose

The purpose of these interim fire management policies and guidelines is to: (1) assure the safety of the general public and NAP staff; (2) provide interim guidelines for Poudre Fire Authority for their use in controlling natural or human-caused fires on natural areas; and (3) define the role of NAP staff in both wildland fire suppression and prescribed fire efforts.

General Administrative Policies

1. The safety and protection of human life, welfare and property are the paramount and overarching objectives in managing both natural and human-ignited wildland fire on all natural areas.
2. The City of Fort Collins Natural Areas Program recognizes Poudre Fire Authority (PFA), or their designee as the City's primary fire control and management agency. To that end, it is understood that all wildland fire activities (prescribed fires and wildfires alike) on natural areas and open lands that are the jurisdiction of PFA and shall be coordinated with PFA.
3. The City of Fort Collins Natural Areas Program shall adopt National Wildfire Coordinating Group (NWCG) standards and practices for the control and management of all wildland fires unless otherwise directed by Poudre Fire Authority.
4. Poudre Fire Authority and Poudre Emergency Communication Center shall immediately notify Natural Areas Ranger Staff of any wildfire ignition on Natural Areas Program managed lands.
5. After the protection of human life, welfare and property, resource protection and enhancement of habitat, wildlife, native flora, air and soil quality, and natural ecological processes are the next most important fire management objectives on natural areas.

Natural Areas Fire Management Guidelines

Guidelines for Wildfires

1. As an interim policy, the Natural Areas Program directs Poudre Fire Authority to suppress all wildfires on natural areas especially those that (1) threaten public health, welfare, or adjacent private land; (2) threaten natural area structures including wooden fences, interpretive signs, kiosks, wildlife viewing platforms, restrooms, "Art in Public Places"; or (3) threaten known sensitive habitats (nests, dens, prairie dogs burrows, etc.).

Guidelines for Prescribed Fires

1. The City of Fort Collins Natural Areas Program in coordination with Poudre Fire Authority shall use prescribed fire as a vegetation management tool on City-owned or managed natural areas and open lands. Prescribed fire may be used for the purposes of (but not limited to): fuels reduction, weed control, habitat enhancement, and biomass removal.

2. All prescribed fires shall be conducted in coordination with Poudre Fire Authority. Implementation of such fires shall carefully follow stated plans and not be conducted if objectives specified in the prescribed burn plan cannot be met. All required permits (State of Colorado, PFA, etc.) shall be acquired in advance of prescribed burning and all essential agencies and appropriate publics shall be notified.

Guidelines for Natural Areas Staff (Roles)

1. It is the policy of the Natural Areas Program that personal safety is paramount objective of staff involvement.
2. All Natural Areas Program Staff are responsible for reporting any observed or suspected fire activity first to Poudre Emergency Communication Center (911), then to Natural Areas Ranger Staff and Program Manager in that order.
3. The first arriving fire agency (PFA, Larimer County, US Forest Service, etc.) shall assume Incident Command at the time of arrival on scene. Natural Areas staff that may have been first on scene should provide all necessary information to the Incident Commander including known or suspected visitors in the area, lay of the land, resources at risk, location of trails or other fire breaks, recommend access points or routes, etc.
4. Any Natural Areas Program staff who participates in wildfire suppression or prescribed burning shall hold an updated and valid Incident Qualification Card ("red card") issued by a recognized and qualified agency.
5. Any Natural Areas staff shall (prior to engaging in fire control) be suited with Nomex shirt and pants, helmet, eye protection, suitable leather boots and gloves, fire shelter, water to drink, and handtool (shovel, combi-tool, mcloud, etc.) consistent with PFA direction and NWCG standards.
6. All Natural Areas Ranger staff shall be trained in Basic Wildland Firefighting and be prepared to respond to wildfires for the purposes of initial fire sizeup and reporting, serving as agency representative to Incident Command (IC) and assisting PFA or its designee with initial attack. When on scene, the most senior and experienced ranger shall act as the single point of contact (primary liaison) to Incident Command to provide information on natural area layout, resources at risk, etc.
7. Additional personnel resources (NA staff) may be recruited by the IC or Natural Areas Ranger to aid with fire operations, or non red-carded

individuals to assist with trail closures, provide information, and other like assignments.

8. The lead Natural Areas Ranger on a wildfire incident shall be informed as to the management prescription for each natural area when it is available.

Next Steps

NAP staff will over the course of 2003 and early 2004 work with PFA to develop a comprehensive Fire Management Plan to include additional policies and fire management objectives for NAP managed natural areas. It is anticipated that the 2004 plan may include guidelines on the use of prescribed fire including identifying safe areas and timing when prescribed wildfire under a "contain and control" may be used as a management tool for resource benefit. As part of this, city Natural Resource Department staff is exploring the appropriate permitting required by the Colorado Department of Public Health and Environment.

Staff will also give careful thought to what fire management challenges and needs future land acquisitions may pose as the NAP considers more rural (and fire prone) lands. It is likely that the Program's fire management responsibilities will grow with acquisition of additional lands and restoration of existing sites.

