

# STRUCTURE

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*Cheyenne is an authentic western town  
with deep historic roots.  
Its architecture, railroad and roadway connections,  
government and military functions,  
vibrant ranching and wide open spaces,  
form a unique heritage that endures today.  
The community believes that this heritage  
is key to Cheyenne's identity  
and important to preserve, enhance, and emulate.  
Growth and development signals the prosperity of our community  
and encourages ambition and innovation  
that characterizes a great place to live.  
New development should enhance Cheyenne's  
western town character and quality of life,  
creating a tapestry that future generations continue to admire,  
instilling a pride in calling Cheyenne "home."*

*- PlanCheyenne*

## Structure: A Framework for Belvoir Ranch Development

### ELEMENTS OF STRUCTURE

*Structure* provides a framework for future use and development of the Belvoir Ranch and The Big Hole properties. Developed through a community-driven planning process, this handbook is intended to ensure that any future development of these wonderful properties responds to three overarching community goals: character, quality, and authenticity.

Five major sections make up this handbook, including:

**1:** *A Community-Driven Planning Process*

This section tells the story of the purchase of the Belvoir Ranch and The Big Hole properties, and how the community has been involved in the master planning process.

**2:** *A Vision for Stewardship of Belvoir Ranch and The Big Hole*

This section offers a broad, long-term vision that can be used as a “touchstone” for evaluating the types of uses and development that are appropriate for the properties, to ensure that they are cared for properly and remain an important part of Cheyenne’s legacy for generations to come.

**3:** *Existing Site Conditions and Planning Considerations*

The map and accompanying text describes the site’s landscape, streams and creeks, wildlife habitat, archaeological artifacts, views, and other significant elements of the properties. It also reviews major considerations, including existing ranching and railroad operations, that will affect any future public use and development.

**4:** *Significant Character Zones*

Because the properties together encompass almost 22,000 acres, looking at smaller, distinct character zones helps us to break the planning process down into more manageable pieces, as well as understand the special qualities that make each of these zones unique and special. These character zones are defined based on existing site conditions and current uses and activities.

**5:** *Design Principles*

This final section illustrates methods for promoting sustainable site development. They are intended to guide the implementation of the Master Plan, including both construction of new facilities and management of the property, over many years. They illustrate what it means to be responsible stewards of the land, as well as “best practices” that should be encouraged.



*Aerial view of cattle grazing along Lone Tree Creek looking southwest.*



## ONE OF FOUR PARTS OF THE BELVOIR RANCH MASTER PLAN

This handbook is one of four parts of the Belvoir Ranch Master Plan, which will become a component of *PlanCheyenne*, the Cheyenne Area *Comprehensive Plan*.

- ★ *Snapshot* involves collecting, assembling and analyzing relevant data on existing site conditions.
- ★ *Structure* establishes the building blocks that shape the properties' physical character and conceptualizes the community's vision.
- ★ *Shape* documents the Master Development Plan and provides policies and guidelines for managing the properties so that their significant qualities and features will be preserved for future generations of Cheyenne residents.
- ★ *Build* provides strategies for phasing in proposed improvements, as well as approaches to financing capital construction and ongoing operating costs.

## HOW TO USE THIS HANDBOOK

It may take many years to implement some or all of the improvements on the Belvoir Ranch and The Big Hole properties, and some modifications may be made to the plan as community needs evolve and change. This handbook is intended to serve as a guide for interpreting the community's intentions for the properties, the importance of sustainable stewardship, the types of uses that are compatible in each zone, and management practices that will preserve underlying resources.

The Design Principles are not intended to be rigidly prescriptive, nor to constrain creative design. Rather, they represent “best practices” for designing and managing with a light hand, with respect for the properties' special character, and with an eye toward conserving finite or non-renewable resources.

They also address the features that contribute to character, quality, and authenticity — and that make the properties wonderful examples of Cheyenne's heritage. The principles are accompanied by photos and character sketches that illustrate these concepts. Together, the text and images are the basis for the development plan's form and visual character.



## A Community-Driven Planning Process

Community participation is essential in developing a sound and implementable master plan for the Belvoir Ranch and The Big Hole properties. Because the properties were purchased with public funds, and for public benefit, community opinions about how the properties should ultimately be developed, were key considerations in the planning process.

This section tells the story of the Ranch and The Big Hole purchases, and describes how Cheyenne residents has a key hand in developing the Plan.

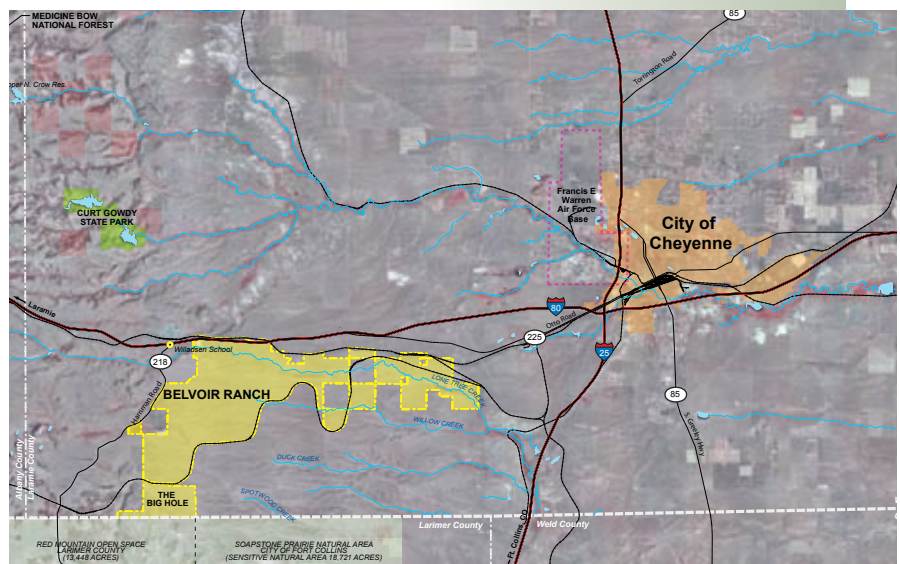
### PURCHASING BELVOIR RANCH AND THE BIG HOLE

Located 16 miles west of Cheyenne, Belvoir Ranch and The Big Hole consist of 18,800 acres with an additional 3,400 acres of land leased from the State of Wyoming.

The 2003 purchase of Belvoir Ranch was funded by The City of Cheyenne Board of Public Utilities (BOPU) to expand the City's water supply, and by the Department of Public Works for a possible landfill site. Purchase of the Ranch property allows for expansion of the City's infrastructure as it grows, as well as for compatible recreation.



*Public input was a key part of developing the Plan for the Ranch.*



*Belvoir Ranch Context Map*

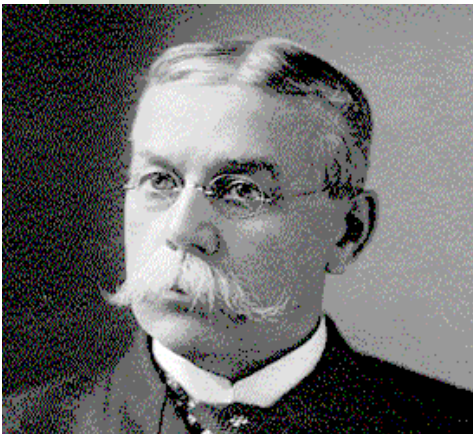


*View of The Big Hole from the rim property*

The Big Hole was purchased in 2005 from The Nature Conservancy, which holds a conservation agreement on the property. It consists of 1,000 acres of rim property and 800 acres of spectacular red rock canyon scenery. It is part of a regional area identified as the Laramie/Foothills Mountain to Plains Project, which is sponsored by Larimer County, the City of Fort Collins, the Nature Conservancy, and the Legacy Land Trust.

The property will most likely remain natural, allowing selected, low-impact activities such as hiking or horseback riding. Management of The Big Hole will happen through a partnership between the City of Cheyenne, Larimer County, and the Nature Conservancy.

*The Belvoir Ranch area has been a colorful part of Cheyenne's history for generations.*



*Francis E. Warren (photo: Wyoming State Historic Preservation Office)*

In the 1860s, the Ranch property included a number of smaller homesteads, that would be consolidated in the next decade by the vast Warren Livestock Company, owned by Francis E. Warren, former Territorial and State Governor. In 1905, Captain John (Blackjack) Pershing married one of Warren's daughters and the buildings that formed the core of what became Belvoir Ranch, came to him in marriage. Ranching and grazing have been central features of the property since that time.

The railroad has been a major presence for almost as long. The construction of the Transcontinental Railroad during the 1860s contributed significantly to Cheyenne's development as the "Magic City of the Plains" and to the growth of the Union Pacific Railroad. In 1867, the railroad's chief engineer selected a location that would become a division point for the Union Pacific and named it Cheyenne. By the year's end, the new city housed thousands of people. As railroad robberies became prevalent, the U.S. military established forts, including Fort Russell (later F.E. Warren Air Force Base) to protect railroad workers and civilians. Railroad routes through the Ranch property remain in use today.

During the Cold War, the Air Force constructed several Atlas Missile silos on the Ranch. These were abandoned several years later, though the silo structures still remain as a reminder of this period in the community's history.



*Union Pacific Railroad track laying in Wyoming (photo: Wyoming Tales and Trails.com)*

## THE PLANNING CONTEXT

Cheyenne is a community with a rich planning tradition—a tradition that has shaped and guided planning for the future development of Belvoir Ranch. Two plans, in particular, are important to mention.

In 2002, the Greater Cheyenne Chamber of Commerce launched *Vision 2020*, a community visioning process. At the time, planners noted that “...Cheyenne is poised to become the northern anchor for the booming Front Range economy and a complete community that attracts people because of its quality of life.” The community-driven vision stresses the importance of the City’s history, image and quality of life to economic health and residents’ well-being.

Important goals that followed from this vision included protecting natural areas, conserving water, supporting the City’s agricultural areas, and protecting key wildlife habitat. Significant in this planning process was the connection that was made between protecting valued resources and community quality of life, and the idea that open space could act as a “draw” that would stimulate positive economic investment and prosperity.

In 2006, the City completed *PlanCheyenne*, a major update to the Cheyenne Area’s Comprehensive Plan that is intended to guide growth while retaining the character and authenticity that make the City so unique and special.

*PlanCheyenne* is important to the Belvoir Ranch/The Big Hole planning for a couple reasons.

- ★ **First**, the Plan reinforces and emphasizes the relationship between preservation of open lands, quality built environments, quality of life, and economic growth and prosperity; this helps us to understand how this vast property can be a significant asset for Cheyenne.
- ★ **Second**, the planning process and innovative approaches for drawing members of the public into the discussion, are important models for this planning effort.



*Potential land use and recreational opportunities were evaluated with a dot-voting exercise at a public meeting.*

## HOW CHEYENNE RESIDENTS HAVE SHAPED THE BELVOIR RANCH/THE BIG HOLE PLAN

Cheyenne residents have participated actively in the planning process. Since the properties are not open to public access, few residents have actually seen the site — posing a challenge for the planning team. Through the use of an aerial video, shot from a helicopter, the City has been able to allow residents to “experience” the site and understand its unique qualities.

An initial “visioning” workshop was held in June 2007, drawing approximately 70 people, who were able to express their views on how best to use the site, key areas for conservation, and areas that might be developed in a compatible manner to provide income to the City. Based on that workshop, the vision and design principles presented in this document were developed and refined.

The vision and principles then guided the creation of a preliminary land use plan that defines appropriate uses and organizes them on the property. This preliminary plan was discussed at a second workshop, held in October 2007, and participants’ recommendations for revisions were then incorporated into a revised plan.

The next section of this document presents the vision for stewardship of the Belvoir Ranch and The Big Hole properties.



## A Vision for Stewardship of Belvoir Ranch and The Big Hole

### VISION

The community's vision for Belvoir Ranch and The Big Hole properties is an enduring statement about the value and significance of the properties and how the qualities that make them valuable, should be preserved. It is a statement about a desired future, that should inspire and motivate, even though fully realizing the vision may take many years.

Finally, a good vision statement is inclusive, flexible enough to support many ideas and points of view, and allowing everyone to feel that their particular interests and perspectives can be accommodated. The Cheyenne community's vision for stewardship of these magnificent properties is summarized in the box to the right.



*Belvoir Ranch is a unique and significant piece of Cheyenne's rich cultural heritage and regional open space system.*

*To be responsible stewards of the land, the City of Cheyenne and the Board of Public Utilities are seeking to manage it as a sustainable "working landscape" that contributes to the area's economy and its quality of life.*

*The Ranch shall be managed as a community asset and legacy, balancing uses and resources in such a way as to sustain its unique landscape character and heritage, for generations to come.*



CONCEPTUAL CHARACTER IMAGES



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## Existing Site Features and Planning Considerations

### WHAT MAKES BELVOIR RANCH AND THE BIG HOLE SPECIAL?

Located 16 miles west of Cheyenne, Belvoir Ranch and The Big Hole consist of 18,800 acres with an additional 3,400 acres of land leased from the State of Wyoming.

The Ranch is bounded by I-80 and Route 225/Otto Road to the north. Union Pacific Railroad (UPRR) is the southern boundary on the west end of the Ranch. The UPRR track runs north and south, bisecting the property. The UPRR tracks then travel along the northern boundary on the east end of the Ranch.

*Opportunities for City Water and Waste Management:* The purchase of Belvoir Ranch was funded by The City of Cheyenne Board of Public Utilities (BOPU) to expand the City's water supply, and by the Department of Public Works for a possible landfill site. Both allow for expansion of the City's infrastructure as it grows.

BOPU has three hydrogeologic studies underway. These test wells have found abundant groundwater in aquifers underneath the Ranch.

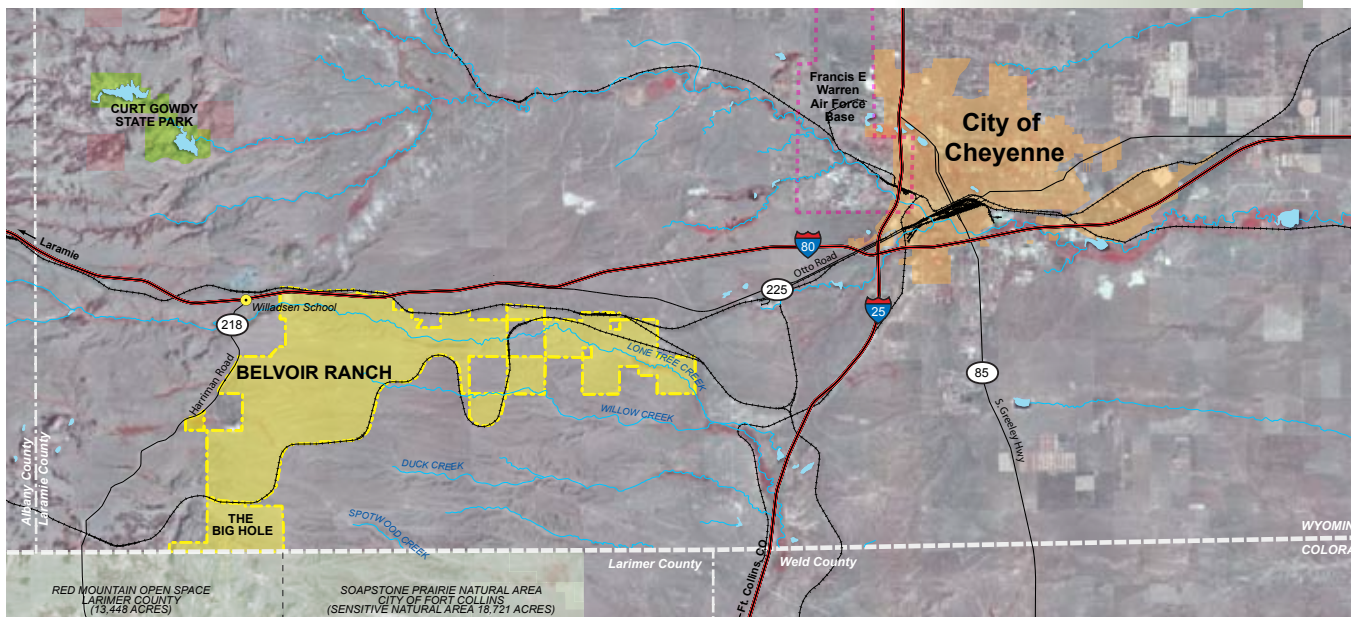
A landfill is being considered for an area in the southwestern portion of the property. It is expected to utilize up to 600 acres with a five-mile access road constructed from the Warren I-80 access.



The southern boundary of the Ranch is defined by the UPRR.



Over 2,000 head of livestock currently graze on the Ranch.



Belvoir Ranch Context Map





Significant historic sites, like this homestead above, will need to be surveyed prior to any future development.



Prime wildlife viewing areas have been identified on the Ranch.



Some areas of the Ranch have potential for challenging mountain bike trails.

*Continuing a Ranching Heritage:* Belvoir Ranch is currently a working ranch with nearly 20,000 acres under a grazing management plan. Each year, over 2,000 head of livestock are grazed on the property. The Ranch headquarters is at the eastern end of the ranch. Housing, barns, corrals and prime pasturing are all in the Meadow Pasture, one of 28. The headquarters provides an excellent opportunity for animal-related recreational activities.

*Significant Archaeological Sites:* Prehistoric and modern peoples inhabited the Ranch and The Big Hole and many of these historically significant cultural sites have yet to be surveyed. These sites, along the western edge of Belvoir and continuing into The Big Hole, will need to be surveyed prior to any future development. The Opportunities and Constraints map illustrates, in very general terms, the zones in which the largest concentrations of these sites are located.

*Wildlife and Plant Life:* The dominant habitat type in Belvoir Ranch is mixed-grass prairie, which is home to many species of plants and wildlife. These include antelope, mule deer, elk, fox, bear, small mammals, rattlesnakes, birds, hawks and raptors to name a few. Prime wildlife viewing areas are indicated on the Opportunities and Constraints map. In addition, Belvoir has habitat for the Colorado butterfly plant, listed as threatened under the Endangered Species Act. A golden eagle's nest is located in the northwest corner of Belvoir. Other sensitive species on the Ranch include Preble's meadow jumping mouse and Howard's evening primrose.

*Landforms:* The predominant landform embracing the Ranch is rolling prairie sliced by draws formed by drainageways. However in some areas, there is significant topographic variation that has potential for challenging mountain bike trails.

The vast treeless rolling prairie offers limitless vistas underscoring the richness of open space. Views to the southwest settle on the Rocky Mountains and to the West the Twin Peaks reinforcing the Mountains to the Prairie connectedness. At the west end of the Lone Tree Creek corridor is a historical site that is accented with mature trees.

*Historic Travelways:* Three historic travel routes cross Belvoir Ranch. The Lincoln Highway (US 30) route follows the northern boundary of the Ranch. The Twin Mountain Wagon Road runs east and west and bisects the Ranch then follows the Ranch boundary as it turns towards the southwest. The Denver Fort Laramie Road runs north and south through the Ranch. The remnants of historic ranch buildings can be found along the route.

*The Atlas Missile site* is relatively intact and represents defense systems during the Cold War period. The Missile site is easily accessed via a short direct paved road that could be simply modified with vehicle access control gates. In so doing the relatively level area could be utilized for large group special events with minimal environmental impact or infrastructure cost.

*Access Points:* Existing and potential access points have been identified and are labeled on the map. The existing Warren access is the most suitable gateway for public access to Belvoir Ranch at this time.

The private access at Borie Field (Route 225/Otto Road) will remain operational for ranch personnel to access the Ranch Headquarters from Otto Road. However, this entry will not be a public road unless substantial design improvements are made to three railroad crossings.

Potential secondary, or controlled, access points might include:

- **Borie (Otto Road)**, an at grade access with 6 railroad crossings where 80+ trains cross per day;
- **Missile Site**, a potential controlled access point off Harriman Road;
- **Rock Quarry**, another potential access point from Harriman Road that will require an easement across State property;
- **Haygood**, another access point from Harriman Road that would require an easement through private property.

Railroad crossings (at-grade or underneath the rail through culverts) are also shown.

*Links With Regional Open Space:* Opportunities for connectivity and integration with other significant open space properties exist. Red Mountain Open Space and Soapstone Prairie Natural Area in Colorado are currently being planned and trails connecting to The Big Hole will be open as early as 2009. Opportunities for greenway bike trails connecting to the City of Cheyenne and other parks, such as Curt Gowdy State Park, may also be possible.

*Renewable Energy:* Wind energy development may be a viable option for revenue generation on the Ranch. The wind resource at Belvoir Ranch is classified by the National Renewable Energy Lab as between class 4 and 6 (“good” to “outstanding”) for wind power production. Class 7 (“superb”) is the highest classification. Wind corridors have been identified based on topography following ridgelines on the western portion of the property. They represent the most suitable locations to be developed.



*The former Atlas Missile site could tell the story of the Cold War.*



*Existing Borie Fields access bridge over the UPRR Overland Route would require reconstruction to allow public access into the Ranch.*



*Viable wind corridors have been identified on Belvoir Ranch.*



*Natural gas pipeline running through Belvoir Ranch.*



*Existing transmission line running east-west on the southwestern half of the Ranch.*

*Wells and Pipelines:* Utilities on Belvoir Ranch include a transmission line, oil wells, groundwater monitoring and test wells, and two pipelines.

The Ranch has groundwater monitoring and test wells covering the site. The Army Corps of Engineers has monitoring wells throughout the site testing the extent of trichloroethylene (TCE) contamination from the Atlas Missile Site. The City of Cheyenne Board of Public Utilities has groundwater test wells throughout the Ranch. Additional, existing aquifers and wells can also be found throughout the site.

Two oil wells are located on the eastern end of the site. No transmission lines are associated with these wells. Two natural gas underground pipelines run from the corner of the Granite Ranch Subdivision southeasterly to the Union Pacific Railroad right of way, each with a 50-foot easement. Western Area Power Administration (WAPA) transmission line crosses Belvoir near Haygood Canyon and runs towards the east.

**INSERT 11x17  
OPPORTUNITIES/CONSTRAINTS MAP  
HERE  
(Z-fold)**



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## Significant Character Zones

### HOW DO WE PLAN FOR A 22,000 ACRE PROPERTY?

With a property so large, how do we even begin to think about planning for uses and activities at Belvoir Ranch and The Big Hole?

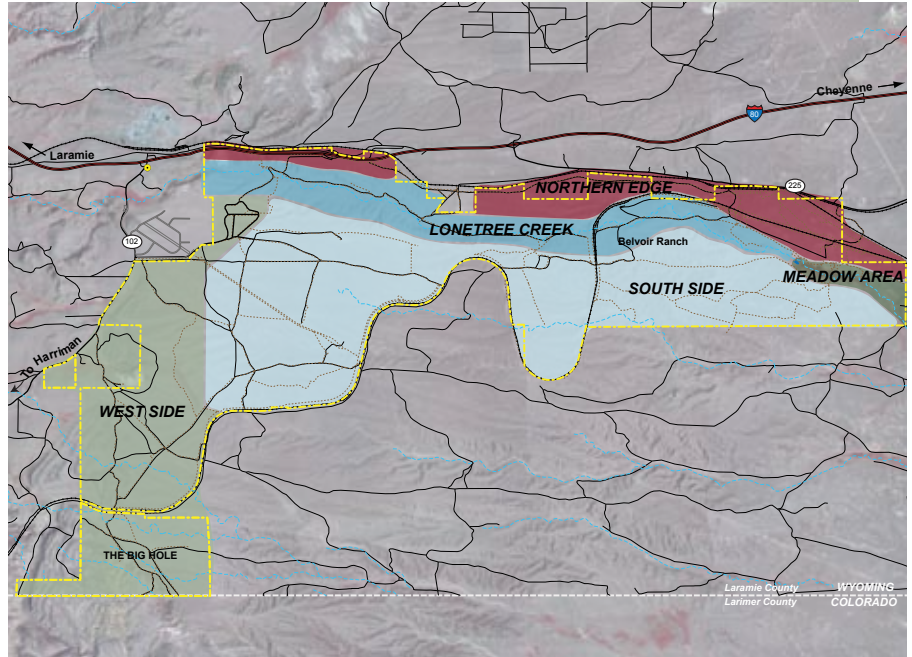
Having analyzed existing conditions, locations of significant resources, and important considerations such as access, the planning team has identified five distinct zones that have differing resources and opportunities for use and development. These are discussed below.

#### ZONE 1: The Meadow

Belvoir's hay meadow is a special but scarce resource, covering only three percent of the site's land area. It is flood irrigated with water from Lone Tree Creek and the Borie Well, and maintains a lush appearance and character. It is the first pasture in which new calves are placed each spring, and is also near the site of the original Ranch House. Recreation development in and around the meadow could offer opportunities to demonstrate environmental stewardship.

#### ZONE 2: Lone Tree Creek

The area along Belvoir's Lone Tree Creek provides significant habitat for birds and other wildlife. The corridor is lined with cottonwoods and willows. Many remnant homesteads and windbreak landscapes are still visible along the creek.



*Belvoir Ranch can be divided into five character zones based on physiographic features, resource values and considerations, access, and potential uses. A program, concept plan and management plan will be tailored to each zone to ensure that the use program is compatible with resource protection.*



ZONE 1: The hay meadow in The Meadow area is a special, but scarce, resource on the Ranch.



ZONE 2: Lone Tree Creek is a perennial stream corridor providing significant habitat for birds and other wildlife.



*ZONE 3: Northern Edge of the Ranch is bound by roads and rail lines.*

### *ZONE 3: Northern Edge*

Bounded by roads and rail lines, the northern edge provides access to the site from I-80 and a narrow corridor for grazing and wildlife.

### *ZONE 4: South Side*

Relatively remote, the south side features grazing pastures, topography that varies from flat to rolling, historic resources, and views to Rocky Mountain National Park.

### *ZONE 5: West Side*

This area is abundant with historic resources and opportunities for recreation and observing wildlife. Here, the landscape shifts from undulating mixed-grass prairie to more prevalent rocky outcrops with mountain mahogany and antelope bitterbrush to a ponderosa pine community at an elevation of approximately 7,300 feet. This area also provides access to The Big Hole's dramatic red stone canyons.



*ZONE 4: Much of the South Side is bound by rail lines.*



*ZONE 3: The West Side landscape consists of rocky outcrops surrounded by mountain mahogany.*



## Design Principles for Structure Plan Elements



(Left to right) A homesteader's hand-dug well from the late 1800s; Interpretive signage; Mountain biking trail system being developed in Curt Gowdy State Park (photo courtesy of Kevin Rokke); Cattle grazing on Belvoir Ranch.

This section offers design principles for sustainable site planning and management. They cover four areas:

- ✦ *Sustainable Resource Management:* These are the elements that give the site its special character. Principles for minimizing or mitigating impacts to these resources are provided.
- ✦ *Sustainable Facilities and Development:* This category covers the built environment, and how that environment is intended to harmonize with the property's natural features. It also covers overhead transmission lines and other utilities.
- ✦ *Access and Circulation:* Gateways, roadways, trails and trailheads are covered here.
- ✦ *Sustainable Property Management:* This section addresses visitor safety and security, and "best practices" for avoiding conflicts between recreational users and other ranch functions, like grazing.



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## Sustainable Resource Management

Belvoir Ranch and The Big Hole are wonderfully diverse environments.

Their landscapes range from rolling, high prairie grasslands, to stream corridors lined with willows and occasional stately cottonwoods, to the spectacular red rock canyon of The Big Hole. Birds and animals abound: visitors may see antelope and mule deer, or hawks and eagles soaring and circling overhead. From spring through fall, cattle may be grazing or moving from pasture to pasture.

Lone Tree Creek and its minor tributaries are especially unique environments. Though no longer a perennial stream, when water is flowing during the spring months, the creek is transformed into a lush green corridor. It is not surprising that many of the old homesteads are located near the creek, and visitors can enjoy looking at these relics and imagining how early settlers lived in what could be such a harsh and challenging environment.

The vastness and openness of the properties, and long panoramic views, are also special character-giving qualities. Visitors can see for miles in all directions, with views of the Front Range and Long's Peak to the west.

These resources and special qualities are reasons why Cheyenne residents — and visitors from other areas — value Belvoir Ranch and The Big Hole. This section provides a series of design principles whose overall goals are to ensure that these resources are preserved for future generations to contemplate and enjoy.

### WHY ARE THESE PRINCIPLES IMPORTANT?

- ★ *The properties' underlying resources — the scenic views, wildlife, high prairie landscape, and sense of vast openness — contribute significantly to their special character.*
- ★ *These resources are finite: once they are lost or diminished, they are impossible to re-create.*
- ★ *Careful stewardship of these resources — for example, avoiding active uses in sensitive areas, closing areas seasonally during nesting or breeding seasons, providing generous buffers around stream corridors, and siting development to avoid interrupting long views — can help to ensure that they can be enjoyed for generations to come.*



*Willow windrow contrasting with the blue sky above is an example of the scenic qualities that contribute significantly to the special character of the Ranch.*



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## Cultural Resources

### PURPOSE

*Cultural resources tell the story of the ranch's settlement, from prehistoric artifacts, to Native American tepee rings, to the ranch and railroad era of the late 1800s, to the mid-20th century missile silos. Together, these resources shape an identity unique to Cheyenne.*



*Windrows, a remnant of past homesteading, remain in Belvoir Ranch.*



*Missile silos (above)  
and a homesteaders hand-dug well  
from the late 1800s (below).*

### PRINCIPLES

1. Protect potential prehistoric resource areas until they can be surveyed and documented.
2. Protect, enhance, and interpret cultural resources that relate to historic roads, homesteading, the railroad, and military history.
3. Provide a variety of media and methods to educate the visiting public about the Ranch's significance, and to provide a variety of options for interpretation.
4. Manage public access to cultural resources in a manner that allows compatible uses and intensities, without degrading the integrity of the resource.
5. Maintain ties to the Ranch's agricultural history by enhancing the viability of its agricultural production and uses.

## 5 SUSTAINABLE RESOURCE MANAGEMENT

### Ranch Ecology

#### PURPOSE

*The Ranch is located in the transition zone from the Rockies to the High Plains. Much of the Ranch is characterized as shortgrass prairie with representative grassland animals and plants, but diversity is enhanced by the proximity of the Front Range foothills. At higher elevations and steeper slopes on the Ranch, pine forests and mountain mahogany/antelope bitterbrush stands grow, and the area is occasionally used or visited by Rocky Mountain foothill species such as elk, mountain lion, and*



*Riparian areas, such as Lone Tree Creek (above), provide habitat to the majority of species found in Belvoir.*



*In addition to grasses, many other plants including the pincushion cactus (above) are found on the Ranch.*

#### PRINCIPLES

1. Maintain the Ranch so that it continues to function as part of the eastern Rockies and western High Plains ecosystems.
2. Protect moist riparian areas to provide habitat for Federally-listed species such as Ute ladies'-tresses orchid, Colorado butterfly plant, and Preble's meadow jumping mouse, and for Wyoming Species of Concern such as marsh felwort.
3. Preserve and restore native shortgrass prairie habitats using rotational grazing, burning, weed control, and re-seeding with native and rare species such as blue grama, buffalograss, and mountain muhly.
4. Control noxious weeds, such as cheatgrass, leafy spurge, and toadflax, using man-made (mowing, herbicide spraying) and natural (controlled burns,

## Riparian Corridors

### PURPOSE

*Lone Tree Creek, Duck Creek, Willow Creek, and Spotwood Creek are intermittent drainages that flow through the Ranch. Lone Tree Creek is the only drainage that has water for most of the year, and well-developed riparian vegetation along the creek attracts many kinds of wildlife.*



*Lone Tree Creek (above) makes up less than five percent of the Ranch, yet is habitat to eighty percent of the species found on the Ranch.*



*Aerial view of the Lone Tree Creek Corridor.*

### PRINCIPLES

1. Protect and enhance riparian vegetation to improve habitat for species such as Preble's meadow jumping mouse, Ute ladies'-tresses orchids, Colorado butterfly plant, deer, and songbirds.
2. Limit and locate development along Lone Tree Creek so that roads, trails, and other structures do not lead to trampling of riparian vegetation, compaction of soils, and erosion along the waterway. Maintain all trails at least 50 feet away from the riparian zone.
3. Preserve portions of Lone Tree Creek as completely undeveloped (no trails nearby) to provide some areas of refuge for wildlife dependent on undisturbed access to this riparian system.



## 5 SUSTAINABLE RESOURCE MANAGEMENT

### Wildlife

#### PURPOSE

*The Ranch is used by a wide variety of wildlife, especially along the Lone Tree Creek riparian zone and in The Big Hole area. Visitors may see hunting hawks and falcons, mule deer and fawns, or catch a glimpse of more rare and elusive species such as bobcats and burrowing owls.*



*Wildlife viewing opportunities include rattlesnakes. The photo above, taken on the Ranch, shows a rattlesnake that recently fed on a rodent.*



*Birding opportunities include the red-winged blackbird (above) and a ground nest (below).*

#### PRINCIPLES

1. Designate wildlife watching areas where visitors are more likely to see a variety of wildlife, but locate these where animals and their habitat will not be disturbed.
2. Provide information to educate the public about species on the Ranch, important aspects of habitat, and conservation issues.
3. Protect/enhance wildlife habitat such as riparian vegetation, nest structures, and shrub habitat to attract a variety of wildlife.
4. Consider wildlife migration corridors as part of the planning process. Connectivity to adjacent open space is important to enhance movement, maintain habitat, food sources, and reduce mortality due to auto collisions.
5. Maintain standing dead and down cottonwood and willow trees to provide habitat.
6. Identify and manage for habitat enhancement needs, i.e. noxious weed removal, riparian habitat improvement, and cottonwood regeneration.

## Big Game

### PURPOSE

*Big game species including pronghorn, mule deer, white-tailed deer, and elk commonly use the Ranch and provide for wildlife viewing and hunting opportunities.*



*Big game found on Belvoir Ranch include mule deer.*



*Elk can be found in The Big Hole.*

### PRINCIPLES

1. Guide the public to good places to view big game, provide education/interpretive materials and signage about big game ecology, life cycles, role of hunting and predators.
2. Construct new fencing in a wildlife-friendly manner so big game movement through the Ranch is not impeded.
3. Maintain hunting opportunities.
4. Manage hunting access to avoid conflicts and dangerous situations with other recreation uses by seasonal trail or area closures.
5. Rejuvenate mountain mahogany/antelope bitterbrush stands that have been depleted by heavy browsing and drought. Replanting with seedlings may be needed to replenish stands with new plants.

## 5 SUSTAINABLE RESOURCE MANAGEMENT

# Threatened, Endangered, and Sensitive Species

### PURPOSE

*The Ranch contains suitable habitat for three Federally-listed species: Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and Colorado butterfly plant. The Ranch could be an important place of refuge for these and other sensitive species.*



*Ute ladies'-tresses, Colorado butterfly plant, and Preble's meadow jumping mouse are supported by riparian habitats such as found along Lone Tree Creek.*



*Many raptor species can be found on the Belvoir, including golden eagles which nest on the Ranch.*

### PRINCIPLES

1. Protect and enhance densely vegetated riparian habitat for Preble's meadow jumping mouse.
2. Protect and enhance open, grassy wetlands for Ute ladies'-tresses orchids and Colorado butterfly plant.
3. Avoid spraying and mowing in sensitive species' habitat during times of the year that are critical for their life cycle, but recognize that some spraying or mechanical management is useful to control noxious weeds and maintain suitable habitat.
4. Cooperate with U.S. Fish & Wildlife Service, Wyoming Department of Game & Fish, The Nature Conservancy, and Colorado partners to manage Ranch land for the benefit of wildlife and habitat.
5. Continue cooperation with the U.S. Fish & Wildlife Service on the 200-acre Wildlife Extension Agreement for Colorado butterfly plant by protecting the plant and habitat and allowing yearly surveys, thereby preventing designation of critical habitat along Lone Tree Creek in the Ranch.
6. Protect the golden eagle's nest by suspending construction activities that potentially disturb nesting eagles during the nesting season (February 1 to August 31). Avoid human activity within ¼ mile of any known nest during the nesting season.
7. If present, raptor nests should be surveyed prior to construction. If active, it is recommended that no new activities take place within ¼ to ½ mile of the active nest, depending on the species.



## Geology

### PURPOSE

*Geological features in the Ranch have been shaped largely by processes erosive of wind and water. These features help to define the site's unique character and provide significant scenic views and interpretive opportunities.*



*Red soils create a dramatic view into The Big Hole.*



*Scenic rock outcrops along drainage ways could be the backdrop for various recreational activities.*

### PRINCIPLES

1. Respect key natural features, including bluffs, ridgelines, escarpments, major drainage features, rock outcroppings, valley walks and other scenic geologic features.
2. Restrict hiking and climbing on the eroded edge of 'The Gangplank' on the northwest part of the Ranch which features cliffs and rock outcrops where golden eagles have their nest.
3. Maintain vegetative cover or apply appropriate erosion controls to protect gravelly and sandy soils susceptible to wind and water erosion.
4. Respect the historic geologic value of the exposed pre-Cambrian granite, on the west side of the Ranch, that is the backbone of the Laramie Range. This pink granite is 1.4 billion years old and is similar to the granite that forms Pike's Peak in Colorado. Quarries on the northwest side of the Ranch mine the granite to make crushed aggregate used in railroad and highway construction.

## 5 SUSTAINABLE RESOURCE MANAGEMENT

### Visual Quality

#### PURPOSE

*Maintaining the visual quality of the mixed-grass prairie and rolling hills characteristic of Wyoming, as well as views to adjacent mountains and canyons, will be important in preserving the Ranch's unique experience.*



*A dramatic view looking south towards Rocky Mountain National Park from Belvoir Ranch.*



*Grand views looking south from The Big Hole Rim and into Colorado beyond.*

#### PRINCIPLES

1. Maintain distinctive viewsheds into and out of the Ranch, i.e. views to Rocky Mountain National Park, views to The Big Hole, to the mountain range to the west and open rangeland.
2. Maintain visual quality from The Big Hole to the north into the Ranch with development setbacks along the rim.
3. Visually integrate buildings and facilities into the landscape so as not to interfere with significant views. Where elements are proposed to be sited along ridgelines, ensure that they are not visible from major viewpoints along the road, or from major proposed activity centers.
4. Cluster development using historic, small scale development patterns to preserve the feeling of openness.
5. Limit development of gateway services and amenities to the I-80/Otto Road corridor.
6. Design plantings to correspond to the natural character of the landscape and ecosystem or historic planting patterns. Locate trees along riparian corridors or in windrows near development.
7. Restrict billboards along I-80 and massive signage along perimeter roads to preserve scenic views.

## Connected Regional Open Space

### PURPOSE

*Belvoir Ranch is an opportunity to create a regional open space while providing a balance between recreation and preserving natural, cultural, and scenic resources.*



*Scenic view of The Big Hole looking south along the Front Range. The Big Hole has the most dramatic topographic features on the Ranch*



*Open space has an intrinsic value as well as economic value to the City of Cheyenne and its residents.*

### PRINCIPLES

1. Plan, develop, and manage the City and State land parcels comprising Belvoir Ranch as one contiguous 22,200 acre parcel.
2. Consider land acquisitions and trades to increase connections to adjacent open space.
3. Organize visitor experiences to emphasize the transition from rolling prairie to the Southern Laramie Foothills. Collaborate with the Laramie Foothills - Mountain to Plains Project within the Ranch perimeter.
4. Collaborate with local and adjacent agencies for regional open space management and planning.



## 5 SUSTAINABLE RESOURCE MANAGEMENT

### Water Resources

#### PURPOSE

*The purchase of Belvoir Ranch was partially funded by The City of Cheyenne Board of Public Utilities to expand the City's water supply and make it less vulnerable to droughts and impacts caused by climate change. Developing water resources on the Ranch also has great potential for potable water and recreation uses.*



*An artesian well located on the Ranch.*



*Former railroad reservoir used to supply water for steam trains.*

#### PRINCIPLES

1. Develop municipal water supply sustainably to avoid degrading wetland/riparian ecosystems.
2. Place new well development near existing roads and infrastructure when possible to reduce habitat disturbances and site erosion. Interconnect wells with roads that respond to topography and site conditions.
3. Develop surface water features that support multiple recreation activities.
4. Create water bodies with edges reflecting the existing topographic contours and natural water courses.



## Sustainable Facilities Development

Belvoir Ranch was purchased to address Cheyenne's water and waste management needs, and to provide opportunities for compatible public uses. These might include recreation, but could also include compatible development that generates revenue for the City that might offset some of the costs of developing recreation facilities.

In visioning sessions with community residents, a variety of lower-impact recreation uses were suggested. Some of the most popular included hiking, biking, and horseback riding; camping; fishing; golfing on a "links" (largely native turf) course; and educational activities. A visitor center and/or education center were suggested, as well as smaller-scale convenience retail — similar to those found at gateway villages outside national parks — that serves visitors' needs.

The presence of the University of Wyoming, and a thriving business community, suggest other possible uses, including a small-scale research campus that might support agricultural or archaeological study, or a retreat center that might be used for corporate off-site meetings or special events.

Other suggested uses, and corresponding facilities, include energy development, possibly through the installation of solar panels or wind turbines.

Careful attention to the design of these facilities can make them significant community assets and a point of pride for Cheyenne residents. Well-designed facilities that complement the properties' natural qualities, will demonstrate Cheyenne's commitment to quality and authenticity. This section offers design principles that will help to make facilities sustainable and consistent with the inherent character of the site.

### WHY ARE THESE PRINCIPLES IMPORTANT?

- ✦ *The "built environment" — visitor centers, campgrounds, picnic areas, interpretive displays — will shape visitors' experiences of Belvoir Ranch and The Big Hole, and demonstrate the City's commitment to a high-quality experience.*
- ✦ *Facilities are also an important opportunity to give visitors a "proud and positive" image of Cheyenne.*
- ✦ *Cheyenne has a long and storied heritage, that includes ranching, the birth of transcontinental rail and roadway systems, and the military. Through inspired design of facilities, this heritage can be communicated to visitors.*
- ✦ *Through sensitive design, the ranch can remain a "working landscape," supporting compatible, revenue-producing activities that do not impact the natural landscape or visitor experience.*
- ✦ *Through careful attention to materials and construction methods, the City can demonstrate its commitment to low-impact, "green" development.*



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## Recreational Opportunities

### PURPOSE

*At 22,200 acres, including state inholdings, the Ranch can support a variety of recreational uses while enriching the public's understanding of the value of open space to the community's quality of life and economic competitiveness.*



*Belvoir's large acreage offers opportunity for open space-oriented recreational uses including horseback riding.*



*A links golf course is a possible recreational use at Belvoir Ranch.*

### PRINCIPLES

1. Provide recreation opportunities for a variety of ages, and ability groups. The area's fastest growing age group is 45 to 64, according to the *Laramie County Comprehensive Plan*.
2. Create trail linkages to adjacent open space areas, and bicycle greenway linkages to city trail systems, where possible.
3. Organize hiking trails around destinations, such as The Big Hole.
4. Consider the impact of dogs on wildlife and ranching operations, and restrict access to designated areas and require dogs to be on-leash.
5. Develop a range of open space-oriented recreation uses that could include walking, jogging, trail running, hiking, horseback riding, mountain biking, hunting, camping and nature observation.
6. Provide winter access for cross-country skiing, snow shoeing, and sledding originating at the year-round Warren Access.

## 5 SUSTAINABLE FACILITIES DEVELOPMENT

### Architectural Features

#### PURPOSE

*Facilities include the elements of the built environment that support use, enjoyment, and interpretation of the Ranch; these can include visitor centers, interpretive shelters, warming huts, restroom enclosures, kiosks, picnic shelters and other elements.*



*The architectural character of buildings and structures should support the surrounding environment.*



*Facilities include interpretive kiosks and restroom enclosures.*

#### PRINCIPLES

1. Architectural elements should be designed to be compatible with, and reflect, the site's heritage, except as provided below.
2. Materials and technology should be sustainable and reflect "green building" principles. Structures should be sited where feasible to take advantage of solar aspect.
3. Facilities should be designed to minimize life-cycle costs, including maintenance and capital repair/replacement.
4. Contemporary facilities may be integrated into the site at locations removed from a well-defined historic context.
5. Facilities shall be sited so as not to intrude on the natural landscape, including significant view corridors, ridgelines, or prominent overlooks.
6. Scale and massing of facilities shall be consistent with the historic "texture" of the landscape.
7. Minimize lighting to basic user safety consistent with the Dark Sky Initiative. Primitive/backcountry areas shall not be lit. Lighting shall only be on during activity periods, not dusk to dawn, except in areas with 24-hour use.
8. Utilize a xeriscape plant palette to minimize water use, create a quality appearance and complement the high prairie ecosystem.



## Education/Interpretive Opportunities

### PURPOSE

*Belvoir Ranch has diverse opportunities to enhance visitors' understanding and appreciation of its many resources through education and interpretation.*



*Interpretation opportunities at a Visitor Center/Interpretive Center.*



*Interpretation and educational opportunities include guided hikes and self-guided tours*

### PRINCIPLES

1. Include signage to enhance visitor understanding and appreciation of Belvoir Ranch's prehistoric, historic and natural resources.
2. Utilize the Ranch where feasible as field research location for colleges and universities to conduct wildlife, ecological, agricultural, and traditional and alternative energy studies.
3. Promote the Ranch as an on-site, hands-on outdoor classroom for K through 12 and university level education.
4. Provide multiple opportunities for education and interpretation. These might include:
  - A Visitor Center/Interpretive Center/Museum
  - Signs or kiosks at points of interest, at trailheads and along trails
  - Guided tours/self guided tours
  - Educational programs
  - Brochures
  - Website-based opportunities



## Gateways, Districts, Corridors and Landmarks

### PURPOSE

*Gateways, Districts, Corridors and Landmarks work together to define special activity zones at Belvoir Ranch. Careful design of each of these elements will help to maintain the Ranch identity.*



*Ranch gateway could provide a unique identity and landmark at the entrance.*



*Ranch gateway village architectural character could be similar to an old western town.*

### PRINCIPLES

1. Identify and create notable Ranch gateways that welcome visitors to the Ranch.
2. Create a thematic image consistent for all Ranch gateways that supports Belvoir's unique identity.
3. Gateway buildings should present and shape positive impressions about the community and support the notion of 'sense of place'.
4. Nodes and districts are the key Ranch destinations. Identify the sublime character unique to each district and maximize the user's enjoyment.
5. Circulation corridors are the connective infrastructure that guides visitors to various areas within the Ranch. The alignment and sensitive integration of circulation enhances a visitor's experience. Sequencing of vistas, speed, special experience, nodes and districts enrich the visit. Create roads and trails that reflect these qualities.

# Signage

## PURPOSE

*Different types of signage should be provided throughout trail and open space areas to welcome users, establish an identity, aid in wayfinding, and provide warnings or regulations.*



*Interpretation sign*



*Wayfinding mile marker*

## PRINCIPLES

1. Create a unified, site-specific signage system for “branding” the Ranch development. The system shall incorporate ranch character, theme, colors and other design elements to create a unique easily recognizable environmental graphic.
2. Minimize the potential for “visual clutter” that could diminish and impair the scenic quality of the property, by creating a “family” of sign types that convey multiple layers of information.
3. Describe and interpret the unique cultural, historical and natural features of the Ranch using informative signage placed at strategic locations and along trails.
4. Make users aware of the rules and laws in force on the Ranch with a consistent message about the importance of compliance.
5. Guide visitors throughout the Ranch with clear and concise wayfinding signs.
6. Enrich trail user experience by providing mile-markers helping inexperienced users stay within their abilities, and allowing more advanced users to track time and distance traveled.

## Power Lines And Other Utilities

### PURPOSE

*The sense of openness and natural qualities of Belvoir Ranch should be preserved through careful and sensitive siting of utility corridors.*



Gravel road and cattle guard at Belvoir Ranch.



Existing energy infrastructure on the Ranch include pipelines and transmission lines.

### PRINCIPLES

1. Maintain distinctive viewsheds into and out of Belvoir Ranch by placing infrastructure (such as transmission lines) outside of these viewsheds, ideally underground.
2. Minimize disturbances by minimizing road development, siting new infrastructure on existing disturbance corridors or along existing roads to extent possible.
3. Reclaim and revegetate disturbed lands as soon as possible after utilities are installed.
4. Avoid development in sensitive habitats and wetland/riparian corridors to the extent possible. When crossing sensitive habitats or wetland/riparian corridor, cross perpendicular or create the least amount of disturbances when possible.
5. Align fire breaks to follow topographic contours to minimize visual impact and reduce erosion.



## Resource Development

### PURPOSE

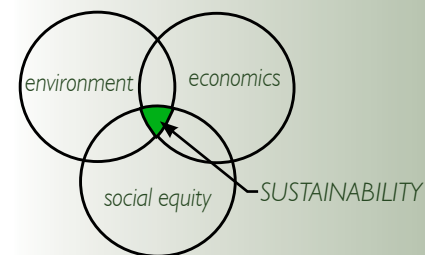
*Belvoir Ranch is part of Wyoming's working landscape. The Ranch can serve multiple economic development roles. As an open space and recreation amenity for Cheyenne area residents, it increases the attractiveness of Cheyenne as a place to live and work. Additionally, it has the potential for significant natural resource development.*



Windpower, a renewable resource, is a viable revenue generating alternative for the Ranch. One section of land, 640 acres, can produce enough energy to power 500 homes.



Festivals, such as archery competitions, could generate revenue for the Ranch.



Environmental stewardship is a balance between the environment, economics, and social equity.

### PRINCIPLES

1. Provide areas for sensitive development of low-impact uses that generate significant revenue for the City – such as solar or wind generated electricity.
2. Place revenue-generating activities in ways that respect key natural and scenic values that preserves open space quality on the Ranch and in abutting Colorado public land holdings.
3. Re-invest resource generated revenue in the Ranch to help fund improvements, operations, and maintenance costs.
4. Manage careful development of Ranch resources in a way that balances the quality of open space and recreation opportunities, revenue and service needs of the community, and environmental stewardship.





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## Access and Circulation

Given the vastness of Belvoir Ranch and The Big Hole, how can we enable visitors to appreciate their diverse and unique qualities?

While activities will likely be clustered in selected zones or nodes, roadway and trail connections within and between these nodes will be very important, both for visitors with only a short amount of time to spend, who want to maximize their enjoyment of the area, and for those visitors who might be seeking a multi-day backcountry experience.

Good roadway design can support positive visitor experiences — not only in offering safe and convenient access, but in guiding visitors to spectacular views, to places where they can usually see wildlife, or to other places that are photo opportunities. Good roadway design can also minimize impacts on the environment, reducing the possibility that visitors will stray from the designated route and create their own travelways through fragile landscapes.

Good trail design is equally important. Some visitors will be looking for short loop walks, close to major attractions. Others may appreciate longer hiking or biking loops, or trails specifically for horses. Still others may be drawn by special facilities, like a mountain bike park.

Good trail design principles will help to make visitor experiences enjoyable and minimize the chances that they will venture “off the beaten path” to create social trails that can scar the landscape and increase erosion hazards.

This section illustrates key design principles that address access and circulation.

### WHY ARE THESE PRINCIPLES IMPORTANT?

- ✦ *Gateways into the Belvoir Ranch and The Big Hole properties will shape visitors' very first impressions and experiences; if well-designed, they can convey a “sense of place” and reveal the history of the area.*
- ✦ *Some visitors may not have the time, or be physically able, to explore Belvoir Ranch and The Big Hole on foot, bike, or horseback. Well-designed roadways, with overlooks that provide for “photo moments,” will help those who see the site by car to have a wonderful experience.*
- ✦ *Roadways can also be designed to be environmentally and economically sustainable, minimizing ambient dust and recurring maintenance costs.*
- ✦ *Trail experiences that meet the needs of a variety of users — from young families with children in strollers, to backcountry hikers seeking a multi-day wilderness experience — can help to maximize use and enjoyment of the properties.*



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## External Access Points

### PURPOSE

Carefully designed access points can help to protect the ranch's natural features, by controlling and managing public access so that it does not exceed the ranch's carrying capacity.



*Borie Fields overpass - requires obtaining public access easements and bridge reconstruction*



*Missile site - controlled access for selected uses*

### PRINCIPLES

Establish the following perimeter entry points:

1. **Warren Access** - This will serve as the primary public entry point at the Belvoir Gateway Village, and could provide access for trucks traveling to the potential landfill site.
2. **The Rock Quarry** - This secondary entrance could provide public vehicular access to The Big Hole, if suitable access easements are acquired. It may be gated during the winter.
3. **Eastern Edge** - In the long-term vision for the site, a secondary public access point is also desired at Borie Fields or an alternative entry point on the eastern edge of the site. The feasibility of a new publicly accessible railroad bridge or a new roadway heading west from I-25 shall be explored.
4. **Missile Site** – This limited access/controlled entrance shall be gated, with public access permitted for organized events. Ranch and City maintenance operations will continue to have full use of this entrance.
5. **Borie and Borie Fields** – Existing entrances shall be limited to Ranch, City, railroad and utility vehicles only. Public access will not be permitted until such time as the existing vehicular bridge is reconstructed to carry higher traffic volumes. However, interim use of the existing Borie Fields viaduct is desired for equestrian access to the Ranch headquarters from a trailhead located north of the railroad tracks.



## Internal Circulation Routes

### PURPOSE

*Internal circulation routes shall be developed to provide public access to future recreation areas, private roads for management access to revenue-generating land uses, trailheads for access to the trail system, and maintenance of existing ranch roads and two-track for agricultural operations.*



*Gated open space entrance.*



*Existing road through Rock Quarry pasture.*

### PRINCIPLES

1. **Hikers** - Provide a variety of purpose-built trails of varying lengths and difficulties to accommodate hikers of different fitness and ability levels, including ADA-accessible trails. Explore regional trail connections to the Greater Cheyenne Greenway, Curt Gowdy State Park, Soapstone and Red Mountain trails.
2. **Mountain Bikers** - Provide a mountain bike freeride park, a variety of purpose-built, moderate-distance loop trails, and explore the possibility of creating a 30+ mile “epic” ride through the Ranch.
3. **Equestrians** - Develop a stacked-loop equestrian trail system based out of the Ranch Headquarters/ Equestrian Center to accommodate 1.5- to 2.5-mile novice riders. Allow experienced riders to share trail systems with other users for longer rides. Offer an interim equestrian trail route that uses the existing Borie Fields overpass to link a northern trailhead with the Ranch Headquarters.
4. **Winter Trail Users** - Provide winter access to higher western elevations for cross-country skiing, snowshoeing and sledding.



Access for user groups includes wagon rides and horse and trailers.



Existing railroad right-of-way.

- 5. Off-Road Vehicles** - Restrict the recreational use of ATVs, dirt bikes and similar motorized recreational uses from the Ranch and from accessing the UPRR right-of-way.
- 6. Personal Vehicles** - Develop new internal roads for use by the general public from two entry points (Warren Access and the Rock Quarry Site). A long-term plan is to link internal roadways beginning at the Warren Access to a third entry/egress point on the eastern edge of the site.
- 7. Equestrian vehicles** - Allow use of the same circulation system as other personal vehicles. Provide adequate trailer parking at equestrian trailheads.
- 8. City and Ranch Operations/Maintenance-** Continue to use existing two-track roads for ranch operations and maintenance, as well as new roads constructed for public access.
- 9. Railroad Operations** - Allow access to all internal Ranch roads and railroad maintenance roads. Restrict public use of and access to Union Pacific Railroad rights-of-way.
- 10. General** - Implement a system of gates and cattleguards to allow movement between pastures for vehicles and trail users while containing ranch livestock.

## Roadway Design

### PURPOSE

Roadways provide access to key destinations and activity centers, accommodate scenic drives, and fulfill other mobility needs for ranch users while maintaining and respecting the area's character.



*Roads should be designed to fit the character of the landscape.*



*Existing two-track road*

### PRINCIPLES

1. Design roads to fit with the character of the landscape so that driving through Belvoir Ranch is part of the visitor experience.
2. Design internal Ranch roads for sightseeing and to provide a minimal facility serving travel between key destinations or activity centers.
3. Route roadways to minimize impacts on sensitive natural and cultural resources.
4. Maintain existing two-track roads for use by Ranch operations/maintenance and City vehicles. Construct a new dedicated road for exclusive landfill use if a landfill is developed.
5. While exact roadway design specifications will depend on levels of traffic generated by proposed land uses, general considerations include:
  - Surfacing material (paved vs. unpaved; aesthetics, maintenance, dust)
  - Signage (location, amount, and appearance)
  - Roadway width
  - Design volume, design speed, and design vehicle



## Railroad Interface

### PURPOSE

*The interface between roadways, trails, and rail lines shall be designed and managed to limit conflicts between rail cars and the public, including private motor vehicles and non-motorized trail users, thereby minimizing liability exposure.*



Existing access tunnel to The Big Hole



Grade-separated railroad crossing

### PRINCIPLES

1. Restrict public access to fire roads and UPRR rights-of-way.
2. **At-Grade Crossings** - No new at-grade railroad crossings shall be installed. Restrict the public from using existing at-grade crossings.
3. **Grade-Separated Crossings** - Use existing culverts to provide internal access across the Ranch for private vehicles and trail users. Retain the original purpose of culverts to move livestock across the rail lines. Preserve existing culverts leading off Belvoir Ranch for future movement onto adjacent properties.
4. Explore the feasibility of public vehicular access to the eastern portion of the site by constructing a new railroad overpass at Borie Fields or developing a new road to I-25.
5. **Emergency Access** - Make all portions of the site accessible by emergency responders. In addition to the designated tunnel crossings, provide at-grade crossings for use by larger emergency vehicles.
6. Maintain the existing at-grade crossing within Section 20 T. 13N, R. 68W, for emergency vehicle access. Similarly, the closed at-grade crossing between Sections 12 and 13 is desired to be re-opened to provide emergency access to The Big Hole.



## Trail User Experience

### PURPOSE

Quality recreational trail experiences successfully combine elements of safety (physical and perceived comfort zones), efficiency (reasonable directness) and playfulness (uneven, random integration and exploration of site elements).



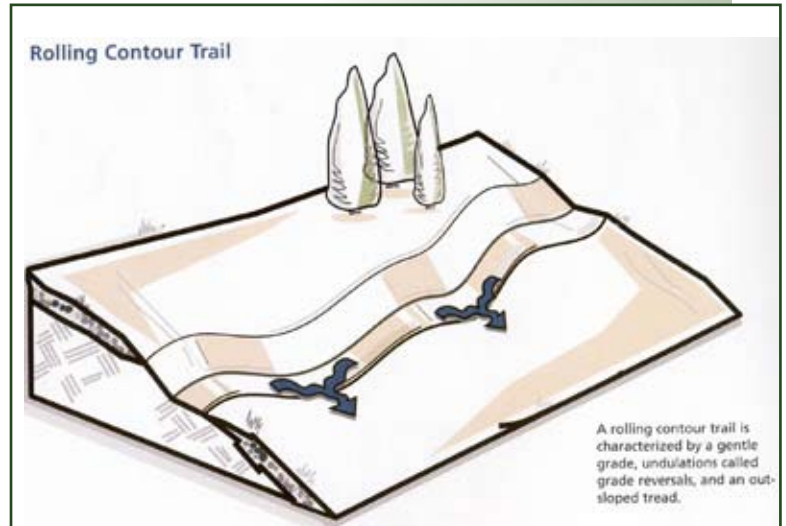
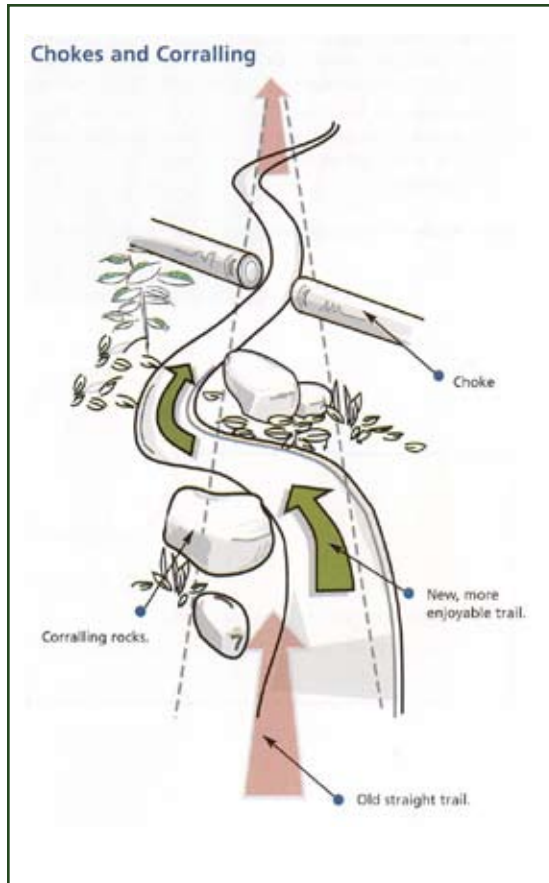
Curt Gowdy trail using chokes and corralling to slow users and provide visual interest.  
(photo courtesy of Kevin Rokke)



Much of the feeling of a trail comes from how it relates to site edges. Being on an edge, one experiences the realms on both sides.

### PRINCIPLES

1. Consider human feelings. Trails should “feel” good by being in tune with both the user and the site. Routes on existing roads and two-tracks do little to enhance user experience.
2. The Ranch can be divided into two main categories - frontcountry and backcountry - depending on the extent of development and ease of access to the area. Each presents varying degrees of safety, interaction, solitude and challenge.
  - **Frontcountry Trails** - Develop a system of natural surface trails within close proximity to motor vehicle access. Include interpretive exhibits. Design for moderate probability of encounters with other trail users.
  - **Backcountry Trails** - Develop a system of primitive natural surface trails extending 3+ miles from trailheads. Provide opportunities for solitude and discovery. Minimize signs of human influence.



(Illustrations from IMBA Trail Solutions)

## DESIGN PRINCIPLES FOR NATURAL SURFACE TRAILS

1. Use **rolling contour trails** to minimize erosion and create a more engaging route.
2. Use an interconnected, **stacked loop** trail network to avoid dead ends, provide multiple route options, accommodate various user types, and enhance enjoyment.
3. Use **chokes, corrals and turns** to create a more exciting or challenging route and slow users in potential conflict areas.
4. Use **anchors, edges and gateways** to give trail users a reason to be “here” instead of “there” and to create points of attraction.
5. Create a **sequential experience** to create a sense of passage and distance. Use trail design and routing to highlight changes in the landscape and other notable features.
6. Route paths to **positive control points** (scenic vistas, unique vegetation, or historic, cultural, and archaeological sites) to minimize social trails and enhance the user experience.
7. Follow a **natural shape** when routing trails. Do not “design” trails to be straight, curved or curvilinear, but rather relate them to the natural environments they traverse.

## Sustainable Trail Design

### PURPOSE

*Sustainable trail design can protect the environment, minimize maintenance and meet the needs of trails users. While erosion is a natural force that can destroy trails and damage the environment, we cannot control it, but rather should shape the trail context to limit how much erosion can occur.*



*Trail is contoured to avoid steep grades and minimize erosion.  
(photo courtesy of Kevin Rokke)*



*Trail with roots exposed from erosion  
of a steep slope.*

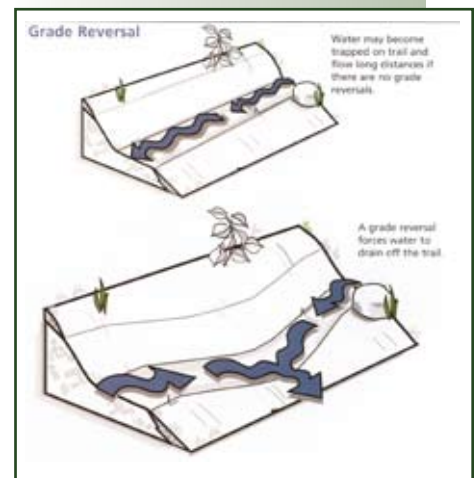
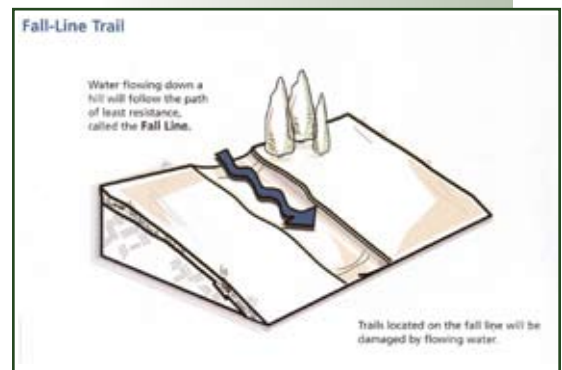
### PRINCIPLES

1. Design purpose-built trails to minimize the opportunity for visitors to create unwanted social trails.
2. Design and route trails to reduce soil compaction, displacement and erosion caused to varying degrees by all modes of trail users. Avoid or minimize disturbances in areas with highly erodible soil.
3. Design and route trails to minimize tread watershed size. This is the only sustainable way to accommodate erosion over time.
4. Continually monitor trails. If needed, implement future measures to moderate the carrying capacity of facilities that are not capable of sustaining moderate to heavy levels of use, particularly on The Big Hole site and accessing the adjacent Colorado open space properties.



## DESIGN PRINCIPLES FOR NATURAL SURFACE TRAILS

1. **Avoid the fall line** (or the prevailing slope) when designing trails. Water naturally flows down this route, stripping trails of soil and damaging the environment.
2. **Use rolling contour trails** to minimize erosion, especially in areas with erosion-prone soil. Contour trails are characterized by a gentle grade, undulations called grade reversals, and a tread that slopes slightly downward. These features allow water to drain in thin, dispersed sheets, minimizing erosion.
3. **Don't route on steep slopes**, especially in areas with erosion-prone soil, as some soils will support steeper trail grades than others. The slope or grade along a trail should generally be less than 10% to minimize erosion, and less than 7% in areas with sandy soil. Short segments can be steeper, but maximum grade should not be exceeded for more than 100 feet.
4. **Don't route across flat lands** - Trails open to users with higher impact (e.g. equestrians) should have more gentle maximum grades; however, some grade variation is desirable for drainage and to provide interest for trail users. For this reason, flat areas should be avoided.
5. **Follow the half rule** - A trail's grade should not exceed half the grade of the hillside or sideslope it traverses.
6. **Use grade reversals** create a series of small trail watersheds and limit the length water can flow on the trail.
7. **Outslope trails** - Leave the outside edge of a hillside trail lower than the inside, allowing it to shed water.
8. **Build bench-cut trails** into the side/contour of a hill with backslope and outslope, which will allow water to move across the trail tread.
9. **Use retaining walls** made of small rocks or wood to support turning platforms, shore up trails over rough terrain, or reinforce the outer edge of a partially benched trail.
10. **Armor erodible trail sections** - Use large rocks to "pave" the trail tread on steep slopes and to create a raised surface through soft, low-lying, or wet areas.



(Illustrations from IMBA Trail Solutions)



## ADA Accessibility

### PURPOSE

A variety of trail types should be provided to accommodate different experiences and user groups. A trail's purpose should be a primary consideration in planning and design. Backcountry trails designed for challenging hikes, horseback riding or mountain biking do not need to be accessible to standards of the Americans with Disabilities Act (ADA), while frontcountry trails designed for recreational pedestrian use should meet minimum accessibility guidelines.



Surfacing materials such as asphalt and concrete are typically considered the most firm and stable.



However, some natural surfaces, such as the crusher fines trail shown above, can also be accessible.

### PRINCIPLES

- 1. Scope** - In general, not all parts of a trail system need to be accessible. Trails developed to connect outstanding natural or cultural features of a site should strive to be 100% accessible if 1/2 mile or less, or have at least 1/2 mile of the route accessible from a trailhead.
- 2. Surface** - Firmness and stability are the two major considerations for accessible trail surfaces. Firmness is a vertical measure of penetration, while stability refers to how much surface material shifts when rotated pressure is applied.
- 3.** Utilize proper construction and maintenance to ensure that surfaces remain accessible. Appropriate surfaces are not limited to paved surfaces such as asphalt and concrete.
- 4.** Many naturally occurring surfaces, such as crushed aggregate or soils containing some clay and a variety of sieve sizes are considered firm and stable.
- 5.** Surfaces that are not typically considered accessible include sand, pea gravel, mulch, woodchips, and large gravel rocks. Without proper maintenance, surfacing materials can become non-accessible.
- 6. Slope** - The cross slope (tilt) and running slope (slope in the direction of travel) on accessible trails generally should not exceed 5%.

## Trailheads and Parking

### PURPOSE

*Trailheads function as gateways for users. They typically include adequate parking, a variety of amenities, and signage containing maps, destination information, trail difficulty, trail length, intended and prohibited uses, and rules and regulations.*



*Interpretative opportunities on the Belvoir Ranch include cultural and natural resources.*



*Trailheads shall be signed for appropriate and inappropriate uses.*

### PRINCIPLES

1. Consider the needs of all trail users when planning/designing the trailhead and parking area (e.g. the parking lot may need to accommodate horse trailers if equestrians will be using the trail).
2. Consider parking demand and plan/design facilities for specific needs (bicycles, RVs, trailers).
3. Reflect an appropriate on-site carrying capacity through trailhead design and parking supply. If future use of Belvoir Ranch is determined to be exceeding sustainable carrying capacity, parking restrictions may be considered as a means to implement resource management.
4. Provide amenities consistent with expected use (more amenities in higher-traffic areas).
5. Consider providing a shelter with picnic tables, restrooms, trash cans, bicycle racks and other amenities at heavily used trailheads or major trail junctions.
6. Provide ADA-accessible amenities and parking area where the trailhead leads to an accessible trail.

## Regional Trail Connections

### PURPOSE

*Belvoir Ranch and The Big Hole are located in close proximity to other large open space tracts in Wyoming and Colorado. As one large interconnected regional ecosystem, these properties have many similarities. However, each also has unique attributes to consider for recreational programming and resource management.*



Mountain biking trail system being developed in Curt Gowdy State Park  
(photo courtesy of Kevin Rokke)



Soapstone property

### PRINCIPLES

1. Consider uses for Belvoir Ranch and The Big Hole that complement uses planned and developed at surrounding sites.
2. Provide wildlife habitat connectivity between sites.
3. Use the concept of "management zones" to focus on resource stewardship while providing high quality, sustainable, non-motorized recreational opportunities.
4. Develop trails between open space sites for regional recreational uses, as appropriate and feasible for the targeted user group.

Regional connections include:

- *Greater Cheyenne Greenway, City of Cheyenne* - provides multi-use transportation and recreation opportunities on a system of 10-foot wide paved trails that link community parks and city neighborhoods. Potential connections to Belvoir Ranch across I-25 and the railroads should be explored in the vicinity of Speer Road or a new connector road to Belvoir Ranch from I-25. An 8'-10' crusher fines trail is recommended as a rural extension of the City's multi-use greenway system.





One of many rock formations in Curt Gowdy State Park (photo courtesy of Kevin Rokke)

- *Curt Gowdy State Park, State of Wyoming*

  - located in combined Great Plains and Rocky Mountains habitats with hiking, equestrian and single-track mountain biking trails across low-lying meadows, gently rolling hills, upland forests, and massive granite formations. The State Park is becoming a regional mountain biking destination, therefore a purpose-built single track connection is the desired future link to Belvoir Ranch.
- *Red Mountain Open Space, Larimer County, CO* - a landscape of rolling foothills and rocky outcrops interspersed with ponderosa and juniper woodlands that dramatically transforms into The Big Hole at the Wyoming state line. Resource management of this site is critical to Larimer County as part of the Mountains to Plains Project. Trails within The Big Hole should thus follow the 12 heartbeat rule, meaning groups using the site shall be restricted in size to no more than 12 heartbeats (i.e. - 6 horses with riders or 12 hikers).
- *Soapstone Prairie Natural Area, City of Fort Collins, CO* - activities will include hiking, mountain biking and horseback riding on 30 miles of trails, picnicking, guided naturalist tours, and development of an extensive cultural interpretation program that includes the Lindenmeier Archaeological Site - a National Historic Landmark of the Folsom occupation. The 12 heartbeat rule also applies to this site.
- *Laramie Foothills Mountains to Plains Project* - a cooperative effort of multiple partners to conserve a corridor of nearly 200,000 acres of protected lands for wildlife habitat and cultural resource preservation. While undeveloped open space and wildlife habitat are the main goals, future trail connections should be explored to provide hiking opportunities from the Wyoming border south along the Front Range of Colorado.





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## Sustainable Property Management

While most of the design principles in this handbook focus either on the “built environment,” or on stewardship of natural and cultural resources, it is equally important to provide “best practices” for management that prevent conflicts between different uses or activities, or that focus on safety and security for visitors.

The property’s large size and remoteness will pose challenges for patrolling, enforcing rules and regulations, and minimizing illegal or harmful activities, like dumping or shooting. It will also pose a challenge for first responders, in locating and transporting injured parties to medical assistance. Finally, to maintain the viability of ranching, or to protect valuable equipment, some portions of the site may need to be closed on a temporary or seasonal basis.

This final section presents “best practices” for managing the property so that safety and security objectives are met.

### WHY ARE THESE PRINCIPLES IMPORTANT?

- ✦ *Grazing is important to maintain on the property, and it will be important to minimize conflicts between grazing and other recreational uses.*
- ✦ *Portions of Belvoir Ranch are also open for hunting, and it will be important to establish management policies, including possible seasonal closures, that minimize conflicts between hunters and other visitors.*
- ✦ *Given the property's vast size, procedures will need to be established to patrol, to prevent prohibited or illegal activities.*
- ✦ *Procedures will also need to be developed for emergency responders, in the event of accidents or injuries.*



*The large size and remoteness of Belvoir Ranch will pose challenges for patrolling and enforcing rules and regulations.*



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## Public Safety and Security

### PURPOSE

*As the Belvoir Ranch develops and uses increase, various levels of security and safety will be required. Security and safety measures seamlessly integrated into the Ranch design will encourage visitation and enhance user enjoyment.*



*Supervised controlled access into some areas of Belvoir Ranch.*



*Signage includes warnings for user safety as well as rules and regulations.*

### PRINCIPLES

1. Locate facilities to provide natural surveillance for improved security. If necessary, segregate public access from incompatible uses.
2. Develop interpretive trailheads for backcountry activities that caution and inform users of possible physical and animal/reptile perils.
3. Develop and implement security management policies and programs that address theft, damage, illegal activity, illegal entry, and other concerns.
4. Establish user access zones based on duration or user management plans; 24-hour access, dawn to dusk access, restricted access by permit or fee.
5. Develop Ranch management plans to address temporary safety/supervision concerns, such as at special events or swimming areas.
6. Develop fencing/barrier systems to ensure visitors use grade separated railroad crossings.
7. Provide access by emergency responders to all portions of the site.



## Landfill

### PURPOSE

One of the reasons for purchasing Belvoir Ranch was as a landfill site. The landfill is expected to cover 250 acres with total infrastructure utilizing up to 600 acres. If the landfill is constructed, best management practices should be employed to minimize scarring of the property, blowing trash, and ambient dust.



The proposed landfill location on Belvoir Ranch.



Landscape berms will be used to buffer views of the haul road and landfill. Berms will mimic the rolling landscape found elsewhere on the ranch, for example, at the Borie Field entrance, where this natural berm screens the railroad from view.

### PRINCIPLES

1. Design the haul road to minimize visual and noise impacts to surrounding uses, and to the gateway ambiance, historic sites and open space quality. Use berms or other landscape elements to screen the road from view.
2. When feasible, use combustible waste as a revenue generator to increase the life of the landfill.
3. Implement a City-wide recycling program to reduce municipal solid waste, generate revenue from sale of recycled materials, decrease truck trips and increase duration of use of landfill.
4. Allow only covered vehicles to prevent and reduce blowing trash from trucks.
5. Consider future alternative uses for reclamation when landfill is capped, including alternative energy development and open space.
6. Place litter fences downwind and consider using wind breaks to reduce wind speed and turbulence upwind of the potential tipping area. Conduct regular mechanical and or hand pick up of litter

# Grazing

## PURPOSE

*Belvoir Ranch has operated as a cattle ranch since the 1870s. Intact ranches are becoming scarcer in the region and the Belvoir is considered a jewel due to its excellent grass forage and suitability for use as a yearling or cow/calf operation.*



*Cattle ranching is the historic use on Belvoir Ranch.*



*Minimize user conflicts by limiting access to pastures while cattle are using them.*

## PRINCIPLES

1. Maintain the Belvoir as a working cattle ranch.
2. Strive to limit improvements to those compatible with grazing.
3. Maintain healthy grasslands on the Belvoir through control of noxious weeds (e.g., larkspur, leafy spurge, toadflax) and quickly reclaim disturbed areas with native species to prevent establishment and spread of noxious weeds.
4. Because cattle operations are oftentimes not compatible with people, dogs, and equestrian uses, minimize conflicts by rotating cattle through Ranch pastures and restricting access to those pastures while cattle are in them.
5. Continue haying on the Belvoir to maintain water rights and supplement ranch income.
6. Replace all gates with cattle guards to prevent conflicts associated with people leaving gates open and disrupting livestock operations.
7. Provide for long-term grazing leases (e.g., 5-7 years) to prevent rangeland abuse sometimes associated with short-term leases.
8. Negotiate grazing leases that incorporate best rangeland management practices.
9. Encourage ranch management educational opportunities with regional universities.



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