



Colorado Mountain College Hayden Homestead Master Plan

Prepared for:

Colorado Mountain College
Timberline Campus
901 S. Hwy 24
Leadville, Colorado 80461
(710) 486-2015

Prepared by:

Conlin Associates Resource Planners
875 Mountain View Drive
Leadville, Colorado 80461
(719) 486-2772
(719) 207-0321

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Forward

The Hayden Homestead Master Plan (Plan) has been prepared for the purpose of identifying potential adaptive uses of the historic, cultural and natural resources of Colorado Mountain College's (CMC) Hayden Homestead property, balancing these uses against the carrying capacity of the land and its supporting infrastructure, and establishing a vision for future use of the property that provides a strategic direction and guidance for informed and comprehensive decisions concerning CMC's stewardship of the site

Nothing in this plan shall be construed as committing Colorado Mountain College to the actions or projects identified herein. The prioritization, timing, and commitment to projects identified within the context of this document shall be at the sole discretion of Colorado Mountain College, based on demonstrated market demand, availability of funding, partnering opportunities, or other variables that justify, to CMC's satisfaction, the furtherance of planning and project implementation.

The Plan represents the vision for the property at the time of its preparation, based on over a decade of public discussion and planning, and is intended to provide flexibility to accommodate paradigm shifts in experiential learning, college policies, community needs, or funding opportunities that may occur over time. Nothing in this document should be construed as preventing the accommodation of new ideas or revision of identified projects or activities, as deemed appropriate by CMC. The Plan should be viewed as a dynamic document that provides a framework for the development of the natural and built environment within the over-arching vision for the use of the property.

Executive Summary

Introduction

The Hayden Homestead Master Plan (Plan) has been prepared to identify and integrate the multiple and cross-disciplinary use of the natural, historic, and cultural resources of the Homestead to enhance the educational mission of Colorado Mountain College by providing hands-on, experiential learning opportunities for its students and the surrounding community. The Plan seeks to optimize the adaptive use of the property in compliance with the Deed of Conservation Easement, in a manner that is economically sustainable, and in balance with available infrastructure and the carrying capacity of the land.

The Plan establishes an over-arching vision and mission for the project, identifies goals and objectives for reaching the vision, offers a brief historical perspective, describes existing conditions, identifies power, water and sanitation services to support the facilities, outlines requirements for compliance with jurisdictional guidelines and regulations, suggests uses for interior and exterior space and illustrates spatial relationships that match desired end uses, and identifies action plans to attain the goals and objectives of the Plan.

Section 1 The Plan

Section 1 establishes the Vision and Mission of the plan, based on input received from faculty, staff and administration of Colorado Mountain College, members of the local community, and stakeholders in the future of the site.

Vision Statement:

The Hayden Homestead is a dynamic, multi-use, hands-on experiential learning center, advancing the principles of historic preservation, environmental sustainability, outdoor recreation leadership, natural resource management, and land stewardship through education, research, demonstration, and community outreach and participation.

Mission Statement:

To develop the Hayden Homestead to support and enhance CMC's academic mission and service to the community through adaptive use of its historic structures and wise use of its renewable natural resources, in a manner that integrates the needs of society with the natural world.

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Section 1 also establishes the Purpose and Need for the Plan, identifies the Goals and Objectives for achieving the Vision, and documents the Scoping process through which input was gathered.

The Primary Goals for the adaptive use of the Hayden Homestead are:

To provide and enhance experiential learning opportunities for students of Colorado Mountain College;

To protect and preserve the historic integrity of the Hayden Homestead and interpret its historic significance;

To achieve financial stability and sustainability in support and enhancement of the academic mission of CMC to ensure long term maintenance and stewardship of the property; and.

To redevelop the land and structures to encourage and revitalize use of the Ranch within the College and surrounding community.

Section 2 Background

Section 2 provides a historical perspective of the Hayden Ranch during its period of significance (1860 – 1940), as well as the sequence of events and actions that put the property in a position to be acquired by Colorado Mountain College.

Section 3 Existing Condition

Section 3 of the Plan establishes the Existing Condition of the Hayden Homestead as it appeared in the year 2010, providing a description of the natural setting, defining the land base, delineating and describing each of the contributing and non-contributing structures of the built environment, and documenting the infrastructure currently in place to support future use and development of the site. Establishing the Existing Condition not only inventories available resources, but also provides a baseline from which to monitor the changes that occur over time.

Section 4 Land Use Constraints

Section 4 of the Plan identifies the land use constraints that determine the carrying capacity of the land to support the desired end uses. Constraints are categorized as either Environmental (e.g. soils and wetlands), Physical (e.g. floodplain, groundwater table, site security, and fire protection) or Regulatory (e.g. Deed of Conservation Easement, Secretary of the Interior's Standards for the Treatment of Historic Properties, Lake County Land Development Code, and Colorado Water Law).

Section 5 Adaptive Use: Experiential Education Center

Section 5 identifies the programs and disciplines that are currently available at Colorado Mountain College and could be integral components of an Experiential Education Center. It also provides an overview of recommended adaptive uses of the built and natural environment that support both sitewide and individual programmatic needs.

Sitewide actions meet such universal needs as providing site security, fire protection, modern classroom space, restrooms, accommodations, and renewable energy, while programmatic uses meet the needs of a specific program, such as the construction of the proposed greenhouse and nursery plots to support the Sustainable Agronomy program.

Each recommended adaptive use is accompanied by an Action Plan, which outlines the basic “next steps” to be taken to advance the project toward implementation.

Summary

The Hayden Homestead encompasses the natural and built environment to support a nationally acclaimed Experiential Educational Center. By expanding upon the classroom experience offered on the Timberline Campus, the Hayden Homestead can become a dynamic laboratory for hands-on experiential learning in a real world environment.

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Section 1 The Plan

1.1 Introduction:

The Hayden Ranch has long been a model of evolution, subsistence, and sustainability. From its earliest recorded history, the resilience and ingenuity of its inhabitants have left an indelible mark on the cultural landscape of Lake County and the State of Colorado. Its prominent place in the cultural and historic context of the nation has been recognized by its inclusion on both the Colorado State Register of Historic Properties¹, and the National Register of Historic Places².

The acquisition of the Hayden Homestead by Colorado Mountain College (CMC) in 2008, as an experiential, multi-use learning center to provide hands-on educational opportunities for its students in the areas of sustainability, historic preservation trades, natural resource management, fly fishing guide training, outdoor recreation leadership, and entrepreneurial pursuits, marks a positive step in its evolution, serving to preserve and sustain the vitality and productivity of one of Lake County's most visible and tangible icons of its agricultural heritage.

Immediate efforts following acquisition of the Homestead focused on stemming the advance of deterioration and collapse of its structural elements, stabilizing the "skeleton" of the ranch to preserve the historic and architectural integrity of the site. The physical and economic sustainability of the stabilization effort, and the eventual rehabilitation and restoration to productive use of the structures, however, are

¹ Colorado Historical Society, 5LK1340, designated September 10, 2003

² National Register of Historic Places, #03001007, designated October 11, 2003

dependent upon identifying and implementing adaptive uses for the Homestead's natural and man-built resources that optimize the utility of the site and justify its long term maintenance and operations.

It is the intent of the Hayden Homestead Master Plan (Plan) to: identify and inventory potential adaptive uses for the site that enhance educational opportunities or provide service to the community; to establish vision and mission statements, goals and objectives for optimizing the long term use of the property; to balance potential uses with the physical carrying capacity of the land, structures, and available infrastructure; and to identify action plans that facilitate implementation of the vision.

1.2 Plan Organization:

The Plan is organized to establish and document:

Section 1

Vision Statement

A Vision Statement is an expression of possibility, an ideal future state that the participants hope to attain.³ It provides a fundamental objective or strategic direction and focuses energies and resources on attainment of a common goal

Mission Statement

A Mission Statement defines the fundamental purpose of the participants and how this purpose serves to advance the vision.

Purpose and Need

The Statement of Purpose and Need establishes the justification and intent of preparing the plan to reach the shared vision.

Goals

Goals are broad abstract statements that provide general intentions, answering the question of “what” will the project accomplish.

Objectives

Objectives are narrowly defined, measurable actions or milestones that describe “how” the goals will be accomplished.

Scoping

Scoping describes the process by which the input of stakeholders in the project is solicited and documented.

³ Community Visioning and Strategic Planning Handbook

Section 2

Background

Provides important information on how the project came about, its historical context, partnering entities, and strategic objective.

Section 3

Existing Condition

The Existing Condition provides a baseline inventory of natural and built resources as they exist on-site today. The Existing Condition Section includes physical, economic, regulatory, or environmental opportunities/constraints that help determine the carrying capacity of the land and resources to support the desired end use.

Section 4

Land Use Considerations

Land Use Considerations identify the environmental, physical, and regulatory constraints that combine to determine the carrying capacity of the site

Section 5

Adaptive Use

The identification and discussion of desired end uses of the natural and built environment that arise from participant's recommendations in the Scoping process.

Action Plans

Action Plans recommend the “next steps” that should be taken to initiate activities or planning efforts to implement the recommended actions.

Section 6

Appendices

Appendices provide documentation in support of the Plan.

1.3 Vision Statement:

The Hayden Homestead is a dynamic, multi-use, hands-on experiential learning center, advancing the principles of historic preservation environmental sustainability, outdoor recreation leadership, natural resource management, and land stewardship, through education, research, demonstration, and community outreach and participation.

1.4 Mission Statement:

To develop the Hayden Homestead to support and enhance CMC's academic mission and service to the community through adaptive use of its historic structures and wise use of its renewable natural resources, in a manner that integrates the needs of society with the natural world.

1.5 Purpose and Need:

The purpose of the Hayden Homestead Master Plan is to balance and integrate the multiple-uses of the natural, historic, and cultural resources of the Homestead with the needs and educational mission of Colorado Mountain College, in a manner that optimizes the adaptive re-use of the property in accordance with the Deed of Conservation Easement, is economically sustainable and in balance with available infrastructure capacities, respects the carrying capacity of the land, and encourages community involvement.

The Master Plan will establish an over-arching vision and mission for the project, identify goals and objectives for reaching the vision, allocate interior and exterior space to desired end uses and illustrate their spatial relationships, ensure that adequate power, water and sanitation services exist to support the facilities, maintain compliance with environmental and jurisdictional guidelines and regulations, and identify action plans to implement the goals and objectives.

1.6 Project Goals and Objectives

1.6.1 Goal 1:

To provide and enhance experiential learning opportunities for students of Colorado Mountain College

Objectives:

- a) To provide conditioned classroom, shop, and lab space for student instruction;
- b) To utilize the historic structures of the Homestead as a workspace and laboratory for the study of the historic preservation trades and construction industry;
- c) To create conditioned greenhouse space and outdoor growing plots to advance the knowledge, research, and instruction of sustainable agronomy;
- d) To develop the solar, wind, and geothermal resources of the Homestead to provide instruction in renewable energy technologies and energy sustainability;
- e) To make use of the upland, wetland, riparian and lacustrine habitats of the Homestead as an outdoor laboratory for teaching the disciplines of Natural Resource Management;
- f) To utilize the lands and the still and moving waters of the Homestead for outdoor recreation, leadership training, and instruction;
- g) To make use of the structures, coops, pastures, and corrals of the Homestead to interpret and continue the ranching heritage;
- h) To provide an incubator site for entrepreneurial studies and projects;
- i) To utilize the land, water, and structures of the Homestead to provide instruction in the agricultural, animal husbandry, and ranching skills that were a part of the every day life of its inhabitants.

1.6.2 Goal 2:

To protect and preserve the historic integrity of the Hayden Homestead and interpret its historic significance in accordance with the terms and conditions of the Deed of Conservation Easement and the intent of the Lake County Scenic Conservation Overlay District and the Top of the Rockies Corridor Management Plan.

Objectives:

- a) To develop long term stabilization, rehabilitation and adaptive re-use, and operations and maintenance plans for the contributing structures;
- b) To complete the physical stabilization of all significant structures of the Homestead;
- c) To complete an archaeological review of the physical landscape prior to any site disturbance;
- d) To complete the rehabilitation of structures selected for adaptive re-use;
- e) To provide a physical, on-site presence (ranch manager/caretaker) to provide protection from vandalism, fire, and theft of property;
- f) To collect, document, and display artifacts of ranch life from the period of historic significance;
- g) To tell the story of the evolution of the ranch and the historic significance of the people who operated it;
- h) To demonstrate the inter relationship of agriculture and mining in the settlement of the American West;
- i) To demonstrate the inter relationship of the built and natural environments and the uniqueness of the natural setting in which the ranch resides.

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1.6.3 Goal 3:

To achieve financial stability and sustainability in support and enhancement of the academic mission of CMC to ensure long term maintenance and stewardship of the property.

Objectives:

- a) To identify adaptive uses and activities that are consistent and balanced with the carrying capacity of the land, available infrastructure, financial resources, and the academic mission of the college;
- b) To identify potential new structures and infrastructure development to meet the vision for the site that cannot be accommodated in existing building space;
- c) To prioritize adaptive uses that have the potential to provide an economic break-even point or return on investment to the College's academic mission;
- d) To identify and allocate space for uses and activities that fulfill both the desires and aspirations expressed by the community through the public scoping process and the College's mission to provide service to the surrounding community;
- e) To attain energy neutrality through development of renewable energy resources by:
 - prioritizing energy generation at the point of consumption;
 - establishing Net Metering agreements with the local utility company to balance energy surpluses and deficits;
 - utilizing existing "on-grid" energy sources as a backup to site generated energy;
 - developing the high solarization potential of the Hayden Homestead site for passive solar heating and photovoltaic power;
 - utilizing geothermal exchange to tap the latent heat stored in the vast underlying aquifer for heating conditioned space;
 - utilizing the power of the wind to provide supplemental electrical power to the net metering system;
 - utilizing the waste stream from the CMC forestry program to support biomass heating of the greenhouse and conditioned indoor space;
 - exploring new technologies such as Electric Thermal Storage (ETS) to integrate off-peak and site generated power into an efficient space heating solution.

1.6.4 Goal 4:

To redevelop the land and structures to encourage and revitalize use of the Ranch within the College and surrounding community

Objectives:

- a) To promote and provide education on the environmental and health benefits of organic food production close to home;
- b) To provide trees and shrubs for re-forestation efforts in the Rocky Mountain West;
- c) To provide for the propagation and rearing of species for wetlands restoration in the Rocky Mountain West;
- d) To provide a unique setting for cultural and social events;
- e) To provide indoor and outdoor space for youth activities;
- f) To provide a staging area for outdoor recreation and educational activities
- g) To provide a staging area for permitted events on surrounding State and Federal lands;
- h) To provide a venue for summer science camps and field schools
- i) To provide rustic overnight accommodations for participants in Ranch-based educational, outdoor recreation, social and cultural activities;
- j) To provide living quarters for an on-site ranch manager/caretaker
- k) To provide dormitory accommodations for students enrolled in immersion classes at the Homestead
- l) To provide modern overnight accommodations for visiting instructors or dignitaries, or persons with disabilities or special needs

1.7 Scoping

Scoping for the Hayden Homestead Master Plan incorporated informational and input sessions with three primary cohorts: Administration, faculty, and staff of Colorado Mountain College; community members; and stakeholder groups.

The suggestions and recommendations solicited through these scoping sessions formed the basis for determining the vision and mission statements of the project, as well as identifying the individual project elements that, together, form the basis for the Hayden Homestead Master Plan.

1.7.1 Colorado Mountain College

Planning workshops and one-on-one interviews with personnel representing Colorado Mountain College administration, faculty and staff were conducted by Conlin Associates from April through August of 2010, and written comments were requested from those unable to attend.

A PowerPoint presentation, site maps, a photo-key identifying and describing Homestead structures, a listing of previously suggested land uses, and input forms were provided, where appropriate, and were updated to incorporate new information following each interaction.

Input sessions with CMC Administration included meetings with: Stan Jenson, CMC President; Mike Simon, CMC Vice President and Timberline Campus CEO; Ted Phillips, Dean of Instruction, Timberline Campus; Skip Lee, Dean of Student Services, Timberline Campus; and Sam Skramstad, Director of Facilities, CMC District Office, Townsend Anderson, Historic Preservation and Hayden Ranch Director, and Bryan Renfrow, Dean of Instruction.

Conlin Associates also requested and documented input, where provided, from the department heads of the Natural Resource Management, Outdoor Recreation Leadership, Forestry, Fly Fishing Guide, and Entrepreneurial Programs, as well as the Director, Project Manager, and Grant Administrator for the Historic Preservation Program, and the Maintenance Director for the Timberline Campus.

Additionally, scoping workshops were conducted in coordination with two bi-monthly staff meetings on April 14th and 21st of 2010, where members of the faculty and staff were afforded the opportunity to provide the input that helped generate the vision and mission statements for the Master Plan, as well as the list of individual project elements that serve to support the overall vision.

1.7.2 Community Participation

The community was informed of the opportunity to participate in the scoping of the Master Plan through: a series of press releases and articles in the local newspaper; event posters; a notice on the events board on the local television station; and through updates and announcements at local activities and meetings.

A planning workshop was hosted at the Hayden Homestead on May 15th, and included a PowerPoint presentation, maps, photo-key with a description of Homestead structures, and handouts listing previous suggestions and providing a form for documenting issues, concerns or suggestions. A planned walking tour of the site was cancelled due to a passing blizzard. The local newspaper attended and reported on the workshop, and ran a public opinion poll asking what the public would like to see developed at the Homestead, which was published in the subsequent edition.

A volunteer group was also formed to provide input and expertise on the community sustainability elements of the Homestead, most specifically, the community garden, greenhouse, and food co-op. Aside from providing input, the volunteers have helped to construct 8 test plots to compare growth rates and metals uptake in consumable plants propagated in different soil mixes and amendments in the community garden, and in the cleaning and stabilizing of the chicken and rabbit coops in preparation for habitation by the chickens and goats that will provide dairy products for local consumption.

Community input will be an ongoing process, and will serve to revise and refine action plans in response to local funding opportunities, volunteer participation, and changing needs even after the Master Plan has been completed.

1.7.3 Stakeholder Groups

Scoping and informational meetings were also held with stakeholders in the future of the Hayden Homestead, including surrounding federal landowners, funding agencies, historic preservation and open space partners, and state agencies who have in the past, or will at some point in the future, share a role in the actions, authorizations, certifications, funding, and activities that occur on and around the Homestead.

Project elements identified in the CMC and public scoping workshops were delineated and discussed to determine their compliance with the intent and content of grant awards and the terms of the Conservation Easement, and to build on the input base provided by stakeholder input.

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Stakeholder meetings included: the Colorado Historical Society; the State Historic Fund; the Colorado Historic Foundation; Colorado Preservation Inc.; A.E. Design; the U.S. Bureau of Land Management; and the Lake County Open Space Initiative. Status reports and requests for input on the Master Planning process were also made before the Climax Community Forum and the Lake County Watershed Advisory Council. Where appropriate, the PowerPoint and planning documents were presented as part of the workshop.

Entities, such as the State Historic Fund and Colorado Historic Society have been responsible for over \$750,000.00 in grant funding for stabilization of the historic structures of the Homestead, while the Colorado Historic Foundation holds the Deed of Conservation Easement on the ranch that dictates what can, and cannot be constructed or modified on the property. These entities will remain partners in the stabilization, rehabilitation, and preservation of the Homestead throughout the life of the project.

Upon review by the Stakeholders, none of the identified project concepts resulting from the scoping process, and subsequently included in this Master Plan, were determined to be out of compliance with the intent of the grants awarded, or the Conservation Easement, and received strong support as part of the effort to restore the ranch to productive use as defined in the mission and vision statements for the project.



Section 2 Background

2.1 Historical Perspective

The history of the Hayden Ranch is inextricably entwined with the discovery and development of one of the world's richest mineral deposits in Leadville, Colorado. The cover story of the summer 2005 edition of the Colorado Preservationist, entitled *The Past and Future of Hayden Ranch* (as edited), provides the following historical perspective⁴:

In April of 1860, a small band of wizened prospectors, veterans of the 1849 California Gold Rush, stooped patiently over the bone chilling cold waters of a small tributary stream not far from the current day Hayden Ranch. Patiently they searched the swirling waters of their gold pans for the “color” that would surely bring them fortune.

The tedium was broken when one of the prospectors, Abe Lee, rose stiffly from the bed of the creek and exclaimed, “Boys, I just found all of California in this here pan!” With those words, the rush was on, and the legacy of one of Colorado’s richest and bawdiest mining camps was born.

Word of the rich strike spread like wildfire, and soon the sounds of picks and shovels striking the hard Rocky Mountain earth rang from every tributary in the basin. By July of 1860, over 8,000 miners and prospectors fanned out over the length and breadth of the Upper Arkansas River Valley, spilling over

⁴ Colorado Preservationist, Volume 19, No. 2, Summer 2005, Michael Conlin
Hayden Homestead Master Plan: Section 2

Hayden Homestead: Master Plan

the mountain passes into the valleys of the Eagle, Gunnison, and Roaring Fork Rivers in search of precious metals.

Beginning as a crude assortment of mud roofed cabins and tents, a community aptly named Oro City, Spanish for gold, sprang up seemingly overnight. Millions of dollars in placer gold were extracted from the glacial alluvium of gulches with names like California, Nugget, and Stray Horse, but the color soon panned out, and many miners moved on to the next strike.

The mining camp might have become just another Colorado ghost town gracing the pages of modern history books, had it not been for Alvinus Wood's fortuitous discovery in 1873, that the black sands that had clogged the sluice boxes and gold pans of the early gold miners, was in fact lead carbonate, fabulously rich in silver.



Harrison Avenue in 1879. Photo Source: Denver Public Library Western History Collection.

During its second heyday in the 1880's and early 90's, the mining camp, now renamed Leadville, made its fortune extracting the rich veins of silver that lay buried beneath the hills east of town. Assays approaching and sometimes exceeding 10,000 troy ounces of silver to the ton of ore yielded extraordinary wealth, creating one of the most ornate and modern communities in the west, while establishing the fortunes of

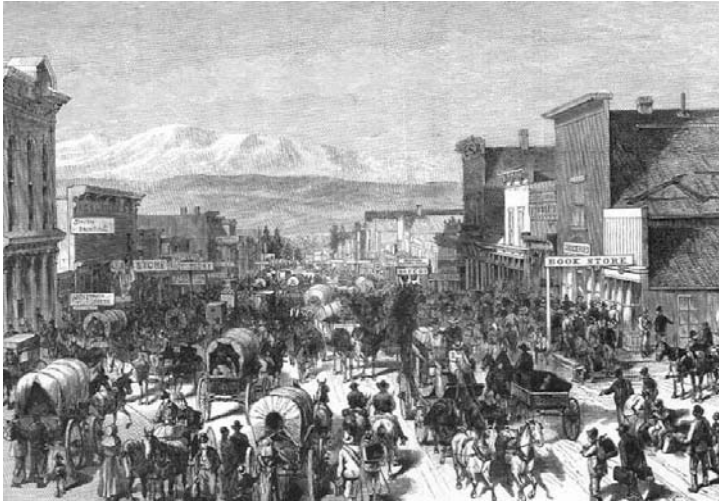
such historic figures as Meyer Guggenheim, Charles Boettcher, David May, David Moffett, and H.A.W. Tabor.

During this second "boom" cycle, Leadville boasted a population of over 30,000; was among the first communities in Colorado to have electrical power; and was considered as a possible site for the State Capital.

Shadowy characters from Colorado's early history, including Doc Holiday, the James Gang, the Younger Brothers, and "Soapy" Smith frequented Leadville's flourishing brothels, bars, and gambling houses, while the new wealth of the "Silver Kings" built grand hotels and opera houses, drawing headliners like Oscar Wilde and Harry Houdini to the frontier town. While Horace and Baby Doe Tabor entertained Heads of State, the "Unsinkable Molly Brown" struggled to shed her commoner's past to gain entry into Colorado's elite society. Leadville staked its claim in history as Colorado's "Silver City."

Hayden Homestead: Master Plan

The Role of Agriculture



Downtown Leadville, late 1870's, Denver Public Library

While the vast mineral resources of the Leadville Mining District were the driving force for settlement of the central Colorado Rockies, the literal “horsepower” to support the early mining industry was provided by the horses, burro’s, oxen, and mules that carried the prospectors packs, pulled the stage coaches, ore and freight wagons, and skidded the timber from the forest. Prior to the arrival of the first train, virtually everything that came into, passed through, or left the mining camp, did so riding on the backs of beasts of burden.

If beasts of burden provided the literal horsepower of the day, then it was the hay that fed the livestock that fueled the mining boom. The problem was that the sparse mountain grasses of the mining camp, at an elevation typically exceeding 10,000 feet, could hardly support a family of chipmunks, much less thousands of toiling “hay burners.”



Harvesting hay, Hayden Ranch, Farrington Collection

The solution lay in the lush bottomlands of the Arkansas River Valley, where abundant water and rich soils supported a luxurious mantle of the hay and cool season grasses that were needed to fuel the growing mining industry. Astute ranchers quickly homesteaded the lands along the river bottom to raise and harvest the lucrative crop.



Hayden Homestead corrals and paddocks today, M Conlin Collection

Hayden Homestead: Master Plan

Historical Figures

What we refer to as the Hayden Ranch today, was first called the Elkhorn Ranch, and records of its operations date back to 1860. It is located on an ancient terrace of the Arkansas River, some 10 miles south of Leadville. Perched above a shallow water table, this broad expanse of verdant grasslands is nestled between the Sawatch and Mosquito Ranges of the Rocky Mountain Cordillera, at the base of Mount Elbert, Colorado's highest peak. Its eastern boundary is formed by the braided channel of the Arkansas River. The meandering course of Box Creek, with its headwaters high on the snow covered slopes of Mount Elbert, flows lazily across the ranchlands, recharging the underlying aquifer, and supporting rich meadows and wetlands.



Father John Dyer, Denver Public Library

The ranch passed through many famous hands in Leadville's early "boom" years. In 1864, part interest in the ranch was purchased from Mr. John Harrington by Father John Dyer, Colorado's "Snowshoe Itinerant", and renamed the Dyer and Harrington Hay Ranch. Besides spreading the gospel to the remote mining camps, Father Dyer is best known for delivering the mail between Fairplay and Leadville, which required traversing the treacherous 13,000 foot elevations of Mosquito Pass on nine foot long "snowshoes", in the dead of winter.

In 1868, Father Dyer sold a one half interest to the Ranch to his son, Judge Elias Dyer. Judge Dyer was murdered by vigilantes in his own courtroom in Granite in 1875 during the infamous "Leadville Wars", a violent dispute triggered by the murder of John. Harrington over ranch water rights.

In 1871 the Ranch was sold to a mercantile owner by the name of Charles Mater, one of Leadville's founding fathers and a member of its first Board of County Commissioners. Mater also chartered Leadville's First National Bank, and founded the Leadville Chamber of Commerce. Mater sold the Ranch to Olive and Francis Hayden in 1872. The property was held within the same family for more than six decades, and still bears their name today.

Hayden Homestead: Master Plan



Hayden Ranch entrance, Farrington Collection

Sustainability

The Hayden Ranch is a study in evolution, surviving by changing to meet the demands and economic shifts inherent to the boom and bust cycles typical of mining communities.

The Hayden Ranch was initially operated as a hay ranch from 1860 through the early 1890's, when the Silver Panic of 1893 dropped the bottom out of the silver market, plummeting Leadville once again into the classic "bust" cycle. With the advent of electricity and arrival of the automobile shortly thereafter, the horse drawn era began its steady decline into obscurity, and the hay market never fully recovered.



Colorized postcard, Hayden Cattle Ranch, Farrington Collection

To survive the hard times, the Hayden family had to change or perish. They turned to grazing cattle, and harvested hay to "winter over" the livestock so that they could be sold as "long yearlings" in the more profitable spring market. To store the hay, tend to the cattle, and house the ranch hands, they built many of the structures that today constitute the Hayden Homestead National Historic Site.

Hayden Homestead: Master Plan



In 1919, the Hayden's turned the operation of the Ranch over to their son-in-law, John Weir. Inside of the main hay barn Weir installed a Loeffel water turbine to power a stationary hay bailer, mechanical shop, and sawmill, which allowed the Ranch to process and package their products for sale. A ranch spur off of the Denver and Rio Grande rail line, known as the Weir siding, allowed them to transport their cattle and agricultural products outside of the depressed local market. The Ranch survived where many others faltered or failed.

Line Shaft pulleys powered by Loeffel Water Turbine



Wintering over cattle, Hayden Ranch, Farrington Collection

The Ranch was sold to the Callahan Construction Company in 1933, and was used briefly in 1939 as part of the U.S. Army remount Service to breed choice horses for the Calvary. World War II rendered the horse soldier obsolete, however, and the program was dropped. Callahan instituted many new technologies for cattle breeding and rearing, and ran a successful year-round livestock business for the next 14 years.

Callahan sold the ranch in 1947, and since that time, it has been used primarily for seasonal cattle grazing. With no need to store winter hay, or to house the numerous ranch hands required to raise, irrigate, and harvest the grasses, the buildings were eventually taken out of active use and began the inevitable process of deterioration.

Hayden Homestead: Master Plan

Speculation

In the 1960's, encouraged by the successes of the Aspen and Vail Ski Areas, a consortium of investors acquired the Hayden and several other ranches in Lake County, convinced that the ski industry would logically spill over into the Arkansas River Valley. Lands near the base of Mount Elbert were subdivided into over 1200 building lots, and a speculative condominium complex called the Pan Ark Lodge (today re-named the Moosehaven Condominiums) was constructed just north of the Hayden Homestead.



A circular configuration of stone faced columns still stands where the base of the gondola to the summit of Mount Elbert was to be built. It was a dream that was never to come to fruition.

In the summer of 1997, the investment consortium decided to liquidate its holdings, and some 7,000 acres of historic ranch land, including the Hayden Ranch, were simultaneously dumped on the real estate market.

Citizens of Lake County raised the alarm that development of the ranches into low density "Ranchettes", as has become common across the American west, could lead to a loss of the sense of uncluttered open space that distinguishes the Arkansas Valley, degradation of the scenic viewsheds guarding Colorado's highest peaks, interruption of essential wildlife migration routes, fragmentation of critical winter wildlife habitat, and a severance of the tangible links to our ranching heritage.

At the same time, Lake County was struggling from the loss of approximately 80% of its assessed valuation due to the closure of the Climax Mine, with no appreciable decrease in demand for basic services. In a deficit spending position, with limited manpower and planning budget, there was little that the County could do to respond to these public concerns on their own. The prospect of losing local control over growth, coupled with the potential loss of the natural, historic, and cultural resource values that drew many residents and visitors to Lake County, rallied the community to action.

In early 1998, the Hayden Ranch was optioned by the City of Aurora, whose primary interest was in securing the ranch water rights to meet their existing and future municipal needs. In an unprecedented move, the City approached the Lake County Commissioners with the unique offer to work cooperatively in determining how the community wanted to see the surplus lands of the Hayden Ranch used.

LCOSI

The Board of Commissioners seized on the opportunity, and assembled a diverse mix of stakeholders with an interest in the future of the Upper Arkansas River Basin. The partnership that would result from the effort would come to be known as the Lake County Open Space Initiative (LCOSI), and would grow to include some 25 federal, state, and local agencies, municipalities, citizen groups, and organizations. The organization is bound by a memorandum of understanding, administered by Colorado Mountain College.

The first order of business was a community poll, conducted for LCOSI by Colorado Mountain College, which specifically asked whether survey participants supported the acquisition of ranch lands along the Arkansas River for the preservation of open space and the creation of parks. An overwhelming 91% of respondents indicated support, providing a strong public mandate to protect the lands as open space.



Hayden Ranch against the backdrop of the Sawatch Range

Based on that mandate, LCOSI adopted a mission statement that prioritized the preservation and stewardship of land and water resources for open space, wildlife, historic preservation, public education, smart growth, and outdoor recreation.

Over the course of the next 7 years, LCOSI successfully placed over 8,000-acres of land under a single Ecosystem Management Plan. Ecosystem Management Planning views the land in much the same way as wildlife does, as an interwoven matrix of forage, water, and cover, rather than as a series of political or jurisdictional property lines, and seeks to manage the land and its resources to their highest and best use, regardless of man imposed boundaries.

Hayden Homestead: Master Plan

The LCOSI Ecosystem Management Plan is a voluntary, consensus document, developed through cooperation between the agency land owners and the local community to cross jurisdictional lines in establishing management emphasis areas for such varied uses as wildlife winter range, historic preservation, dispersed outdoor recreation, water storage, viewshed protection, and water based recreation.

The plan recognizes man as an integral part of the ecosystem, and acknowledges the need to seek balance between human and wildlife resource needs.

Under this plan, the LCOSI partnership created a 13 square mile landscape linkage spanning the Arkansas River between the Sawatch and Mosquito Mountain Ranges, securing traditional migration routes and winter range, and preserving the foreground viewsheds framing Colorado's two highest peaks.



Southern half of the Lake County Open Space Initiative, containing the Hayden Ranch

Hayden Homestead: Master Plan



Opening day kids fishing derby, Hayden Meadows

Accomplishments

LCOSI also constructed the Hayden Meadows Recreation Area, and the Hayden Meadows Reservoir to provide developed recreational opportunities, and to store 50 acre feet of water to help sustain smart growth and community development.

During this period, the LCOSI Partners also constructed the Sawatch Range Interpretive Trail, opened 5.5 miles of public recreational access to the Arkansas River, placed the Derry Ranch on the National Historic register, performed an inventory and structural analysis of the Hayden Homestead buildings, expanded the Arkansas Headwaters Recreation Area into Lake County, and restored one quarter mile of floodplain that had been subjected to past natural resource damages along the Arkansas River.



While everyone agreed in principle that the Hayden Homestead was a significant icon of the role that ranching played in Colorado's early history, the prospect of stabilizing, restoring, and placing its structures once again into productive use was daunting. Neither the City of Aurora, nor the resource agencies interested in acquiring the Ranch for preservation as open space, had the mandate, the expertise, or the resources to take on the task of preserving the structures.

The ability to place the balance of the ranch into open space hinged upon finding a conservation owner and an adaptive use for the structures of the Homestead.

CPI and Colorado Mountain College

Hours of brainstorming workshops by the LCOSI partners led to the conclusion that they would have to look outside of the current membership for the expertise to resolve the problem. An invitation to join in the discussions was sent out to Colorado Preservation Inc. (CPI), whose Endangered Places program had been successfully utilized to help preserve portions of the historic Leadville Mining District some years earlier.

Simultaneously, the Timberline Campus of Colorado Mountain College was looking to expand their program offerings, and was considering capitalizing on the unique niche provided by Leadville's place in history to initiate a degree program in historic preservation. CPI provided the needed expertise and became the catalyst for drawing together the varied interests of the partnership in the formation of a plan to: protect and preserve the historic ranch and its structures; interpret the ranch's history for the public; return the property to productive use; develop an economic generator for Lake County; create a model for historic preservation education; and generate public interest in preserving Colorado's history.

Under the plan, the City of Aurora agreed to partition off a 35.38-acre parcel of land encompassing the 16 contributing structures of the historic Homestead for donation to Colorado Preservation Inc. Using the historic context and structural analysis generated by LCOSI, CPI submitted an application, and was successful in placing the Hayden Homestead on the State and National Register's of Historic Places.

With the National Historic Landmark status secured, CPI applied for, and was awarded a Colorado Historic Fund Grant of \$270,000.00 to resolve the immediate stabilization needs of the major ranch structures. LCOSI partners provided the cash match, including a substantial contribution from Colorado Mountain College.

Under an agreement with the College, CPI acted as interim owner of the Hayden Homestead through the initial stabilization process, after which CMC had the option to take ownership of the property.

The Historic Preservation Program at CMC will be the only two year program of its kind in the Rocky Mountain Region, and its unique hands-on, experiential learning opportunities have already drawn the interest of the history departments of several major Front Range Universities, as well as the Gates Family Foundation and the National Trust for Historic Preservation, who see the need for training individuals in the skills and trades necessary to preserve our nations historic treasures.

From its initial status as the proverbial "albatross", the Hayden Homestead Project has taken wing, and stands as a model of what can be done when dedicated individuals and agencies set aside narrowly focused agendas to attain common goals.

Hayden Homestead: Master Plan

The expertise and spirit of cooperation that entities such as CPI, CMC and the City of Aurora brought to the LCOSI partnership not only established a national model for historic preservation, but cleared the way for the placement of the surrounding lands of the Hayden Ranch into perpetual open space.

That the Hayden Homestead will be reborn as an educational facility, increasing the public's understanding and appreciation of our shared heritage, is a tribute to the power of partnership building.

Following publication of the Colorado Preservationist article in 2005, three additional grants and matching funds in excess of \$500,000.00 have been awarded for stabilization of the structures and reconditioning the waterwheel. Ownership of the Homestead was transferred from CPI to Colorado Mountain College on April 2nd of 2008 for adaptive use as an off-campus, experiential learning center for their Historic Preservation Trades, Natural Resource Management, Forestry, Outdoor Recreation Leadership, Entrepreneurial and Fly Fishing Guide Training Programs.

In 2007, Colorado Mountain College initiated an academic degree program in Historic Preservation Trades at its Timberline Campus in Leadville, Colorado, emphasizing hands-on education in the crafts and trades that support the Preservation Industry.

In the summer of 2009, Colorado Mountain College and the Hayden Ranch were selected as the site for the third biennial International Preservation Trades Education Symposium, "*Finding Common Ground*", acknowledging the significance of the project as an international model for historic preservation education.



The guardian of the Homestead



Section 3 Existing Condition

3.1 The Land

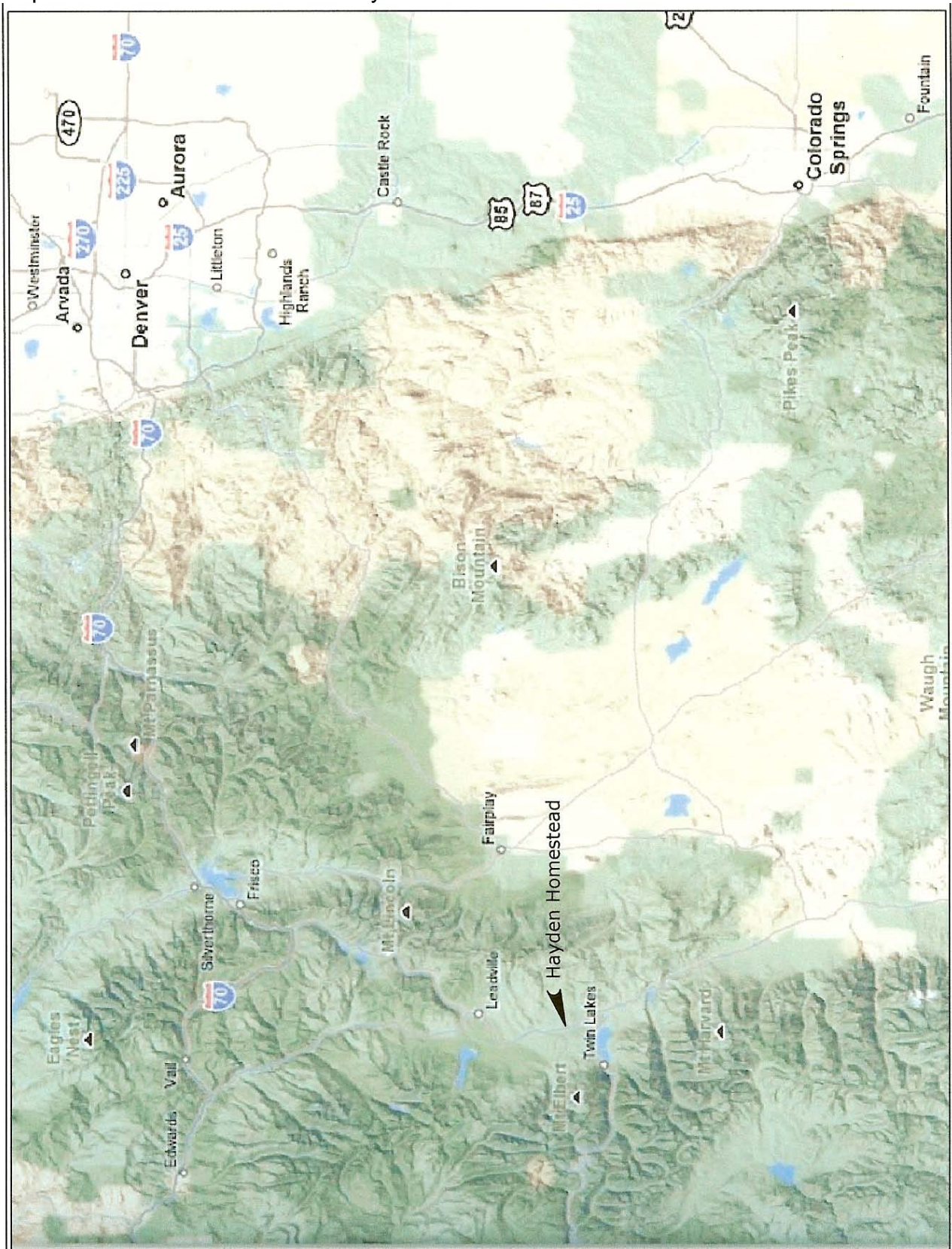
Colorado Mountain College is owner of record of the Hayden Homestead property, as conveyed by a Special Warranty Deed from Colorado Preservation Inc dated April 2, 2008 and recorded with the Lake County Clerk and Recorder (Entry 348801) on April 8, 2008. (See *Appendix B, Special Warranty Deed*). Map 3-1 illustrates the general location of the Homestead within the State of Colorado.

The survey of record (See *Survey Plat, Hayden Homestead*, Appendix A) of the property was performed by Bear Surveying for the City of Aurora, then owner of the property, on August 7, 2002, and encompasses 35.38 acres of land, more or less in NE $\frac{1}{4}$ of Section 3, T11S, R 80W, and the SE $\frac{1}{4}$ of Section 34, T10S, R 80W, of the 6th PM in Lake County, Colorado.

The survey includes an easement provided to the Moosehaven Condominiums Homeowners Association for a sewer line and wastewater treatment plant. Colorado Mountain College is entitled to four domestic and light commercial sewer taps onto the Moosehaven Sanitation System as a condition of the easement. The *Easement Agreement & Conveyance* documentation is provided in Appendix B. Under the agreement, Colorado Mountain College will be responsible for its pro-rated share of the expense to permit, operate, monitor, and maintain the facility.

Hayden Homestead: Master Plan

Map 3-1 General Location: Hayden Homestead



Hayden Homestead: Master Plan

The transfer of the Hayden Homestead from Colorado Preservation Inc. to Colorado Mountain College was encumbered by a Deed of Conservation Easement (see Appendix C, *Colorado Historical Foundation, Hayden Ranch Deed of Conservation Easement*). The easement sets forth the covenants and stipulations intended to preserve and maintain the historic integrity of the buildings and lands of the Hayden Homestead in perpetuity. The Conservation Easement identifies five zones within the property, and delineates specific restrictions and uses that are allowable within each zone. Mapping of the zones is included in Appendix A. Delineation of acceptable uses and restrictions is located in Exhibit F of the Deed of Conservation Easement.

The land also lies within a Lake County Scenic Conservation Overlay (SCO) District extending 1,000 feet either side of the centerline of U.S. Highway 24, designated as the *Top of the Rockies, National Scenic and Historic Byway*. The SCO district, "... was established to supplement part or all of an underlying zone district, imposes additional requirements and regulations intended to protect the major scenic vistas from visual obstruction and aesthetic intrusion."⁵

The Hayden Homestead is situated within the heart of the Lake County Open Space Park (Appendix A, LCOSI Land Matrix), which includes over 8,000 acres of land set aside by the partnering agencies and entities of the Lake County Open Space Initiative (LCOSI) for perpetual management as open space. The Open Space Initiative operates under a Memorandum of Understanding (MOU), administered by Colorado Mountain College (Appendix C, LCOSI MOU).

The management of the Open Space is guided by the *Lake County Open Space Initiative Ecosystem Management Plan*⁶, a consensus document that provides a mutually generated plan for informed decision making by the partnering local, state and federal agencies who share the commitment to preservation and stewardship of land and water resources of Lake County for open space, wildlife, historic preservation, smart growth, education, and outdoor recreation. The Ecosystem Management Plan is available for review at the CMC Library.

⁵ Lake County Land Development Code, 2002 Edition as revised, pp 4-5

⁶ Lake County Open Space Initiative Ecosystem Management Plan, Conlin Associates, January 2003

3.2 The Natural Setting

The Hayden Homestead is uniquely situated at the headwaters of the Arkansas River, along the Continental Divide of the Colorado Rockies, in the highest concentration of 14,000 foot peaks in the lower 48 states..

3.2.1 Arkansas River

The Hayden Ranch is located along the Headwaters of the Arkansas River in the Upper Arkansas River Valley of Lake County, Colorado.

The Arkansas River Basin is the largest of the river drainages in the State of Colorado, and at 1,469 miles in length, is the sixth longest river in the United States. As it passes through four states on its way to the Mississippi River, the Arkansas provides agricultural and municipal water within a 195,000 square mile drainage basin.

From a small trickle high in the snowfields on Fremont Pass north of Leadville, the river grows until it enters the Mississippi River at Napoleon, Arkansas, with a mean discharge of almost 8,500 cubic feet per second. It is navigable for commercial shipping from Muskogee, Oklahoma, to its terminus at the Mississippi.

In its upper reaches, the Arkansas drops 4,600 feet in 120 miles between Leadville and Pueblo, making it “the most popular whitewater boating river in the United States.” It is rated as the most commercially rafted river in the world.⁷

With the cleanup of the California Gulch Superfund site in Leadville, the improved water quality now supports a healthy, self sustaining population of brown trout. Trout Unlimited lists the Arkansas as one of the top 100 trout streams in America.⁸



In a recent feature article in Southwest Fly Fishing Magazine⁹, author Toner Mitchell describes the Upper Arkansas River as a “dream for anglers who enjoy pocket water fishing... hosting one of the most

⁷ Colorado State Parks

⁸ Trout Unlimited’s Guide to America’s 100 Best Trout Streams, Ross, 2005

⁹ Southwest Fly Fishing Magazine, Volume 11, Number 4, July/August 2010

Hayden Homestead: Master Plan

consistent and predictable trout menus of any stream I know.”

He goes on to say that...”If I had only two days to experience the best of the Arkansas River fishery, I would begin with a day at either the Granite State Wildlife Area or at the Hayden Meadows region above Twin Lakes and downstream of Leadville.”

In this passage, Mr. Mitchell is describing the reach of the Arkansas passing through the Hayden Ranch and extending downstream to Granite, Colorado.

The 149 mile reach from Leadville to Pueblo was congressionally designated as the Arkansas Headwaters Recreation Area in 1989. It is managed under a Cooperative Management Agreement between the Bureau of Land Management and Colorado State Parks.

Colorado Mountain College holds an Outfitter Guide Permit to use the river from its headwaters to Pueblo Reservoir, for guiding wade and walk fishing, float fishing, and whitewater rafting. The permit provides a natural extension of the Hayden Homestead and the recreational and educational opportunities afforded by its location proximal to the river.

3.2.2 The Mountains

The Collegiate, Sawatch, and Mosquito Range’s that encircle the Hayden Homestead represent the highest concentration of 14,000 foot peaks in the lower 48 states.



Mount Elbert (left) and Mount Massive (right), Colorado's two highest peaks as seen from the Hayden Ranch

Rising out of the gently rolling ranchlands to the west of the ranch are the peaks of the Sawatch Range, forming the Continental Divide that separates the watersheds of the Atlantic and Pacific Oceans.

Hayden Homestead: Master Plan

Dominating the ridgeline of the Great Divide and visible from the Hayden Homestead, are three of Colorado's five highest peaks, including: number one, Mount Elbert (14,433 ft. m.s.l. and second highest peak in the lower 48 States); number two, Mount Massive (14,413 ft. m.s.l.); and number five, La Plata Peak (14,336 ft. m.s.l.).

The Hayden Ranch was designated as a critical viewshed in the *Top of the Rockies Scenic and Historic Byway: Corridor Management Plan*¹⁰, for its role in protecting the foreground views of Colorado's highest peaks.

3.2.3 National Wilderness Preservation System

In 1964, Congress formally acknowledged the immediate and lasting benefits of wild places to the human spirit and the fabric of our nation, through passage of the Wilderness Act (Public Law 88-577). The Act permanently protects some of the most natural and undisturbed places in America under the National Wilderness Protection System, in order to retain their primeval character and influence, unconstrained and untrammelled by man.

The Hayden Homestead is surrounded by one of the highest concentrations of designated wilderness in the nation, with the Holy Cross and Mount Massive Wilderness Areas to the north, the Collegiate Peaks Wilderness to the south, the Buffalo Peaks Wilderness to the east, and the Hunter / Fryingpan Wilderness to the west, totaling over 445,000 acres of designated Wilderness.

3.2.4 Open Space

The Hayden Homestead is centrally located within the Lake County Open Space Park (Appendix A, LCOSI Land Matrix), which includes over 8,000 acres of land set aside by the partnering agencies and entities of the Lake County Open Space Initiative (LCOSI) for perpetual management as open space. The LCOSI operates under a Memorandum of Understanding (MOU), administered by Colorado Mountain College. (Appendix C, LCOSI MOU)

The management of the Open Space is guided by the *Lake County Open Space Initiative Ecosystem Management Plan*¹¹, a consensus document that provides a mutually generated plan for informed

¹⁰ Top of the Rockies Scenic and Historic Byway, Corridor Management Plan, Conlin Associates, November 1996

¹¹ Lake County Open Space Initiative; Ecosystem Management Plan, Conlin Associates, January 2003

Hayden Homestead: Master Plan

decision making by the participating local, state and federal agencies who share the commitment to preservation and stewardship of land and water resources of Lake County for open space, wildlife, historic preservation, smart growth, education, and outdoor recreation.

The LCOSI Ecosystem Management Plan is available for review at the CMC Library on the Timberline Campus in Leadville.



Hayden Ranch situated within the Lake County Open Space Park
Foreground: Arkansas River and Top of the Rockies National Scenic and Historic Byway
Background: Quail Mountain, Mt. Hope, Twin Peaks, La Plata Peak and Mount Elbert

3.3 The Built Environment

3.3 Structures

The Hayden Homestead parcel encompasses the structures that made up the ranch headquarters and support facilities that evolved through the period of historic significance to represent the site as it exists today.

The site consists of 16 contributing historic structures, 3 non-contributing structures, and historic evidence of at least four structures that were lost to collapse or fire, accumulated piles of discarded ranch artifacts, and ancillary infrastructure such as corrals, loading chutes, fences, and irrigation ditches that supported ranch operations.

A photo key illustrating the spatial relationship of the contributing and non-contributing structures is provided as Figure 3-1.

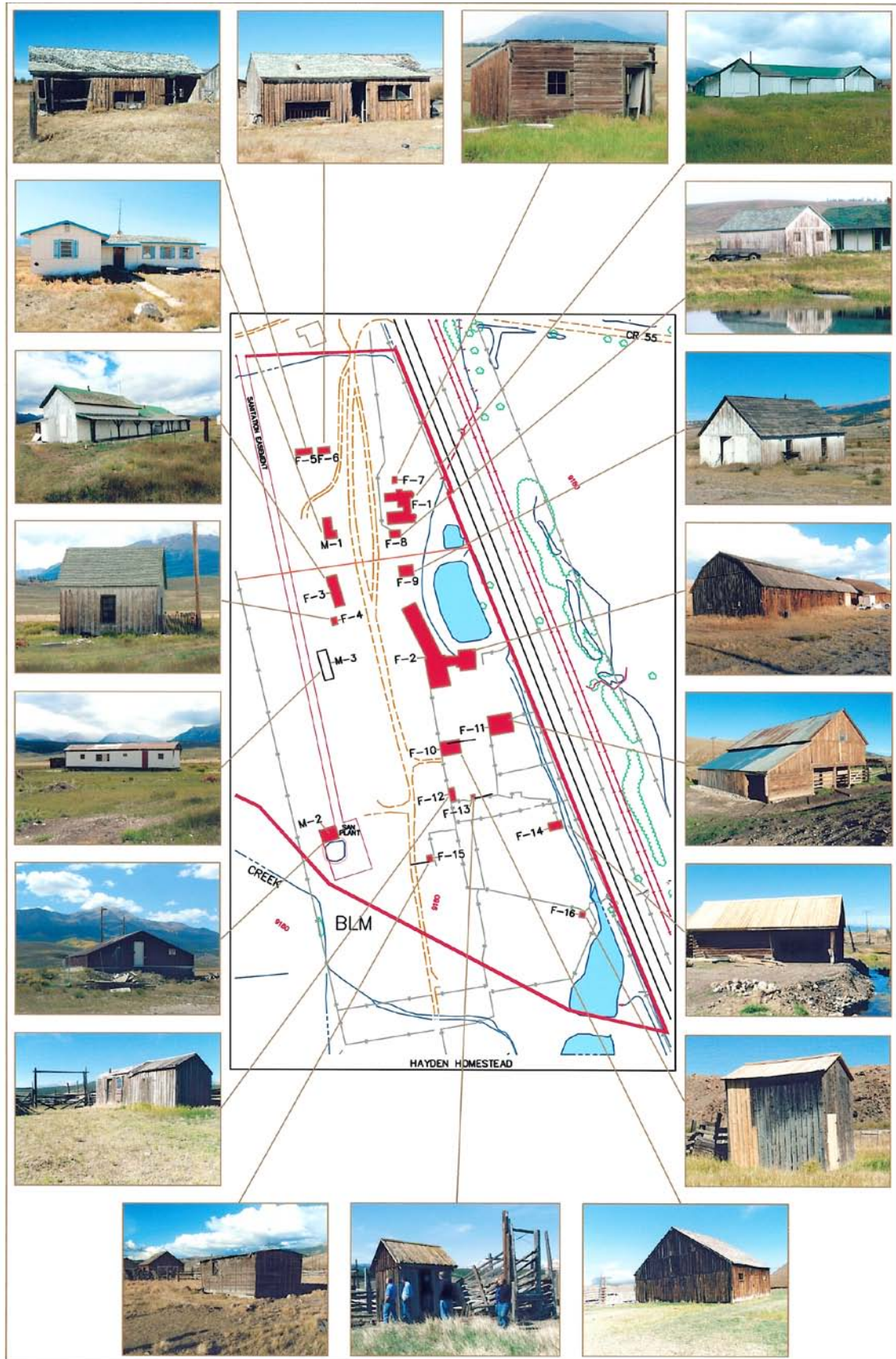
3.3.1 Contributing Structures

The structures of the Hayden Homestead were surveyed by AE Design Associates, P.C in 1999 in preparation for submittal of the site for State and National Historic Landmark status. The document, entitled *Lake County Open Space Initiative: Historic Ranches Survey*,¹² is incorporated herein by reference, and is available for review at the Colorado Mountain College, Timberline Campus library. Alphanumeric descriptors within this document coincide with those presented in the AE Survey. A description of the structures, as illustrated and numbered in the 1999 AE report, follows:

¹² Lake County Open Space Initiative: Historic Ranches Survey, CHC/SHF Project #99-02-53, D. Beardsmore, P Berglund, S, Zaske, 1999

Hayden Homestead: Master Plan

Figure 3-1 Photo Key: Hayden Homestead Structures



Hayden Homestead: Master Plan



3.3.1.1 Building F - 1 Ranch Owner's House

Contributing / Architecturally Significant

Conservation Easement: Zone 1

Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Stabilization Status:

Phase 1 – Mud sill stabilization, window frames removed for restoration, window openings boarded up

Phase 2 – Roof repairs and painting

Description:

The Ranch owner's house is a one story wood frame house with an irregular U-shape and a medium pitch, cross gable roof with gray-green asphalt shingles and galvanized meta; flashing at the base. Twelve (12) chimneys, including both brick and metal stovepipes are located on the slopes of the roof. The building has no foundation. The majority of the house is clad with white-painted wood siding and green painted trim.

The house is divided into north, south and east wings and a bathroom addition. The north and south wings originally may have been two separate houses. Both of these wings are oriented with their entrances facing south and once had porches spanning the length of each wing(the north wing porch has since been modified. Several other open and enclosed porches exist on each wing

The east wing was constructed at a later date and connects the north and south wings, shifting the orientation of the main entrance to the east elevation.

Hayden Homestead: Master Plan

The building has a total of thirty (30) windows. Most are double hung with varying light patterns. The north and south wings have bay windows composed of four, two-over-two windows.

Two bathrooms with indoor plumbing were added at the junction of the north and south wings. The building was used as the Ranch Owner's house and has twenty-three rooms¹³. Interior finishes vary from room to room, and include paint, wallpaper, linoleum, and wood paneling. Some original finishes exist.

- 1056 square feet gross – north wing
- 216 square feet gross – bathroom addition
- 975 square feet gross – south wing (original portion)
- 360 square feet gross – south wing (addition)
- 666 square feet gross – east wing
- 80 square feet gross – enclosed porch (north side, north wing)
- 58 square feet gross – enclosed porch (south side, south wing)
- 33 square feet gross – bay windows (north and south wings)
- 3,444 square feet gross – TOTAL
- Condition: Deteriorating
- Alterations: Moderate



¹³ Originally called the bunkhouse in the AE report, its use as the ranch owner's residence was clarified by ranch resident Betty Farrington

Hayden Homestead: Master Plan



3.3.1.2 Building F - 2

Main Barn

Contributing: Site Number 5LK1340 - Architecturally Significant

Conservation Easement: Zone 1

Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Stabilization Status:

Phase 1

North and south wing roofed, structural members repaired, base of support members stabilized and dry rotted sections replaced, cables installed spanning the base of support members to prevent spreading of building base.

Water wheel excavated and partially restored

Description:

The one and a half story (ground floor and hay loft), wood frame barn has an irregular footprint. The barn has no foundation or basement – the entire floor is dirt. The Building contains the remnants of a waterwheel and sawmill once powered by the stream flowing under the building. The east wing of the barn contains the water wheel and saw mill and was constructed circa 1918, while the north and south wing were constructed earlier. Each wing has a different construction style.

The north wing has a gambrel roof clad in milled planks and supported by a common rafter system. The south wing has a side gable roof clad in wood shingles and is supported by beams of rough-cut lumber. The east wing has a side gable roof (cross gable at the intersection with the south wing) and is supported by a queen post system. The roof is clad with boards and wood shingles. The north and south additions to the east wing have secondary extended roofs off of the main roof, while the east addition has a shed roof.

The walls of the north wing are vertical, flush, milled planks. Two windows exist on this elevation. The north half of the north wing has a hay loft supported by 8" square beams. The south half of the north wing does not have an upper loft, but is open to

Hayden Homestead: Master Plan

the rafters. The south wing's walls consist of 1" x 12" milled lumber planks placed vertically and supported by interior, horizontally set 2" x 4"s. This area contains animal stalls and a wood cattle loading ramp.

The east wing is clad with irregular widths of vertical, flush, rough-cut lumber. There is one rough window opening without frame or glazing. A similar window opening exists in the west elevation's hayloft. A 40', two room addition was built onto the north elevation of the east wing. This addition has one window opening without glazing. The west room was associated with the sawmill operation and contains several sawhorses and blades. The east room of this addition is almost fully collapsed.

Another addition onto the east elevation of the east wing was once the main processing area for the sawmill. To the east of this addition is a 15' wide area of open floor joists built over the stream.

An animal manger (Building F-10) was once directly connected to the main barn. An effort to stabilize the connecting portion of the barn failed and this central portion of the barn was removed before it could collapse and bring the entire barn down with it.

- 4550 square feet gross – north wing
- 3,550 square feet gross – south wing
- 1,400 square feet gross – east wing
- 800 square feet gross – east wing (north & south additions)
- 1,425 square foot gross – east wing (uncovered and shed roof)
- 11, 675 square foot gross – TOTAL
- Condition: Poor to deteriorating
- Alterations: Moderate



Hayden Homestead: Master Plan



3.3.1.3 **Building F - 3 Bunkhouse**

Contributing: Site Number 5LK1340

Stabilization Status:

Phase I – Remove windows for restoration, board up window openings

Phase II – Stabilize foundation, paint exterior, patch roof

Conservation Easement: Zone 2

Preservation/Rehabilitation/Restoration of Existing Buildings

Description:

This one bedroom, rectangular, wood frame ranch house has a bathroom addition on the west elevation. Although no construction date was recorded, it is estimated that the six room house was built in stages between 1918 and 1925.

The side gable roof has a medium pitch with little eave overhang and is clad in asphalt shingles. Three metal stovepipes extend from the roof. The central portion of the roof extends higher than the north and south portions.

The north portion of the house is clad with vertical boards, the central portion has simple drop siding, and the south portion has vertical, lapped, board-on-board siding. All exterior wall treatments are painted white and all porch supports, doors and window trim are painted green. There is no basement or foundation.

The house has ten (10) windows with similar light patterns, one sliding window, and six (6) doors, one of which is boarded over. The porch runs the entire length of the east (main) elevation and is supported by 4" square posts.

Hayden Homestead: Master Plan

The interior of the house has linoleum flooring in the bathrooms and kitchen, and carpet over plywood in the remainder of the house. Wall treatment varies from room to room and includes wood paneling, linoleum, and painted fiberboard squares.

An electric heating stove is located in Room 2, piping heat through a hole in the wall transferred heat from this stove to Room 1.

- 1224 square feet gross – main house
- 80 square feet gross – bathroom addition
- 1304 square feet gross – TOTAL
- Condition: Good
- Alterations: Minor



Hayden Homestead: Master Plan



3.3.1.4 **Building F - 4** **Shed / Cookhouse**

Contributing: Site Number 5LK1340

Stabilization Status:
None to date

Conservation Easement: Zone 2
Preservation/Rehabilitation/Restoration of Existing Buildings

Description:

The one story, rectangular, wood frame shed has a steeply pitched gable roof covered in asphalt shingles. One metal stovepipe extends from the west slope roof. The walls are clad with rough finished vertical board-on-board siding. There is no basement or foundation. The shed has two double hung, four over four windows – one on the east elevation and one on the north elevation. There is one wood door on the on the south elevation. A small stoop extends from the south elevation and is supported by three (3) railroad ties. The shed was at one time electrically wired and heated with a stove. The interior has linoleum flooring and papered walls, indicating that the building was once used as living quarters.

- 205 square feet gross – TOTAL
- Condition: Fair
- Alterations: None

Hayden Homestead: Master Plan



3.3.1.5 Building F – 5 Chicken & Rabbit Coop

Contributing: Site Number 5LK1340

Stabilization Status:

Community volunteers cleaned, pressure washed and sprayed with Linseed oil.

Conservation Easement: Zone 2

Preservation/Rehabilitation/Restoration of Existing Buildings

Description:

This one story, rectangular, wood frame chicken coop has a side gable, medium pitch roof covered with asphalt shingles with metal edging. There is no basement or foundation, and no chimney. The coop has two windows on the south elevation. As the glass is missing from these windows, they are covered with chicken wire, wood planks and/or a snow fence. The south elevation also has two door openings. The interior of the coop has a closet extending the length of the west elevation with a built-in feed storage bin. Two rabbit hutches and a chicken nesting area are located inside. An enclosed fence extends from the south elevation, forming a pen.

- 475 square feet gross – TOTAL
- Condition: Poor
- Alterations: None

Hayden Homestead: Master Plan



3.3.1.6 **Building F – 6** **Hen House / Tack Room**

Contributing: Site Number 5LK1340

Stabilization Status:

Community volunteers cleaned, pressure washed and sprayed with Linseed oil.

Conservation Easement: Zone 2

Preservation/Rehabilitation/Restoration of Existing Buildings

Description:

The one-story, rectangular, wood frame hen house/tack room has a side gable roof covered with asphalt siding and metal edging. One metal stovepipe extends from the roof's south slope. The walls are clad with vertical board siding. There is no basement or foundation. An exterior chicken coop is located along the east elevation. The hen house has two windows on the south elevation and one on the east elevation (one is a round window located at the peak of the gable, The interior is divided by a hall, The west room was originally used as a tack room, and the east room was added later to house chickens. This room is divided into two sections, each with a door to the exterior chicken coops.

- 410 square feet gross – TOTAL
- Condition: Fair
- Alterations: Minor

Hayden Homestead: Master Plan



3.3.1.7 **Building F – 7 Schoolmarms Residence**

Contributing: Site Number 5LK1340

Stabilization Status:
None to date

Conservation Easement: Zone 1
Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Description:

The schoolmarm for the local one room schoolhouse occupied this one story, rectangular, wood frame shed adjacent to the Ranch Owners House. The building has a shed roof clad in wood planks covered by corrugated roofing tin. The shed's walls are clad with both horizontal and vertical wood planks, indicating that it was probably build in two phases with one an addition to the other. There is no basement or foundation. There is a stovepipe cut through the ceiling. Of the three windows, the north and eat elevation windows are two-over-two, while the west elevation window is covered by a hinged plank shutter. There is one wood door on the east elevation. The north half of the floor is dirt, the south half is 4" milled lumber

- 145 square feet gross – TOTAL
- Condition: Fair
- Alterations: Minor

Hayden Homestead: Master Plan



3.3.1.8 **Building F - 8** **Storage Garage**

Contributing: Site Number 5LK1340

Stabilization Status:
None to date

Conservation Easement: Zone 1
Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Description:

This garage is a one-story, rectangular, wood frame building located directly south of the Ranch Owner's house. It has a medium pitch, front gable roof clad with flush, white painted, vertical wood siding. There is no foundation or basement and no chimney. There are two windows on the east elevation. The garage has a large double-leaf door on the west elevation. Both doors swing out and are attached to their jambs by two strap hinges each. An additional door on the north elevation is sheltered by a small gable roof. The interior of the garage has exposed 2x rafters.

- 392 square feet gross – TOTAL
- Condition: Fair
- Alterations: None

Hayden Homestead: Master Plan



3.3.1.9 Building F – 9

Maintenance Garage

Contributing: Site Number 5LK1340

Stabilization Status:

Stabilization and roof repair scheduled in Phase III

Conservation Easement: Zone 1

Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Description:

This one-and-one-half story, rectangular, wood frame garage has a front gable roof covered by asphalt shingles. One metal stovepipe extends from the roof. Walls are clad with white painted, 1" x 5:" lapped siding. There is no foundation or basement and the dirt floor is covered with 2" thick wood boards. There is one window on the north elevation, two on the south, and two on the east. A large double leaf door on the main elevation opens out on hinges. The interior loft space is accessed by a ladder. This space has a finished ceiling, plank floors, and stained plank wall paneling.

- 832 square feet gross – TOTAL
- Condition: Fair
- Alterations: None

Hayden Homestead: Master Plan



3.3.1.10 **Building F – 10** **South Barn/Manger**

Contributing: Site Number 5LK1340

Stabilization Status: Scheduled for stabilization and roof repair – Phase III

Conservation Easement: Zone 1

Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Description:

This one-and-a-half story, rectangular, wood frame barn is supported by a queen post system. The side gable roof is clad with wood shingles. Walls are unfinished, non-uniform planks. There is no foundation or basement and the dirt floor is covered by rough-hewn planks. No chimney exists. The south elevation has one window at the hay loft level. One set of swinging wood, double –leaf doors exists on the east elevation. Another set of double-leaf doors swings out on the west elevation. A third set of double-leaf doors is located on the east elevation. The barn/manger was once part of a larger barn complex (building 2) which collapsed and was removed. The lower portion of the exposed elevation was planked over after the collapse, and the gable end clad in OSB to protect the structure. The interior of the building has eleven (11) stalls and was used as a horse and livestock feeding and grooming area

- 1,5551 square feet gross – TOTAL
- Condition: Fair to poor
- Alterations: Moderate

Hayden Homestead: Master Plan



3.3.1.11 **Building F – 11** **Cow Barn**¹⁴

Contributing: Site Number 5LK1340 - Architecturally Significant

Stabilization Status:

New rock sill, foundation leveling, new shed roof, Phase II

Conservation Easement: Zone 1

Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Description:

This one-and-a-half story, rectangular, wood frame structure was built circa 1920 and is architecturally significant as an intact example of a vernacular cow barn.

The Barn's front gable roof is clad with wood shingles and corrugated metal sheeting. Walls are vertical wood siding. There is no basement or foundation.

An overhang on the west (main) elevation extends 84". Two windows exist on the west elevation – one six pane window in the gable end and one first story window with no glazing.

The south elevation has two windows at the hayloft level and three windows on the first story. Two, first story windows on the east elevation are identical to the first story, south elevation windows. On the north elevation, two windows were cut from the wall. The removed wall material is hinged to open as shutters.

The west elevation has a sliding door on rollers. Under the overhang area on the north elevation, a 72" x 74" door opens inward. A gate separates the space beneath

¹⁴ Referred to as the Horse Barn in the AE Report – subsequently clarified as the Cow Barn by Betty Farrington, former resident of the Ranch

Hayden Homestead: Master Plan

the overhang from the yard. The south elevation door opens on metal strap hinges. The east elevation has two additional doors

The interior of the first floor has a wood floor and is divided into stalls and tack/feed rooms. Wood stairs provide access to the hayloft. A shed roof addition to the north elevation, constructed at an unknown date, has finishes similar to the original. A fenced corral is located to the south of the barn.

- 5,152 square feet gross – TOTAL
- Condition: Fair
- Alterations: Minor



Hayden Homestead: Master Plan



3.3.1.12 **Building F – 12** **Shed**

Contributing: Site Number 5LK1340

Stabilization Status:

None currently scheduled

Conservation Easement: Zone 1

Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Description:

This shed is a one-story, rectangular, wood frame building with a side gable roof clad with both vertical and horizontal roofing planks. There is one metal stovepipe on the east slope of the roof. Walls are vertical, lapped wood siding. Horizontal wood exists beneath the window on the east elevation. The shed has no foundation or basement. There is a window on the south elevation and one on the east elevation. The shed is accessed by three, single-leaf, wood doors – two on the east elevation and one on the west elevation. The shed was built in two stages. An internal wall divides the north and south portions of the building and there is no interior access between the two sides.

- 378 square feet gross – TOTAL
- Condition : Poor
- Alterations: Minor

Hayden Homestead: Master Plan



3.3.1.13 Building F – 13

Privy

Contributing: Site Number 5LK1340

Stabilization Status:

None currently scheduled

Conservation Easement: Zone 1

Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Description:

The one story, rectangular, wood frame, four seat privy has a steeply pitched, side gable roof clad with wood boards. Walls are unpainted, vertical wood siding.

Interior walls are finished with milled lumber. There is no foundation, but the privy is built atop stacked 2" x 4"s.

Flooring is 1" x 8" lumber nailed onto 2" x 4"s. As the building is a privy, there are no windows. The north elevation door can be locked from the inside by fastening a wire around a nail located inside the door frame.

- 51 square feet gross – TOTAL
- Condition: Fair
- Alterations: None

Hayden Homestead: Master Plan



3.3.1.14 Building F – 14 Log Cabin

Contributing: Site Number 5LK1340

Stabilization Status:

Phase II stabilization – stabilize bank, rebuild shed, re-roof

Conservation Easement: Zone 1

Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Description:

One-story, rectangular, log frame building has a medium pitch, front gable roof clad with boards. There is no foundation or basement, and floors are dirt throughout. A three sided shelter addition with one open side is located on the east elevation. On the original structure, walls are peeled, square notched logs. In some areas, walls are chinked with bits of wood. In other areas, rough hewn lumber has been nailed to the logs to seal cracks, with some gaps chinked with cement. There is one window in the north elevation that has been boarded over. The gable ends are clad with vertical siding. Walls on the addition are unpainted, vertical wood siding. A built in trough runs the entire length of the addition's east wall. West of the cabin is a 30' wood cattle chute. The east end of the shed is settling into the stream

- 252 square feet gross – main
- 202 square feet gross – addition
- 454 square feet gross – TOTAL
- Condition: Poor
- Alterations: Minor

Hayden Homestead: Master Plan



3.3.1.15 Building F – 15

Work Shed

Contributing: Site Number 5LK1340

Stabilization Status:

None currently scheduled

Conservation Easement: Zone 1

Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Description:

One-story, rectangular, wood frame shed with arched roof of 1" x 12" planks spanning the width. Although no stovepipe is evident, there is a round opening in the northwest corner of the roof. Walls are horizontal tongue-and-groove siding. Vertical battens spaced 11" apart appear to have secured a tar paper overlay. There is no basement or foundation.

In the 1950' or 1960's, the floor was raised resulting in a final resting position ranging from 12" to 18" above grade. A window opening in the west elevation is partially covered with a screen. The east elevation has two window openings – the smaller covered by a metal sheet and the larger screened over. An asymmetrically positioned door opening is located on the north elevation. It is thought that the shed may have originally been on wheels and served as a sheep herder's wagon¹⁵.

- 192 square feet gross – TOTAL
- Condition: Poor
- Alterations: Moderate

¹⁵ Communication – Dick Beardsmore, AE Design

Hayden Homestead: Master Plan



3.3.1.16 Building F – 16

Slaughterhouse

Contributing: Site Number 5LK1340

Stabilization Status:

Phase II – New rock sill, level, straighten, new roof & doors

Conservation Easement: Zone 1

Preservation/ Rehabilitation/ Restoration/ Reconstruction of Existing Buildings

Description:

One-story, square, wood frame building with a low pitch gable roof clad with two layers of flush planks. Walls are vertical, flush, 1" x 8" planks and are not weatherproofed. The building has no foundation. The interior floor is non-uniform wood. The building has no windows. A door on the south elevation measures 80" x 34". The north elevation door opens to the corral and holding pen attached to the structure. A stream flows to the east of the slaughterhouse.

- 145 square feet gross – TOTAL
- Condition: Fair
- Alterations: None

Hayden Homestead: Master Plan

3.3.2 Supporting Infrastructure



Elements of the ranching technologies employed during the late 19th and early 20th century are still evident upon the historic landscape of the Hayden Homestead.

Corrals and paddocks, that once held the ranch livestock for branding and calving, ditches for bringing water to livestock and irrigating the ranch gardens and hay meadows, and midden piles that provide a treasure trove of discarded household wares and ranch equipment, from frying pans to tractors and hay rakes, still dot the landscape.



"Squeeze Chute" being used to control cattle for medical treatment at log cabin (F-14)



Squeeze Chute, Building F-14



Abandoned utility tractor

Hayden Homestead: Master Plan

3.3.3 Evidence of past buildings



E) Large cattle barn (left) no longer standing

An aerial photograph taken in 1939 (Appendix A), historical photographs, personal accounts, and public records indicate that during its period of historical significance, the Hayden Homestead included a log bunkhouse (A) and a blacksmith shop (B) that were consumed by fire, a fuel shed (C), and three large barns (D,E,F) that have since collapsed. Little remains of these structures other than a few photographs and a scattering of timbers and hardware, but they speak to the scope and significance of the Homestead as a part of the pattern of high country ranching history.



A – F, Air Photo, Hayden Homestead structures circa 1939



B) Blacksmith shop (left) and A) Bunkhouse (right),
lost to fire circa mid-1940's

A number of other barns and outbuildings were located on the Ranch, outside of the boundaries of the Hayden Homestead parcel.

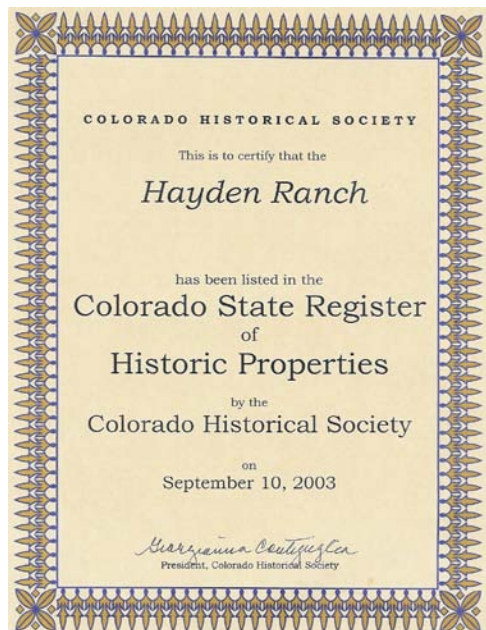
Hayden Homestead: Master Plan

3.3.4 Historic Register Designation

Collectively, the 16 contributing structures and ancillary support facilities of the Hayden Homestead complex represent an intact example of an early high country agricultural operation. The site was first noted for its hay production that fueled the mining boom in nearby Leadville, and later for the beef that fed the inhabitants of the region.

“The multiple agricultural buildings accurately reflect the specialized function of each building during its operation from 1872 through 1947, and demonstrate the historic types and methods of construction associated with high country farming and ranching.”⁵

The Hayden Homestead was listed on the Colorado State Register of Historic Properties on September 10, 2003 (delineated as Colorado Historical Site 5LK1340), and designated a National Historic District in the National Register of Historic Places on October 11, 2003.



⁵ Colorado Historical Fund: Description of the Hayden Homestead

Hayden Homestead: Master Plan

3.3.5 Non-Contributing Structures

Three modern buildings located on the property have been determined to be non-contributing structures, constructed after the period of significance of the Hayden Homestead. These structures include:

3.3.5.1 Building M – 1 Caretakers House



The caretaker's house was constructed in 1962 to house the ranch manager and his family,⁶ and was inhabited as recently as 2004.

It is a one story, wood frame, L-shaped building of approximately 1200 square feet gross. It has a front-gable roof that intersects with an end-gable ell and is clad in green asphalt shingles. Walls are clad with cream colored painted board and batten siding and horizontal siding near the base. There is a concrete foundation.

There is a shed roof sheltering the entrance on the east, or main elevation. The east elevation also includes four double hung windows, with screens and decorative shutters. The north elevation has a painted wood door with fixed glass panes, and a gable with vent. The west elevation has three double hung windows with screens and sliding patio doors, which has been modified. The south elevation has three double hung windows with screens, and a gable with vent.



⁶ Personal communication: Walt Clotworthy, Ranch Manager 1962 - 1998

Hayden Homestead: Master Plan

3.3.5.2 Building M – 2 Moosehaven Waste Treatment Plant



The Moosehaven wastewater treatment plant is a one-and-a-half story, rectangular, wood frame building clad in vertical steel siding and a steel roof. The building has a poured concrete foundation. The building has no windows.

The plant is permitted with a CPDES permit as an aerated lagoon system. Wastewater flows through an 8,000 gallon aeration basin, a 4,000 gallon settling basin, an 8,000 gallon polishing basin, and a 4,000 gallon chlorine detention basin. Two 20,000-gallon basins are available when needed. Design capacity is 10,350 gallons per day, based on 48 condominium units, 3 cabins, and 4 units allocated to CMC through an lot-line adjustment easement negotiated by the City of Aurora during their period of ownership. Current flow is approximately half of the design flow.⁷

The plant is owned by the Moosehaven Homeowner's Association, and operated by Southwest Water Company. The plant has not received any violations, and discharges to Box Creek.

3.3.5.2 Building M – 3 Mobile Home



The mobile home was moved onto the Homestead to house miners from the Glacier Placer Mine on the west end of the Hallenbeck Ranch. The unit currently belongs to Mr. Kay Blecca, owner of the Mount Elbert Mining Company, LLC. Mr. Blecca has indicated that CMC can move or demolish the unit to suit their needs.

The unit is a one-story, rectangular, manufactured mobile home. A wood frame gable roof clad with asphalt sheeting has been added, and it has no foundation, but rests on blocks. Access to the west elevation is by two wood steps with wood handrails. It has a red painted wood door. Other openings include four window openings on the west elevation, one of which was created by infilling a door opening, four window openings on the east elevation, and one window on the south elevation. There are no openings on the north elevation.

⁷ Correspondence: Jerry Knudsen, P.E., President, Knudsen Engineering

Hayden Homestead: Master Plan

3.3.5.4

Log Cabin



A fourth structure has been moved on-site since the Historic Ranches Study was completed. A one room log cabin, originally located on Derry Ranch Mining Camp was marked, deconstructed, and reconstructed on the Hayden Homestead as a teaching exercise during the International Trades Education Symposium held at the Hayden Ranch in August of 2009. The roof of the structure was deteriorated beyond salvaging, and only the log structure was reconstructed on site.

Although the structure itself is historic, its relocation away from its area of historic context makes it a non-contributing structure on the Hayden Homestead site.

3.4 Transportation

The transportation corridors that accessed the Leadville Mining Camp were in large part responsible for opening the Central Colorado Rockies to modern settlement. The Hayden Homestead shares the Arkansas Valley with several of Colorado's most important transportation corridors of the late 19th and early 20th centuries.

The Old Stage Road to Leadville was designated as a public highway by the Lake County Board of Commissioners in 1866, and parallels the Arkansas River just east of the Homestead. The Old Stage Road was a primary freight and passenger route from Denver to Leadville, traversing Trout Creek Pass east of Buena Vista to access the Upper Arkansas River Valley. By the mid-1870's the Denver and South Park Stage Line was running two stages a day, and early entrepreneurs such as Kit Carson hauled tons of freight over parts of its rutted track between the mining camps of Leadville and Aspen. The era of stage travel came to an abrupt end in 1880, with the arrival of the first steam locomotive to the bustling mining district. Today, the Old Stage Road is being studied as a possible bike trail route linking Salida to Leadville.



Steam locomotive passing through Hayden Ranch

The first rail line to reach the vast riches of the Leadville mining camp was the Denver and Rio Grande narrow gage, which rolled into Leadville on July 22, 1880. The celebration was attended by President Ulysses S. Grant.

A spur off of the main D&RG line at the Hayden Ranch, referred to as the Weir Siding, allowed the early inhabitants of the ranch to ship their agricultural and forest products outside of the local market, helping the ranch to survive while many others perished. The rail line, now owned by the Union Pacific Railroad, is currently deactivated, but the tracks are readily visible from the Homestead.

Running parallel to, and immediately west of the Denver and Rio Grande line, adjacent to the current eastern boundary of the Homestead, was the track of the Colorado Midland Railroad. Construction of the standard gage line from Colorado Springs to Leadville began in 1866, and reached the mining camp on August 30,

Hayden Homestead: Master Plan

1887. The arrival of the Colorado Midland signaled the switch from narrow to standard gage track, and ushered in the era of sleeping and dining cars and faster, more dependable schedules, making Leadville more accessible from the outside world. The Midland line was forced into abandonment in 1923.



Ocean to Ocean Pikes Peak Highway, Hayden Ranch in background

The Ocean to Ocean Pikes Peak Highway ran through Hayden Ranch, and was the nation's first trans-continental highway, traversing the country from Atlantic City, Maryland to San Francisco, California.

Completed in Lake County in 1913, the Ocean to Ocean Pikes Peak Highway alignment crossed the Arkansas River on the concrete bridge at what today is the Hayden Meadows Recreation Area, and ran along the approximate alignment of County Road 10 as it traveled through the Hayden Ranch.

The rail bed of the Colorado Midland grade through the Hayden Ranch was widened to accommodate automobile traffic in 1939, making room for the realignment of the Ocean to Ocean Pike's Peak Highway through the narrow river canyon south of the ranch. Today the abandoned Midland Line underlies the alignment of U.S. Highway 24, an all season, two lane minor arterial road that accommodates automobile, heavy truck and bus traffic, and is classified as a Critical Travel Corridor in the Inter-Mountain Transportation Planning Region.

Highway 24 in Lake County is part of the Top of the Rockies National Scenic and Historic Byway. The Top of the Rockies was designated as Colorado's 21st State Scenic and Historic Byway in September of 1993, and received the designation as a National Scenic and Historic Byway in 1999. At that time, the Top of the Rockies was one of only 53 Byways in the Country to achieve the National Scenic and Historic designation. The Hayden Homestead is designated as a critical cultural and historic resource, and a significant scenic viewshed in the Top of the Rockies Corridor Management Plan.

3.5 Infrastructure

The Hayden was still a working ranch through the beginning of the 21st century, and housed ranch hands and caretakers through 2004. Map _ illustrates the location of the on-site infrastructure that supports the current and potential residential and commercial needs of the Ranch, which include:

3.5.1 Electrical Service

Electrical service is provided by the Sangre de Christo Electric Association (SDCEA), and was historically connected to the caretaker's residence, the ranch owner's house, cookhouse, maintenance garage, and bunk house.

SDCEA currently provides 3-phase, 120 / 240 volt power to two transformers located on the Homestead, one at the northwest corner of the main barn, that is currently rated at 100 amps, and a second located at the Moosehaven Sanitation Plant that is rated at 200 amps. Three phase power is located within the easement of U.S. Highway 24, which forms the eastern boundary of the Homestead. Sangre de Christo engineers indicate that capacity in excess of current and anticipated demand exists, and that upgrades to the service at the Homestead, up to a maximum of 1200 amps, can be facilitated without impacting their system⁸.

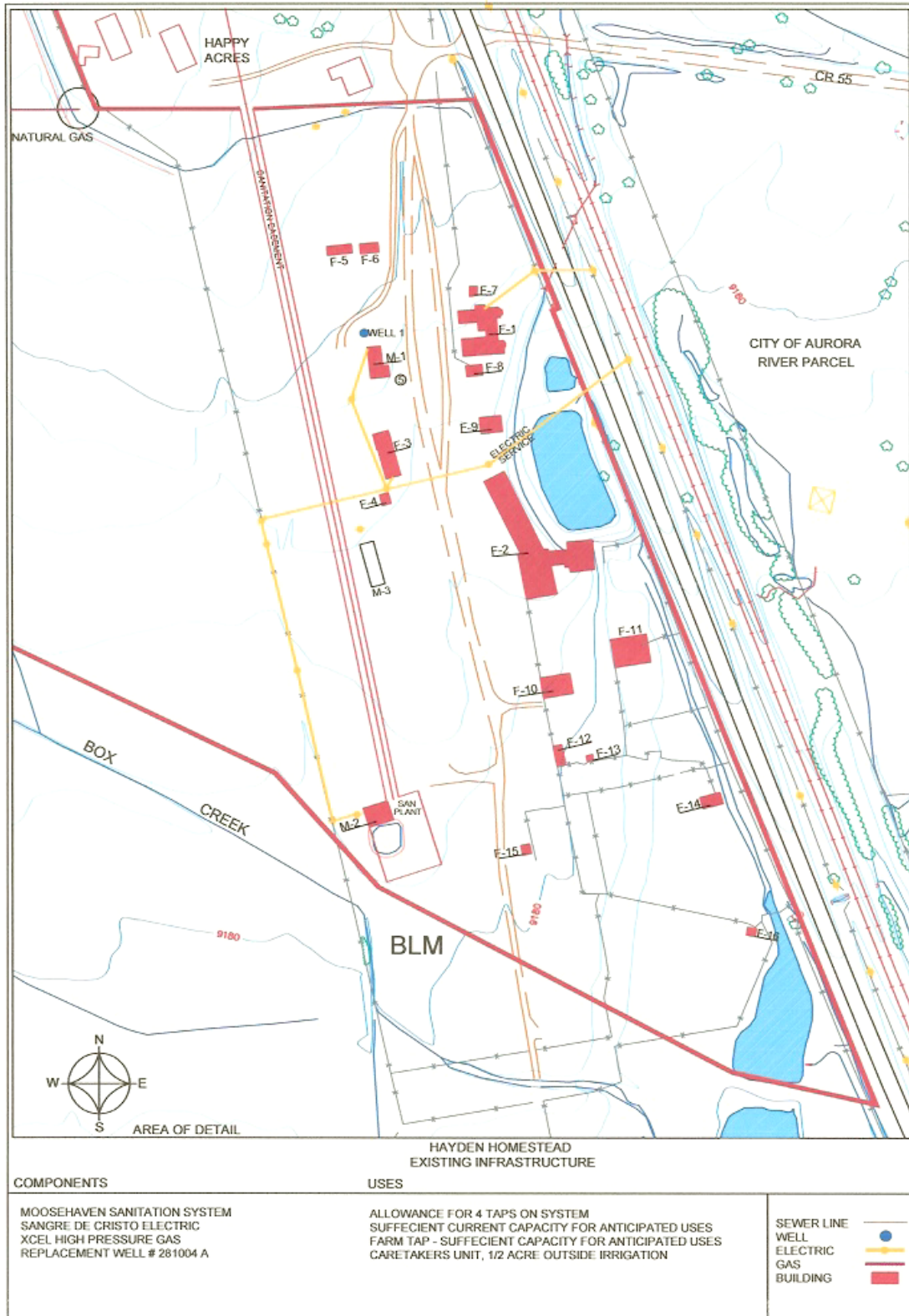
SDCEA provides a Net Metering program that can accept, and grant credit for surplus power generated on site through renewable energy technologies such as wind power and photovoltaic solar cells, or feed power back into to the site when renewable sources cannot keep up with the demand.

SDCEA also promotes the use of Electric Thermal Storage (ETS) for space heating. ETS technology consists of electric elements surrounded by ceramic bricks inside a super insulated cabinet. The elements are energized and store heat in the bricks only during off-peak periods, when power is more economical. During peak periods the elements are disconnected. An on-board, thermostatically controlled fan allows for room air to be circulated over the hot bricks and blown out into the room whenever there is a call for heat. The ETS units can hold their charge for long periods of time allowing for 24 hour heating using only use off-peak power.

⁸ Communication: Sangre de Christo Electric, Engineering Department, 8/19/10

Hayden Homestead: Master Plan

Map 3-2 Existing Infrastructure



Hayden Homestead: Master Plan

3.5.2 Natural Gas

Natural Gas in southern Lake County is provided by the High Pressure Gas Division of Xcel Energy. A high pressure natural gas “farm tap” crosses the Hayden Ranch from the main distribution line running parallel to County Road 10, to a fire valve located on the Hayden Homestead (see Map 3-2). From the fire valve, natural gas is routed to the Moosehaven Condominiums and the three cabins constructed on the Happy Acres subdivision, through a distribution center located just off College property on the western most lot of the subdivision.

Discussions and a field inspection with personnel from Xcel Energy’s Engineering Department⁹ indicate that the farm tap has excess capacity sufficient to meet the anticipated needs of existing and future development on the Hayden Homestead. It was further indicated that Xcel Energy would like to replace the existing fire tap with newer technology, and move the point of distribution from its current location on Happy Acres onto the Homestead. The existing farm tap could then be extended to provide service to the structures located anywhere on the Homestead without incurring a new tap fee on the main line, or the cost of running approximately one mile of distribution line from the main line to the Homestead. Changing the rate of delivery to the property could be easily facilitated through a change in the orifice at the fire valve as demand increases over time.

A conservative estimate of \$10 per linear foot to install distribution lines from the fire valve to points of consumption on the Homestead was provided, and a consumption rate of 50 BTU per square foot was suggested for calculating the delivery rate in cubic feet per hour (cfh).

3.5.3 Sanitation

Disposal of sanitary waste was historically accommodated through the use of outhouses, which were eventually replaced by crude septic systems. These septic systems failed to meet State codes, in large part due to their proximity to the high ground water table underlying the Ranch.

Four sewer taps onto the Moosehaven Sanitation Plant, granted as a condition of the lot line adjustment to accommodate the easement for the delivery line and sanitation plant located on the Homestead, run with the land and will provide CMC with a combined capacity of 1200 gallons per day of treatment for domestic and light commercial use

⁹ Personal discussion, Jake Farber, Xcel Energy Engineering Department 8/24/10

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(Appendix B Easement Agreement & Conveyance, Moose Haven Sanitation Easement).

The Moosehaven Sanitation Plant was originally designed and constructed to service two 48 unit condominium complexes, only one of which was ever built. As a result, only about one half of the plant's design capacity to treat 10,350 gallons per day is currently being utilized. The design capacity is based on effluent discharge from 48 condominium units, 3 cabins, and the four taps allocated for CMC use.

The Plant operates under a Colorado Pollutant Discharge Elimination System (CPDES) permit as an aerated lagoon system. Effluent flows through an 8,000 gallon aeration basin, a 4,000 gallon settling basin, an 8,000 gallon polishing basin and a 4,000 gallon chlorine detention basin before being discharged to Box Creek. Sampling and analysis of the discharge to Box Creek is done monthly by Southwest Water, and reported to the CDPHE. The plant has not received any violations.

In total, 24,000 gallons of capacity is currently being used, and another 40,000 gallons of capacity is available to accommodate additional uses¹⁰.

3.5.4 Water

Water is an essential element of life, from the cellular level to the production of food and the habitability of the land. The physical water resources of the ranch and the ability to develop the legal right to utilize that water are critical to any adaptive use of the property.

3.5.4.1 Potable Water: Domestic Use

Potable water for domestic use was initially supplied by four hand-dug wells. Of these existing wells, two were determined to be eligible for permitting as replacement wells with the State Water Engineer. The well located northwest of the Caretakers residence (13S0386286, UTM 4331750) was permitted (Permit # 281004 A)¹¹ and drilled in the summer of 2009, and allows pumping up to 15 gallons per minute (gpm) to support one residence, outside irrigation of up to one half acre of land, fire suppression, and livestock watering

¹⁰ Gerald Knudsen, Knudsen Engineering, correspondence dated 8/19/10

¹¹ Office of the State Engineer, Colorado Division of Water Resources, dated 6/24/09

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The second domestic well, replacing the hand dug well at the Bunk House (13S0386303, UTM 4331700), has been permitted (Permit # 281005 A)¹², but not drilled. It allows for a pumping rate of 15 gpm to support up to 3 residential units, one half acre of outside irrigation, fire suppression, and livestock watering. It must be drilled by 6/24/11, within 200 feet of the well it is replacing, in order to be in compliance with the terms of the permit.

3.5.4.2 Potable Water: Commercial Use

Discussions with the Office of the State Water Engineer have indicated that the Hayden Homestead is eligible for one Commercial Exempt Well permit under Colorado Revised Statute 37-92-602, as long as, after exempting a 20 foot perimeter around the two permitted domestic wells (Permit #s 281004A and 281005A); the remaining parcel is in excess of 35 acres. Correspondence also verified that the Commercial Exempt Well can be closer to the existing wells than the 600 feet delineated in the permit instructions¹³.

A Commercial Exempt Well is limited to use within a commercial business, and is limited to 1/3 of an acre foot of water (108,600 gallons) per year. Since students pay for classes, classrooms and labs are considered to be a commercial use. The uses of the water from a Commercial Exempt well are restricted to drinking and sanitation facilities inside a single business. Outside watering uses of commercial water are not allowed.

3.5.4.3 Irrigation Water

Historic irrigation water rights were purchased by the City of Aurora as part of the bundle of rights of the Hayden Ranch purchase in 1998. Water rights were removed from the estate and adjudicated through the water courts (98CW137[A]) to meet current and future municipal water needs of the City. No irrigation water rights were conferred to Colorado Mountain College in the subsequent land transfers.

Box Creek flows within 50 feet of the Hayden Homestead boundary, on lands owned by the Bureau of Land Management. The perennial Creek provides a physical source of water

¹² Office of the State Engineer, Colorado Division of Water Resources, dated 6/24/09

¹³ Janet Garoutte, State Water Engineer's Office, correspondence dated 5/24/10

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proximal to the Homestead that was historically used for crop irrigation. Water rights owners, including the Pueblo Board of Water Works, Aurora Water, and Lake County, have indicated a willingness to work with CMC to exchange agricultural water rights to an alternate point of diversion on Box Creek to support limited irrigation on the Homestead (Appendix D, *Colorado Mountain College Center for Sustainable Agronomy: Preliminary Feasibility Analysis*, Conlin Associates, 2009).

Additionally, BLM has indicated a willingness to exercise a reciprocal easement agreement with the College to allow transfer of Box Creek water across their land in return for an easement to pass through the Homestead to access their grazing leases on surrounding BLM lands.

3.5.4.4 Geothermal Exchange

The Hayden Homestead is located over a vast alluvial aquifer, with a ground water table typically located within 10 feet or less of the surface. The latent heat contained within the water in the sub-surface reservoir provides the potential for geothermal exchange to extract BTU's from the water to heat structures on the site. A well permit to tap the resource will be required if geothermal exchange for heating is implemented.

A Geoexchange system is defined as a heat pump or heat exchange system having a horizontal or vertical closed loop buried in the ground or submerged in a body of water, in which a heat exchange medium is circulated and fully contained within the pipe or tubing, allowing for the transfer of heat between the circulating fluid and the groundwater. Although these systems do not appropriate or consume ground water, they do utilize the earth's geothermal properties, therefore, requiring a permit.

3.5.4.5 Gravel Pit Wells

The Homestead property includes three shallow spring fed ponds, and a perennial stream that is tributary to Box Creek. The ponds were excavated in the late 1930's to provide fill material to widen the abandoned Colorado Midland Railroad grade for automobile traffic on what is now U.S. Highway 24, the Top of the Rockies National Scenic and Historic Byway.

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Since the ponds were excavated for their gravel content prior to 1980, they are classified by the State of Colorado as gravel pit wells. Under Senate Bill 89-120, any gravel pit in operation after December 31, 1980, that exposed groundwater to the atmosphere, must apply for a well permit, prepare a water augmentation plan, and replace all out-of-priority depletions of groundwater. Existing gravel pits that exposed groundwater to the atmosphere, but ceased operations prior to January 1, 1981, such as the Hayden Homestead ponds, are not required to be permitted or replace depletions from evaporation.

Permits for the consumptive use of the water from the ponds are still required, but non-consumptive uses, such as recreation, aesthetics, water sports, fishing etc. do not require an augmentation plan or replacement of evaporation or evapotranspiration losses.

3.5.5 Communications

The caretaker's house was historically served by Mountain Bell land-line telephone service, but the lines are currently disconnected. Phone lines and a fiber-optic cable run within the roadway easement of U.S. Highway 24 along the eastern boundary of the Homestead property. Cellular service is available at the site. Satellite dishes have traditionally been used locally for television reception.



Section 4 Land Use Constraints

4.1 Introduction

The development of adaptive uses of the Hayden Homestead is constrained by environmental, physical, and regulatory land use limitations that combine to define the level of development or activity that can occur on the site without resulting in significant adverse affects on or degradation of its natural or built environment. These limitations collectively determine and define the “carrying capacity” of the site.

Within the context of this Plan, the environmental carrying capacity of the Homestead refers to constraints or limitations imposed by environmental factors such as habitat, water, soils, wetlands, and other natural resources present on the site.

An example of determining the environmental carrying capacity of the Homestead would be the evaluation of the suggested adaptive use of the site for raising cattle, bison, or other large animals. Given the environmental conditions of elevation, limited growing season, and vegetative cover of the ranch, approximately 30 acres of grazing land would be required to support a single cow. With only 16 acres of available pasture, the physical environment of the Homestead could not sustain the habitat or food requirements of raising cattle or other large animals without supplemental feeding or additional grazing allotments. Sans mitigation, the suggested use would, therefore, exceed the environmental carrying capacity of the land.

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For sustaining human population needs, more complex physical variables such as disposal of sanitary waste, development of a potable water supply, provisions for light and heat, transportation, and communications enter the equation. Simple examples of exceeding the site's physical carrying capacity would be creating more demand for potable water than the site is capable of providing, or promoting activities that exceed the space available to accommodate the vehicle circulation and parking requirements generated by the event.

Regulatory constraints refer to the limitations or conditions placed on adaptive uses of the ranch imposed by laws, covenants, or agreements that govern or regulate the use of the land and the built environment. Examples would include the terms and conditions dictated by the Deed of Conservation Easement, that limit how and where structural stabilization, rehabilitation and new construction can occur.

The carrying capacity of the Homestead will, therefore, influence how, where, and how much development can occur to fulfill the vision and mission of this Plan. Adaptive uses that exceed the carrying capacity of the site, or do not comply with laws, covenants or agreements entered into by the College, will not be considered for implementation.

4.2 Environmental Constraints

Environmental constraints to the suggested adaptive uses of the Homestead include, but are not limited to its soil chemistry and wetlands.

4.2.1 Soils

During the period of active mineral extraction in the historic Leadville Mining District, it was common practice to dump mine waste directly into the gullies and tributaries that fed the Arkansas River. When exposed to oxygen, the high concentrations of iron pyrite (FeSO_2) found in the Leadville ore bodies generated sulfuric acid that lowered the pH of the streams, and allowed heavy metals, such as lead, zinc and cadmium to go into solution. Carried downstream with the flow, these acidic, metal laden waters were diverted from the Arkansas River to irrigate the hay fields of the Upper Arkansas Valley, depositing concentrations of toxic metals on areas where irrigation historically took place.

The Hayden Ranch originally had 5 water rights that were capable of diverting up to 50 cubic feet (approximately 375 gallons) of water per second from the main stem of the Arkansas River to irrigate its hay meadows. In some locations, the deposition of heavy metals was sufficient to retard or eliminate vegetative growth, and metals uptake in the plants was capable of being ingested by herbivores feeding on the biomass.

The site characterization of the 11-mile reach of the Arkansas River performed by the U.S. EPA identified areas of high metals concentrations on the northern and western irrigated meadows of the Hayden Ranch above Box Creek. None of the areas of heavy metals contamination identified in the characterization were located on the Hayden Homestead parcel.

In the summer of 2009, EPA amended the contaminated Hayden Ranch soils with limestone, beet pulp, and compost to raise their pH and replace some of the organic nutrient leached from the soil by the contaminated irrigation water. Raising the pH allows the metals to come back out of solution, reducing their bioavailability and subsequent uptake into the vegetation. Areas previously devoid of vegetation were seeded in the fall of 2009, and produced a healthy crop of native grasses in the summer of 2010.

Evidence of irrigation ditches on the Hayden Homestead would suggest that water from the Arkansas River was historically used on the site to water livestock and irrigate the ranch gardens. Soil samples

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collected and analyzed by CMC indicate the presence of elevated levels of heavy metals in the upper soil horizon (Appendix D), but the neutral to slightly basic pH of the soils of the Homestead would suggest that the metals are not in solution and would exhibit limited bioavailability.

Elevated background levels of heavy metals are not unusual in the soils of Lake County, due to the rich ore bodies that underlie the valley. The question is whether the metals are bio-available, and can be sequestered in plant material at levels that pose a human health risk through their consumption.

Agronomists from the U.S. EPA have suggested that plants intended for human consumption be propagated in the native soil and harvested to determine whether metals uptake into the edible roots, leaves, legumes, or flowers of the vegetables is occurring at levels that pose a health risk. That study is currently underway through the Natural Resource Management Program at CMC.

In the event that metals uptake into the vegetation exceeds EPA standards for human consumption, the soils of the Homestead would pose an environmental constraint to the land's adaptive re-use for organic food production, and the soils would either have to be amended or replaced to attain the desired end use.

4.2.2 Wetlands

Under the Clean Water Act of 1985 (CWA), the term wetlands means "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

Jurisdictional wetlands are regulated by the U.S. Army Corps of Engineers (Corps) under 33 USC 401, Section 10: 1413, Section 404 of the CWA. The principal purpose of Section 404 of the CWA was the promulgation of laws regulating activities in, or affecting navigable waters of the United States, and the discharge of dredged or fill material into waters of the United States.

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Under CWA Section 404, jurisdictional wetlands must exhibit all three wetland characteristics²⁶

- 1) Wetland Vegetation
At least periodically, the land supports predominately hydrophytes;
- 2) Wetland Soils
The substrate is predominately un-drained hydric soil; and,
- 3) Wetland Hydrology
The substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

Jurisdictional wetlands exist on the Hayden Homestead, and are primarily concentrated within the ancestral floodplain of the Arkansas River proximal to the spring creek and ponds located along its eastern boundary. Any activity in, or affecting these wetlands, is subject to the laws and regulations of Section 404 of the CWA.



Dr. Brad Johnson performing Wetland Delineation

Phase II of the Stabilization Plan for the Hayden Homestead required that work be performed in and adjacent to the Homestead's jurisdictional wetlands. Dr. Brad Johnson, Professional Wetland Scientist, was contracted to perform a wetland delineation of the site in the fall of 2008 to establish the boundary of the jurisdictional wetland east of the Hayden Homestead structures, extending from the northeast corner of the east wing of the Main Barn (F-2) downstream to the Slaughterhouse (F-16)²⁷, in the area that would be disturbed during Phase II stabilization. (See Map 4-1)

Conlin Associates, Resource Planners prepared a Hydrologic Investigation²⁸ of the site in December of 2008, which also incorporated the wetland delineation and the work plan for Phase II Stabilization provided by AE Design, as part of the required documentation for submittal of an application to the Army Corps of Engineers to allow work in the wetlands.

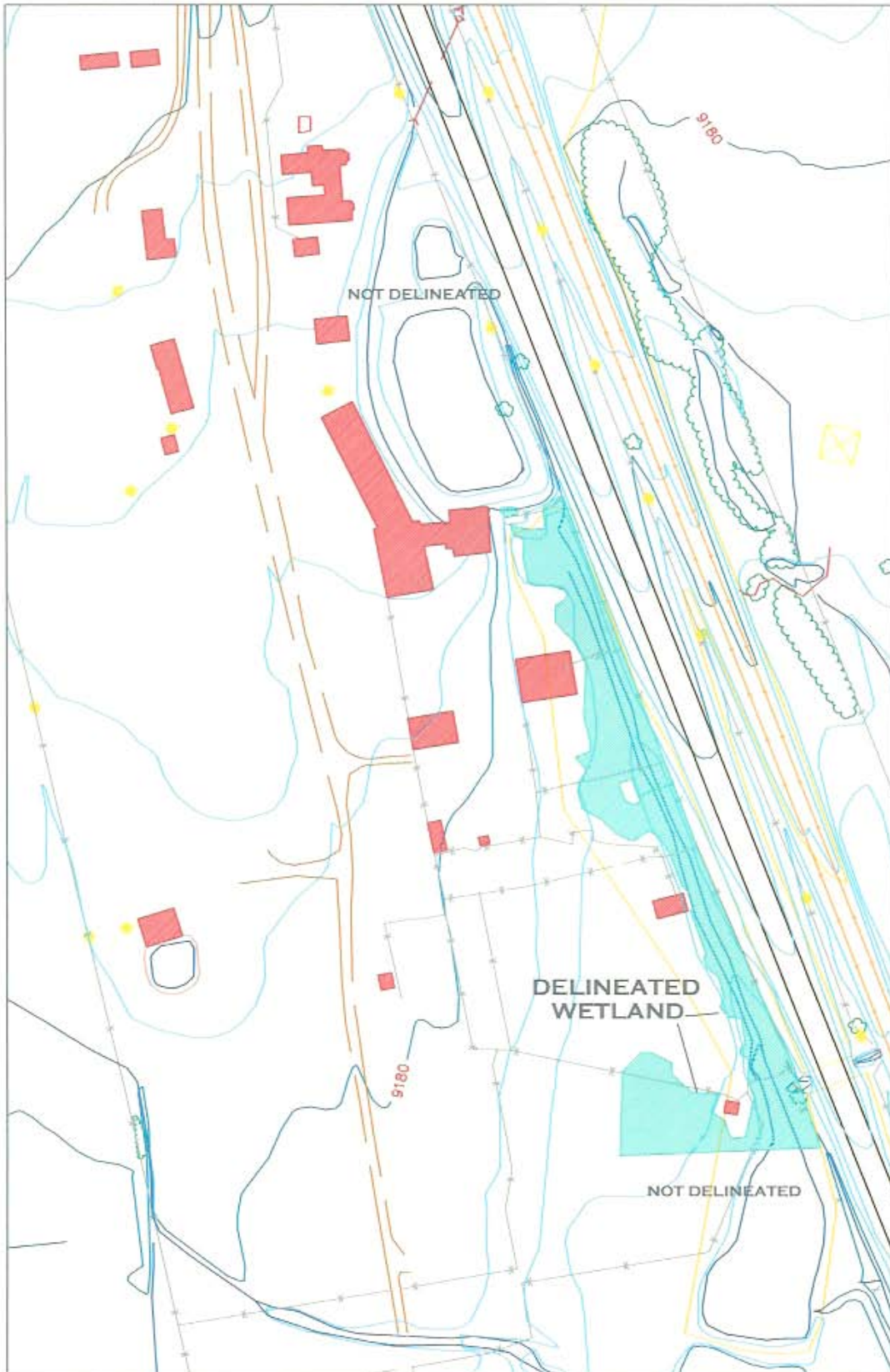
²⁶ Cowardin et. Al., 1979

²⁷ Hayden Ranch Wetland Delineation, Johnson Environmental Consulting, November 19, 2008

²⁸ Hayden Homestead, Hydrologic Investigation, Conlin Associates, December, 2008

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Map 4-1 Dr. Brad Johnson: 2008 Wetland Delineation



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The permit application requesting authorization to perform the Phase II plan of work was submitted to the Army Corps of Engineers, Southern Colorado Regulatory Office, in compliance with the requirements of Section 404 of the Clean Water Act, on June 9, 2009. Based on the information contained in the application, the Corps determined that the project would include activities subject to CWA Section 404, and that a Department of the Army Permit would be required.

Authorization from the Corps (Action Number SPA-2009-00368-SCO) was received on October 9, 2009. In that permit, the Corps authorized CMC to conduct *only* the work described in the submittal, under a Nationwide Permit 3. The permit is valid for a period of 2 years from the date of issuance.

Any work in, or affecting the wetlands on the Homestead that is: outside of the current wetland delineation boundary; not specifically identified in the June 9, 2009 permit application; or does not occur within the 2 year period for which the permit is valid, will be subject to a new permit application.

Adaptive uses of the Homestead may therefore be environmentally constrained by the presence of wetlands on the site, and the laws and regulations governing their disturbance.



Wetland / riparian habitats, Hayden Ranch

4.3 Physical Constraints

Physical constraints to the development of adaptive uses include, but are not limited to the proximity of the groundwater table to the ground surface, desiccating winds, loss of food crops to herbivores, loss of poultry or livestock to predation, fire protection, limited space for parking, and security from trespass and vandalism.

4.3.1 Groundwater Table



Hand dug well, 5' to water surface, Building F-1

The Hayden Homestead sits atop a large alluvial aquifer that is typically within 5 to 7 feet of the ground surface. In some locations, such as the penstock for the turbine in the Main Barn (F-2) or the ponds and stream along the eastern boundary of the property, the surface elevation of the ground intercepts the water table and exposes the water to the surface. Hand dug wells that historically provided a potable water supply for the ranch were typically less than 10 feet deep, with standing water to within 5 feet of the surface.

The proximity of the ground water table to the surface poses physical constraints to the structural stability of building foundations, makes the burial of underground utilities problematic, and leads to the failure of conventional septic systems. Given the proximity to groundwater, permitting, design, engineering and construction of new sanitation facilities and distribution lines will be at significant expense

The Hayden Homestead currently has the right to four sewer taps on the Moosehaven Sanitation Plant as a condition of the 2004 Easement Agreement and Conveyance with the Moosehaven Homeowners Association (Appendix B), for residential and light commercial use. The plant is currently operating at about 50% of its rated capacity. Any adaptive use that exceeds the cumulative 1200 gallon per day maximum input of the four stipulated sewer taps will require an amendment to the agreement with the Homeowners Association to activate the excess capacity. Any adaptive use that exceeds the current capacity of the Moosehaven Sanitation Plant would require either expansion of the existing plant, or construction of a new sanitation system.

The ability to dispose of sanitary waste is therefore limited by physical conditions inherent to the site.

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4.3.2 Desiccating winds

Strong diurnal winds common to the Homestead dry out irrigated ground rapidly and re-direct aerial spray applications from established patterns, making consistent application of air borne irrigation water highly problematic. Drip or soaker hose water applications are recommended for irrigation of outdoor garden plots to conserve water.

4.3.3 Flood-plain

Map 4-2 depicts the extents of the 500 year floodplain of the Arkansas River in the vicinity of the Hayden Homestead. As indicated on the mapping, it has been calculated²⁹ that a 500 year event would force water through the culverts that pass under U.S. Highway 24, reversing the flow current direction and pushing water into the borrow ditch west of the elevated grade of the highway. At its highest anticipated elevation, flood stage waters from a 500 year event would flood the eastern half of the Cow Barn (Building F-11), the log cabin (Building F-14), and the Slaughterhouse (Building F-15.)

The chances of a 500 year flood have a 0.2% annual probability of occurring. A 100 year flood, which has a 1% annual probability, should not adversely affect the historic structures of the Hayden Homestead.

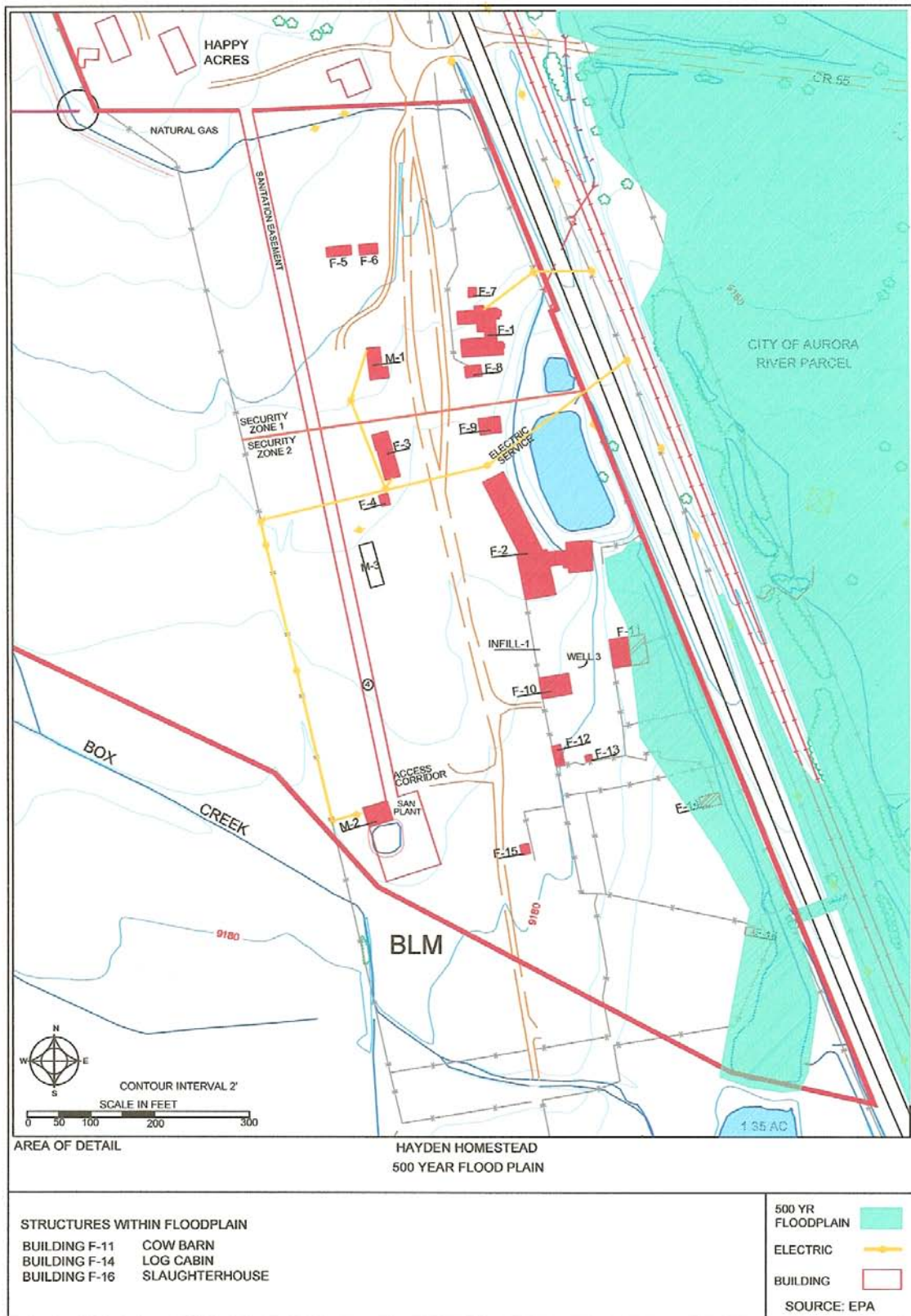
The Colorado Water Conservation Board (CWCB) is updating rules adopted in 2005 to try to reduce flood losses. CWCB has been looking at keeping critical facilities (e.g. hospitals, police stations etc.) out of the 500-year flood plain, or the area that would be damaged by a flood likely to occur once every 500 years. Under the proposed rules, the lowest floor of any new buildings would have to be at least one foot above the 100-year flood elevation, or two feet for critical facilities. A nonresidential building also could meet the requirement by being flood-proofed to that level.

Any proposed new development should avoid construction within the 500 year flood plain.

²⁹ Source: U.S. EPA Characterization of the 11-Mile Reach of the Arkansas River
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Map 4-2 500 year Flood Plain



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4.3.4 Predation and Herbivore loss



Red fox, Hayden Ranch

The Hayden Valley is home to over 250 species of wildlife during all, or a part of their life cycle. Predators include owls, eagles, and hawks, coyote and fox, bobcat and mountain lion, badgers and weasels, and the occasional black bear.

During the early days of the ranch, the solution to predators was to poison, trap, or shoot anything with teeth. That option is not available, nor is it socially acceptable today. Protection of small livestock and poultry will require exclusion fencing and enclosures of

sufficient construction to ward off the incursion of predators. Modern fencing solutions may pose a conflict within the historic context of the ranch if they significantly alter the appearance of the landscape.



Great Horned Owl, Hayden Barn

Adaptive uses of the Homestead that involve the raising of poultry or small animals such as goats and sheep will have to take predatory control measures into account. The physical presence of human caretakers or students can also act as a deterrent, as can a livestock dog such as a Newfoundland whose instincts are to protect the herd or flock.

Similarly, production of food crops will have to be protected from destruction by herbivores ranging in size from ground squirrels to elk. The Hayden Valley is home to large ungulates including deer, elk, and the occasional moose, as well as other smaller herbivores such as pronghorn, rabbits, and ground squirrels.

Exclusion fencing will have to take into account the ability of elk to jump a 6' fence, a Richardson ground squirrel's ability to burrow two feet under an enclosure, or a deer mouse's ability to squeeze through an opening the size of a dime.

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4.3.5 Fire Protection

Fire has been a fact of life for inhabitants of the Hayden Homestead for as long as it has been occupied. At least two structures were lost to fire, and it has been reported that it was the fear of fire that caused the ranch owner to place exterior doors to allow emergency egress from virtually every room in the Ranch Owner's House (Building F-1)³⁰.

The age and moisture content of the lumber and timbers that comprise the structural elements of the historic buildings would be highly susceptible to fire. The closest fire station to the ranch is located almost 10 miles to the north in Leadville, and in the case of a fire, the response time would be at least 15 minutes, which could turn a minor burn into a catastrophic blaze.

Measures to prevent ignition of a grass or structural fires is of critical importance to preserving the historical integrity and investment in preserving the structures of the Homestead.

Primary ignition sources, such as smoking and open flames should be prohibited, except in designated areas, and activities such as parking vehicles with hot catalytic converters over dry grass should be avoided. In the absence of pressurized water sources in most of the buildings, fire extinguishers and evacuation routes should be prominently placed within public view.



Forest fire, PanArk Ridge, 1 mi south of Homestead.
Response time 20 minutes

Given the distance from the nearest fire station, on site fire fighting equipment should be considered, along with training in its use for the caretaker and key personnel. A fire plan should be prepared to establish protocols for dispatching personnel and fighting a fire.

Clear access to the ponds and Box Creek, where water tankers can replenish their water supply, should be maintained at all times. Keys or

³⁰ Personal Communication, Betty Farrington, former resident
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access codes should be supplied to the Fire Department for any locked gates or buildings, and locations of water spigots or surface water sources should be mapped out and posted. Annual visits by the fire department to familiarize them with the site and its assets should be encouraged.

The distance from fire fighting services can adversely affect the cost and availability of insurance policies, which may further serve to limit the implementation of suggested adaptive uses.

4.3.6 Vehicle Circulation and Parking

Space for vehicle circulation and parking could become a limiting factor in the event that proposed adaptive uses convert a portion of the open surface area, currently used to accommodate overflow parking, to agricultural production in the form of community and experimental gardens, or forest and wetland nurseries.

If non-surfaced ground is to be used to accommodate temporary parking in excess of that identified in the Deed of Conservation Easement, care must be taken to ensure public safety, mowing of flammable vegetation, and adequate drainage, as well as clearance to use the area without damage to surficial artifacts and archaeological evidence.

Seasonal conditions, including mud and snow could serve to further limit space for parking.

4.4 Regulatory Compliance

The development of adaptive uses of the Hayden Homestead is regulated by various jurisdictional agencies and deed restrictions that run with the land. Compliance with the terms and conditions of these regulations and agreements is mandatory. No action or activity that is out of compliance with local, state, or federal regulations, the Secretary of the Interior's Standards for the Treatment of Historic Properties, or restrictions contained within the Deed of Conservation Easement, will be considered for implementation.

Areas of compliance include, but are not limited to:

4.4.1 Deed of Conservation Easement

The transfer of the Hayden Homestead property from Colorado Preservation Inc. (CPI) to Colorado Mountain College on April 2, 2008 was subject to a binding Deed of Conservation Easement³¹ (Easement) entered into by CPI and the Colorado Historical Foundation (CHF) on December 14, 2007, when CPI was the owner of record of the property.

The recitals of the document establish the over-arching premise that:

E. The Grantor and Grantee recognize the historical, architectural, cultural and aesthetic value and significance of the Property, and have a common purpose of conserving and preserving the value and significance of the Property.

As a condition of the Easement that was conveyed with the transfer of the land, CMC irrevocably grants and conveys to the Colorado Historical Foundation "a conservation easement in gross, to have and hold in perpetuity to constitute a binding servitude upon the property and the exterior surfaces of the buildings located thereon,"³² as more specifically described in Exhibit A of the document. (See Appendix C Deed of Conservation Easement)

Article 3 of the Easement, entitled Negative Covenants, includes the statement that:

3.2. No Construction. *Without the express written permission of the Grantee, signed by a duly authorized representative thereof, no construction, alteration, or remodeling or any other thing shall*

³¹ Colorado Historical Foundation: Deed of Conservation Easement, December 14, 2007

³² Ibid Article 1. Grant of Easement

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be undertaken or permitted on the Property which would affect either the Present Facades or increase or decrease the height of the buildings, including without limitation anything which would alter the external appearance of the Buildings as depicted in Exhibit B or which would adversely affect the structural soundness of the Buildings or anything that would encroach upon the open land area on the property adjacent to and surrounding the Buildings.”

Exceptions to Section 3.2 include reconstruction, repair or refinishing of damaged Present Facades from casualty loss, deterioration, or wear and tear, when done in compliance with the Secretary of Interiors Standards (Standards) for Treatment of Historic Properties (36CFR Part 68)³³, and Permitted Alterations³⁴ and New Construction expressly authorized in Exhibit F of the Easement.

Exhibit F outlines the Permitted Alterations for each building, organized into five zones. The numbering system for each building referenced in Exhibit F matches the numbering protocol established in the Lake County Open Space Initiative Historic Ranches Survey dated August 2000.

All alterations shall be performed in accordance with the Secretary's Standards, and are subject to the Grantee's right to review and approve detailed plans and specifications.

This Master Plan relies on the outline provided in Exhibit F of the Deed of Conservation Easement for making the threshold determination of whether alterations or new construction are allowable within the 5 zones. All alterations are subject to CHF review and authorization.

³³ Colorado Historical Foundation: Deed of Conservation Easement, Section 3.2 a.

³⁴ Ibid, Section 3.2 b.

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4.4.2 Lake County Land Development Code

The Lake County Land Development Code³⁵ (Code) was adopted in December of 2002 pursuant to the powers and authority conferred by the laws of the State of Colorado. The provisions of the Code apply to all development of buildings, structures and uses of land throughout unincorporated Lake County, whether such development is done by a public, quasi-public or private entity, to the extent allowed by law. The Code is incorporated herein by reference.

The Code was adopted for the purpose of preserving and improving public health, safety, and general welfare of the citizens and businesses of Lake County.

The 35.38 acre Hayden Homestead was divided from the Hayden Ranch by the City of Aurora prior to the transfer of the land to Colorado Preservation Inc. in 2005. Under the Code, "Divisions of land creating parcels of land of 35 acres or more are exempt from the subdivision regulations of this Code."³⁶ The parcel was transferred by Special Warranty Deed from CPI to Colorado Mountain College on April 2, 2008.

The 1999 Edition of the Lake County Land Development Code had designated the lands of the Hayden Ranch as an Agricultural/ Forestry (AF) zoning district. The Ranch was rezoned from an Agricultural Forestry to a Rural (RUR) zoning district by resolution of the Board of County Commissioners on May 21, 2001.

The RUR zoning District is:

*"Intended to allow for the preservation of large tracts of land that were acquired primarily for water rights and open space, and were not acquired for the primary purposes of residential, commercial or industrial development."*³⁷

The Hayden Homestead also lies within a designated Scenic Conservation Overlay District (SCO). The SCO was established to supplement part or all of an underlying zone district and imposes additional requirements and regulations intended to protect major scenic vistas from visual obstruction and aesthetic intrusion.³⁸ The SCO through the Hayden Ranch is 1000' on either side of the U.S.

³⁵ Lake County Development Code, as amended, December 2002 Edition, Resolution #02-24

³⁶ Ibid – Section 3.18.2

³⁷ Ibid – Section 4.2.1

³⁸ Lake County Land Development Code: Section 4.3.3

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Highway 24, as measured from the centerline³⁹, and encompasses the entire Homestead parcel.

Any use by right or conditional use permitted in the underlying district is also permitted in a SCO district so long as it meets the special conditions described in Section 4.3.3. of the Code. These conditions include:

- 1) *All buildings and other structures including towers, poles, silos and other structural features located in an SCO district shall be sited, constructed and finished in a manner that will cause the minimum possible intrusion on and disruption of established scenic views. Buildings and other structures that fail to meet these conditions shall be prohibited in the district*
- 2) *All structures in the zoning district, including roofs and roof appurtenances, manufactured homes, and metal structures, shall be constructed of materials, textures, colors and tones that blend harmoniously and inconspicuously with the indigenous landscape and shall, to the greatest possible extent, be screened by natural slopes from highway view. Towers and antennae are prohibited, unless wholly screened from highway view.*⁴⁰

When Colorado Mountain College took ownership of the Hayden Homestead in 2008, jurisdiction over land use and permitting moved from Lake County to The Colorado Division of Oil and Public Safety in the Department of Labor and Employment. Correspondence from Beattie, Chadwick & Houpt, LLP, legal counsel for Colorado Mountain College, dated September 4, 2009, states:

“CMC is a statutory junior college district formed pursuant to C.R.S. 23-71-101 et seq. Pursuant to C.R.S.A.23-71-122 (v), CMC is exempt from any permit or fee regarding construction or remodeling of buildings and structures and is exempt from compliance with the local building code. CMC is required to construct all buildings or structures in conformance with the building and fire codes of the Colorado Division of Oil and Safety in the Department of Labor and Employment”

“Although CMC is exempt from the local building code, CMC will meet informally with the planning department or planning commission, as feasible, to discuss issues related to location and whether the

³⁹Lake County Land Development Code: Section– 4.3.3, 2) d)

⁴⁰ Ibid – 4.3.3 C 1) and 2)

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proposed site, building or structure conforms to the adopted plan of the local municipality or County.”

Although CMC is exempt from the local building code, all reasonable efforts will be made to conform to the intent of the Scenic Conservation Overlay District and the Top of the Rockies Corridor Management Plan.

4.4.3 Top of the Rockies Corridor Management Plan

The National Scenic Byways (NSB) Program was established under the Intermodal Surface Transportation Efficiency Act of 1991, and reauthorized in 1998 under the Transportation Equity Act for the 21st Century. Section 1047 of the ISTEA, Pub. L. 102–240, 105 Stat. 1914, set up an advisory committee to assist the Secretary of Transportation in establishing a national scenic byways program. Under the program, the U.S. Secretary of Transportation recognizes certain roads as National Scenic Byways or All-American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities.

The Top of the Rockies Byway was designated first as a State Scenic Byway in September of 1993, and in 1999 was awarded National Scenic and Historic Byway status. When it was first designated, the Top of the Rockies National Scenic and Historic Byway was one of only 52 highway corridors to achieve National Byway status.

The Top of the Rockies Corridor Management Plan was completed in November of 1996⁴¹. A Corridor Management Plan is a written document that specifies the actions, procedures, controls, operational practices, and administrative strategies to maintain the scenic, historic, recreational, cultural, archaeological, and natural qualities of the scenic byway.⁴²

The Top of the Rockies National Scenic and Historic Byway passes through parts of Eagle, Summit, Lake and Pitkin Counties, on U.S. Highway 24 and State Highways 91 and 82. In Lake County, the Byway follows U.S. Hwy 24, paralleling the Arkansas River as it passes through the Hayden Ranch. The Scenic Conservation Overlay (SCO) district associated with the Byway extends 1000 feet either side of the highway as it passes the Hayden Homestead.

⁴¹ Top of the Rockies Scenic and Historic Byway Corridor Management Plan, Conlin Associates, 1996

⁴² **Federal Register** / Vol. 60, No. 96 / Thursday, May 18, 1995

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The entirety of the Hayden Homestead lies within the SCO district, and is subject to the terms and conditions of the Corridor Management Plan, including materiality and reflectivity of structures, placement of signs, and preservation of the scenic quality of the viewshed as seen from the Byway.

Consideration for the tenets and goals of the Byway Corridor Management Plan will influence building materiality, color, reflectivity, and placement, and could pose regulatory constraints to adaptive re-uses identified within this plan. The Corridor Management Plan is incorporated herein by reference.

4.4.4 Secretary of the Interior's Standards for the Treatment of Historic Properties

The U.S. Secretary of the Interior (Secretary) is responsible for establishing standards for all national preservation programs under Departmental authority and for advising federal agencies on the preservation of historic properties listed or eligible for listing in the National Register of Historic Places.⁴³

The U.S. Secretary of the Interior has developed a set of standards to guide the treatment of historic properties. The standards address the technical and philosophical aspects of historic rehabilitation, the tenets of preservation and restoration, and issues related to compatibility on a district-wide level.

The Standards were originally published in 1977 and were revised in 1990 and 1995 as part of Department of the Interior regulations (36 CFR Part 67, Historic Preservation Certifications). The Standards pertain to historic buildings of all materials, sizes, construction types, and occupancy and they encompass both the exterior and interior of historic buildings. The Standards also apply to related landscape features and the building's site and environment as well as attached, adjacent, or related new construction.

The Secretary of the Interior's Standards for the Treatment of Historic Properties have been expanded and interpreted to cover a wide variety of preservation situations and issues. Specifically, the Standards cover acquisition, protection, preservation, rehabilitation, restoration, and reconstruction.

⁴³ The National Historic Preservation Act of 1966, as amended (16 U.S.C. 470*et seq.*);
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As defined in the Standards:

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make the properties functional is appropriate within a preservation project.

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, and architectural values.

Restoration is defined as the act or process of accurately depicting the form, features, and characteristics of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems, and other code-required work to make the properties functional is appropriate within a restoration project.

Reconstruction is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

To date, the preservation effort at the Hayden Homestead has prioritized the stabilization of structures in danger of imminent collapse or accelerated deterioration, based on recommendations documented in the Lake County Open Space Initiative: Historic Ranches Survey completed by AE Design in 2000. That plan was intended to “address the degree and rapidly accelerating deterioration of the structures... and to convey the professional opinion that immediate stabilization and remediation was critical and clearly warranted.”⁴⁴ The report goes on to state that if the current deterioration and weather exposure remains

⁴⁴ Lake County Open Space Initiative Historic Ranches Survey, CHS/SHF Project #99-02-053, August 2000
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undeterred, and the buildings remain unprotected, it is quite possible that this district could soon lose its significance and historic integrity.

The AE Design Stabilization / Preservation Plan “does not address a recommended long term rehabilitation, restoration, reconstruction and building reuse plan.”

As urgent and immediate stabilization is completed, the preservation effort at the Hayden Homestead will move to the rehabilitation of structures to support their adaptive re-use.

The Secretary of the Interior's Standards for Rehabilitation provide ten basic principles to help preserve the distinctive character of a historic building and its site, while allowing for reasonable change to meet new needs.

- 1) A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.*
- 2) The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.*
- 3) Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.*
- 4) Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.*
- 5) Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.*
- 6) Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.*

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7) *Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.*

8) *Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.*

9) *New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.*

10) *New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be impaired.*

As a National Historic Site, compliance with the Secretary's Standards will be a limiting requirement affecting all levels of stabilization, rehabilitation, restoration or reconstruction of historic structures, and their surrounding landscapes on the Hayden Homestead.

4.4.5 Colorado Water Law

Colorado Water Law declares that the State claims the right to all moisture in the atmosphere that falls within its borders and that said moisture is declared to be the property of all of the people of this state, dedicated to their use pursuant to the Colorado Constitution.⁴⁵

Water in the State of Colorado is administered through the Prior Appropriation Doctrine, under which, the first appropriator of water has a senior right to that water that must be satisfied before any subsequent rights junior to that right can receive water. The priority of each water right was determined by the District Courts based on the date the structure for the water right was constructed, and the water was put to beneficial use. This is often described as the "first in time, first in right" doctrine.

⁴⁵ Colorado Division of Water Resources
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Water in Colorado is generally divided into two categories: surface water, and ground water. Groundwater is water that is not visible on the surface of the ground under natural conditions.

Prior to 1957, at the time when the hand dug Hayden wells were excavated, no permit was required to construct a groundwater well in Colorado. With the recognition that ground water and surface water are inter-connected, Colorado enacted the Ground Water Law in 1957, and a permit from the State Engineer was required as a prerequisite for drilling a new well, obtaining new groundwater rights, or registering existing wells.

In 1965, the Colorado General Assembly directed the State Engineer to begin regulating wells on the same priority system that applies to surface water. The result was passage of the Water Rights Determination and Administrative Act of 1969, requiring that surface and ground water be administered conjunctively, as an integrated unit.

Since the ditches that are used to distribute surface water are decades older than the oldest of groundwater wells, this effectively meant that residential and commercial wells would theoretically have to be shut off regularly to enable the senior ditches to get the water they are entitled to under the Doctrine of Prior Appropriation. Tributary wells appropriating ground water in such manner as to injure the vested rights of a senior appropriator were subject to injunction by the State Engineer, through the State Attorney General.

The administration of the law, as well as its constitutionality was challenged in the Colorado Supreme Court⁴⁶. The Court ruled that the regulation of tributary wells to protect senior surface rights was constitutional, but further directed the State Engineer to promulgate reasonable rules, regulations and standards to maximize the beneficial use of ground water, while preventing injury to senior water users.

Pursuant to the decision, the State Engineer promulgated rules and regulations for the use of surface water and tributary wells in the South Platte, Arkansas, and Rio Grande River basins. On May 8, 1972 House Bill 1042 and Senate Bill 35, were signed into law governing the jurisdiction of use of the ground water in the state of Colorado. In response to the Supreme Court findings, the legislation created classes of "exempt wells," so-called because they are exempt from the priority system.

⁴⁶ Fellhauer v. People, 167 COLO. 320, 447 p2d 986 (1968)

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For residential use, these exempt classes are:

Domestic: If a well is to be drilled on a thirty-five acre (or greater) parcel this permit allows watering of some livestock and irrigation of up to one acre of lawn or garden. This permit also allows the well to serve three dwellings on this property. Water usage is not to exceed three-acre feet of water per year at a fifteen gallon per minute pumping rate.

In-House Use Only: If a well is to be drilled on property that has less than thirty five acres, on lands subdivided prior to May 8, 1972, the landowner must apply for an In House Use Only permit which only allows water use inside the house. No watering is allowed outside the structure. The total usage of water is not to exceed one acre foot of water per year at a fifteen gallon per minute pumping rate.

For commercial wells, the exempt class is defined as:

Commercial Exempt: Well permits available for small businesses located on lots that were created prior to June 1, 1972, or by an exemption to the subdivision laws (≥ 35 acres). The use of this well is limited to a commercial business, and is limited to the pumping of one-third of an acre foot (108,600 gallons) of water per year. The uses of water are restricted to drinking and sanitation facilities inside a single business. Outside water uses are not allowed.

Under the 1972 law, if the tract is 35 acres or more, and has no existing well, then a domestic or commercial well permit can be obtained. If the parcel is less than 35 acres, and is located in a subdivision created before May 8, 1972, then only a in-house use well permit is available. If the parcel is located within a subdivision which comes under the jurisdiction of Senate Bill 35 (sub-divided after May 8, 1972), then even the in-house use permit is unavailable, and a plan for augmentation must be submitted to the Courts.

A plan for augmentation is a detailed plan, approved by a Water Court decree, which permits the well to be used in accordance with detailed terms and conditions outlined in the decree.

A Plan for Augmentation utilizes the historical consumptive use of a senior agricultural water right to offset the water consumption caused by the use of the wells. In this process, the senior water right is retired from irrigation use, creating a credit in the stream due to the fact that the agricultural user is no longer consuming water. The augmented

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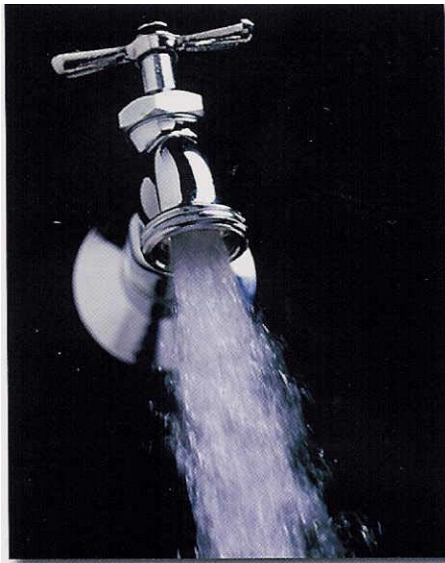
well(s) can then utilize the *consumable* portion of the water that was previously used by the agricultural application.

In Lake County, the traditional source of water to augment non-exempt wells has been the purchase of shares of agricultural water from individual shareholders of the Twin Lakes Reservoir and Canal Company. Shares are limited in number, and as more and more are put into beneficial use to augment residential wells, they represent a diminishing resource that can be difficult to locate and acquire.

A share of "Twin Lakes" water is typically estimated at approximately 0.80 of an acre foot of consumptive water. The current market value of a Twin Lakes share is in the range of \$25,000.00 to \$32,000.00, if a willing seller can be identified. The new owner of the share must then prepare and submit an Augmentation Plan to the Water Court to obtain a Decree to allow the drilling of an In House Use well to serve the property. Engineering and legal fees to prepare and submit the Augmentation Plan are currently estimated in the range of \$15,000.00 to \$25,000.00. This expense is exclusive of the cost of drilling the well.

The Hayden Homestead had at least four wells that historically served the residential, livestock, garden, and industrial needs of the ranch. Of these wells, two were verified as having been in use within the past decade, and were therefore considered eligible for submittal of an application to drill replacement wells. These two replacement wells are exempt from the priority system and available for domestic purposes.

Domestic well number 1 replaces a pre-existing well that served the Caretakers Unit (See building description Section 3.5.1). Permit Number 281004 was issued on June 24, 2009, and drilled in July of the same year.



Conditions of Approval for well permit 281004, item 3) state:

This well is recorded and permit approved in accordance with CRS 37-92-602(5) for historical use as indicated herein and described in CRS 37-92-602 (1) (b), being a well producing 15 GPM and used for ordinary household purposes inside 1 single family dwelling, fire protection, the watering of domestic animals, poultry and livestock on a farm or ranch, and the irrigation of not more than 0.5 acres of home gardens and lawns.

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Domestic well number 2 replaces a pre-existing well that historically served the bunkhouse (Building F-3). Permit Number 281005 was issued on June 24, 2009, and expires on June 24, 2011. This well has not yet been drilled. Conditions of Approval for Well Permit Number 281005, state:

The use of groundwater from this well is limited to fire protection, ordinary household purposes inside not more than three single family dwellings, the watering of poultry, domestic animals and livestock, and the irrigation of not more than 0.5 acres of home gardens and lawns.

Since students pay for classes and lab fees, the creation of classroom space is considered to be a commercial use. Application for a third, Commercial Exempt well has been prepared, but has not yet been submitted pending completion of the Hayden Homestead Master Plan and allocation of the well to a specific location and end use on the property .

A commercial Exempt well can be permitted on a parcel of 35 acres or more, but by statute, can be the only well serving the property.⁴⁷ To clarify the ability to place a commercial well on the Hayden Homestead site, which already has two domestic wells under permit, the State Water Engineer's Office was consulted. Correspondence from Janet Garoutte of the Division Office states:

"A qualification factor is that you must describe 35 acres that does not include the other (pre-72 type) wells, such as a 35 acre tract except for 20 feet around well permitted under 28004A located at 386288 Easting, 4331750 Northing, for example for one of the wells, and so forth. If you have three wells, you must have enough acreage remaining that is 35 acres."

Under the described qualification, the Hayden Homestead parcel can accommodate: 2 domestic replacement wells, capable of supporting 4 residential structures, a total of 1 acre of outdoor irrigation, and water for fire suppression, poultry, domestic, and livestock watering; and one commercial exempt well with the capacity to support indoor use equal to one third of an acre foot of water annually.

Additional potable groundwater supply may be available through a court approved augmentation plan, but that determination is outside of the scope of this Plan. For the purposes of this document, potable water supply from wells is, therefore, assumed to be limited to that

⁴⁷Colorado Division of Water Resources Form GWS-57, Guidelines , parts 4, 5
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which can be supplied by the two permitted domestic wells and the pending commercial exempt well.

A non-potable surface water supply to support outdoor plant production and landscaping will require identification and procurement of an agricultural water source, and a court approved augmentation plan for its diversion and consumptive use.

The College is currently working with the Pueblo Board of Water Works, Aurora Water, and Lake County to secure water rights for exchange to Box Creek to allow for the diversion of surface water to support irrigation in addition to the allowable outdoor watering uses inherent to the potable commercial and domestic wells.

A grant for \$200,000.00 from the Natural Resource Damage Assessment Trustees for planning, engineering, water augmentation, and cash match for the Hayden Homestead Center for Sustainable Agronomy has been awarded, and a portion of that funding will be used to secure a source of irrigation water for the proposed greenhouse, forest and wetland nurseries, and the experimental garden.



Section 5 Adaptive Use: Experiential Education Center

5.0 Introduction

The Hayden Homestead Experiential Education Center represents outcomes of the Scoping process, and embodies the desired end uses of the natural and built resources of the Hayden Homestead as envisioned by a diverse group of educators, administrators, community members, and stakeholders.

The Experiential Educational Center (EEC) is intended to expand upon the classroom learning opportunities currently offered at the Timberline Campus of Colorado Mountain College by providing a learning laboratory for hands-on experiences in the trades and disciplines of both existing and potential educational programs.

Nothing in this plan shall be interpreted as committing Colorado Mountain College to the construction or implementation of the suggested Sitewide Actions or Adaptive Uses. The decision to advance planning and implementation of any element of the plan shall be at the sole discretion of the College, and may be based on available funding, demonstrated market demand, economic feasibility, satisfaction of desired student outcomes, unique partnership opportunities, or other variables that justify moving a project into the action planning stages provided within this section of the Plan.

5.1 Disciplines

Disciplines that would make use of the Homestead would include:

5.1.1 Historic Preservation

The CMC Timberline Campus offers both Associates of Applied Science degrees and Certificate programs in the field of Historic Preservation, through the College's Skilled Trades and Technical Services Program. The Historic Preservation program prepares graduates to pursue a variety of professional career opportunities in the historic preservation industry. The curriculum stresses a balance of classroom, technical and experiential learning.

Students are introduced to the building arts through a sound theoretical foundation followed by an emphasis in developing the handcrafting skills necessary to execute historic building preservation tasks. The core materials sciences of wood, masonry, and metals are complimented by a broad spectrum of electives. Students may choose to concentrate their hands-on experience in the construction or decorative arts components of historic preservation treatment.

The Hayden Homestead is a National Historic District, and contains 16 contributing structures that can provide an experiential laboratory for hands-on learning in the real world application of historic preservation and rehabilitation skills. The site also provides a unique natural and built environment to support the expansion of the Historic Preservation program to include instruction in interpretive skills, architectural woodworking and restoration, period furniture making, and cultural heritage tourism.

5.1.2 Sustainable Agronomy

In 2010, CMC President Stan Jenson signed the American College and University Presidents' Climate Commitment to work toward climate neutrality and to establish a culture of sustainability.

Sustainability is described as an economic, social, and ecological concept. It is intended to be a means of configuring human activity so that society and its members are able to meet their needs and express their greatest potential in the present, without compromising intrinsic values and resources for future generations.

Colorado Mountain College currently provides agricultural learning opportunities through its Agricultural and Natural Resources Program,

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but classes in agronomy are not offered at its Timberline Campus at this time.

The Hayden Homestead offers numerous opportunities to promote and advance the culture of sustainability, from the use of renewable energy sources and production of “food close to home”, to the preservation of our cultural heritage for future generations.

The greenhouse and outdoor nurseries proposed for the Center for Sustainable Agronomy would provide students with a hands-on, comprehensive learning experience, from the gathering and propagation of native seeds, to the harvesting and application of vegetation for the performance of environmental best practices in phytoremediation and restoration of damaged forest and wetland habitats.

The Sustainable Agronomy Center would also instruct and engage the community in production of locally grown organic food, and provide the Timberline Campus with an experimental garden plot and a source of locally grown produce.

5.1.3 Renewable Energy

Renewable energy is energy generated from natural resources such as sunlight, wind, tides, burning of biomass, and geothermal heat, that are naturally replenished. The additional benefit of renewable energy sources is that they produce fewer greenhouse gasses than traditional carbon based means of power production, reducing carbon dioxide emissions to the atmosphere.

Colorado Mountain College currently provides instruction in Solar Energy Technology under its Energy Program, which is designed to provide students with the knowledge, skills and abilities for a career in the renewable energy fields. Students acquire hands-on skills in installation, operation, monitoring, repair and replacement of related equipment. This program includes general education courses to broaden the students’ depth of understanding and prepare them for more advanced degree or professional positions in the renewable energy field as well as hands-on skills needed in the profession. The program is currently not available at the Timberline Campus.

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The Hayden Homestead has the land base and environmental conditions to support the utilization of passive solar, solar thermal heating, photovoltaic cells, geothermal exchange, biomass heating, and wind power to supplement or replace carbon-based sources of energy necessary to power and heat the site. The installation of the renewable energy technologies also provides the hands-on learning laboratory for instruction of the skills and abilities required to install, operate, maintain and monitor renewable energy technologies.

5.1.4 Natural Resource Management

Colorado Mountain College currently offers degree and certificate programs in Agriculture and Natural Resources. The Natural Resource Management program at the Timberline Campus of CMC provides graduates with multi level skills in a variety of environmental science fields. The degree combines aquatic and terrestrial resource management and characterization. Students are trained in career fields of field monitoring, hydrology, soil science, environmental law, and others.

Students work in the areas of earth resources, geology, watershed science, geography, fishery and wildlife biology, forest science and management, natural resource recreation and tourism, rangeland science and ecology, waste management and dealing with hazardous materials.

The natural resources of the Hayden Homestead include springs, a small stream, three ponds, wetlands, uplands and open range that provide a living laboratory for instruction in soils, hydrology, aquatic and terrestrial biology, animal husbandry, rangeland management, and the propagation and application of vegetation for environmental remediation.

With rehabilitation of the bunkhouse, the site could also provide rustic overnight accommodations for the Science, Technology, Engineering and Math (STEM) program, workshops, and science camps to engage youth in the field of Natural Resource Management.

5.1.5 Outdoor Recreation

The CMC Timberline Campus currently offers career and technical degrees and certificates in Outdoor Recreation Leadership and Outdoor Education as part of their Outdoor Studies Program.

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The Outdoor Recreation Leadership program trains students to become knowledgeable and skilled leaders in a variety of adventure travel experiences. Graduates of this program can transfer to a four-year school or work as a leader in the many outdoor recreation fields.

The Outdoor Education Certificate offers a comprehensive series of backcountry travel and appreciation courses. Course work in the natural sciences, humanities, recreation and environmental appreciation are blended to provide opportunities for growth and challenge.

The Timberline Campus also provides a certificate program in Fly Fishing Guide training. The program is designed to provide training and education that will lead to success as a professional fly-fishing guide. The program includes courses that will improve technical skills and knowledge of the art of fly-fishing in both moving and still waters, while stressing interaction with the clients and the natural environment, as well as the basics of running a small business.

The Hayden Homestead provides numerous opportunities for outdoor recreation learning, from ponds to teach fly casting and basic watercraft rigging and handling, to corrals and barns to support the teaching of equestrian skills and management and rigging of pack animals. The terrestrial and aquatic habitats on the ranch also provide a living laboratory for classes such as aquatic biology and entomology.

The adjacent Arkansas River, where the College holds a Guide Outfitters license, provides a natural step in the progression of boat handling, swift water rescue and fly fishing skills

5.1.6 Animal Husbandry / Equestrian

Colorado Mountain College currently offers classes in Veterinary Technology and Animal Shelter Management as part of their Agriculture and Natural Resources Program, but they are not currently offered at the Timberline Campus.

The Veterinary Tech program provides specialty training to enable students to assist a Doctor of Veterinary Medicine, through practical, hands-on experience with both large and small animal medicine and surgery.

The animal shelter management program provides students with a background in animal care and management in preparation for

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employment in management or mid-management entry level positions in the animal shelter industry.

The Hayden Homestead has two large animal barns with stalls and haylofts, corrals and paddocks, open space for grazing, water for livestock, and chicken and rabbit coops for small animal enclosures that could support the areas of animal husbandry, veterinary technology, animal rescue, or equestrian training.

The adaptive use of these structures for shelter and containment of domestic livestock would be in keeping with the historic use.

Community input has also identified the desire to provide a place for equestrian training and the boarding of large animals to support youth groups such as scouting and 4-H groups, for providing leadership training, and for animal related activities such as a petting zoo, competitions, County Fair, or horse shows.

It is assumed that a 35.38 acre site would not have sufficient forage to support large scale grazing, therefore, either supplemental feed sources would be required to support livestock habitation at the ranch, or CMC will have to pursue a long term operating agreement with the lease holder of the adjacent BLM lands.

5.1.7 Community Learning and Enrichment

Colorado Mountain College has a mission of providing lifelong learning, and reaching beyond their campuses to build partnerships and provide service to the surrounding communities. CMC's Vision states: "Over the next ten years, Colorado Mountain College is committed to being our communities' first choice for learning, partnerships, and leadership. "

The scoping process provided clear direction from the community that the Hayden Homestead represents an important and tangible icon of the heritage of the Upper Arkansas Valley, and should be showcased and accessible for events and activities that enhance and enrich the lives of the community and its visitors.

Community input emphasized and encouraged the adaptive use of the natural and built environment of the Homestead for activities such as celebrating Ranch Heritage Days, farmers markets, art exhibits and Instruction, high altitude gardening classes, summer stock theater, vegetable and egg co-op, sustainable living fairs, musical concerts,

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cowboy poetry readings, indoor archery practice, livestock shows and competitions, staging area for winter sports activities, skating pond, kids fishing derbies and instruction, school outings, kids petting zoo, Montessori classes, and barn dances.

Pursuing one or more of these uses is dependent upon viable partnerships, community support, economic sustainability, availability of space that can meet the requirements for public access and use, and other variables that may not be foreseen at this time.

The center, clear span portion of the Main Barn was consistently cited as an iconic space for everything from weddings to barn dances. Provisions for the design of new construction on the site can also take community meeting or convention space into account.

5.1.8 Entrepreneurship

The Timberline Campus awards Career and Technical Degrees and Certificates in Entrepreneurship. The program prepares students to develop the insight needed to discover and create entrepreneurial opportunities and the expertise to successfully start and manage their own businesses. The program provides the knowledge and skills to assess new enterprise opportunities, obtain financial resources, market and start new ventures, and manage entrepreneurial ventures for growth and profitability.

The Hayden Homestead provides a dynamic venue for inspiring entrepreneurial pursuits in areas such as sustainable agronomy, wetland delineation, hand crafted products, woodworking, or historic preservation. A number of CMC graduates have started their own businesses in fields that benefit from the type of hands-on experience that can be gained on the Homestead.

5.1.9 Forestry

The Forestry Technician program at Colorado Mountain College's Timberline Campus in Leadville is designed for forestry careers with a variety of agencies, including federal, state and private land management. The proposed Sustainable Agronomy Program, with its greenhouses and outdoor nursery plots, could provide students with practical experience from seed selection and propagation of forest species to nursery operations and transplanting of seedlings in the application of environmental best practices in reforestation.



5.2 Sitewide Actions

Sitewide Actions represent uses, protocols, or actions that share common or multiple applications within the overall concept for adaptive use of the Hayden Homestead property as an Experiential Education Center.

An example would be the proposed Infill Project that would construct conditioned space between the Main and South barns. This space could provide classrooms, labs, and shop space for use by the Historic Preservation, Sustainable Agronomy, Renewable Energy, Natural Resource Management, Outdoor Recreation, Fly Fishing Guide, Entrepreneurial, and Animal Husbandry programs, as well as conditioned space and restrooms for community meetings and conferences. Its ability to serve multiple functions classifies it as a sitewide action.

Similarly, the need to provide for services such as security, fire protection, and maintenance have sitewide application, as do operations, maintenance, business, and marketing plans for the site.

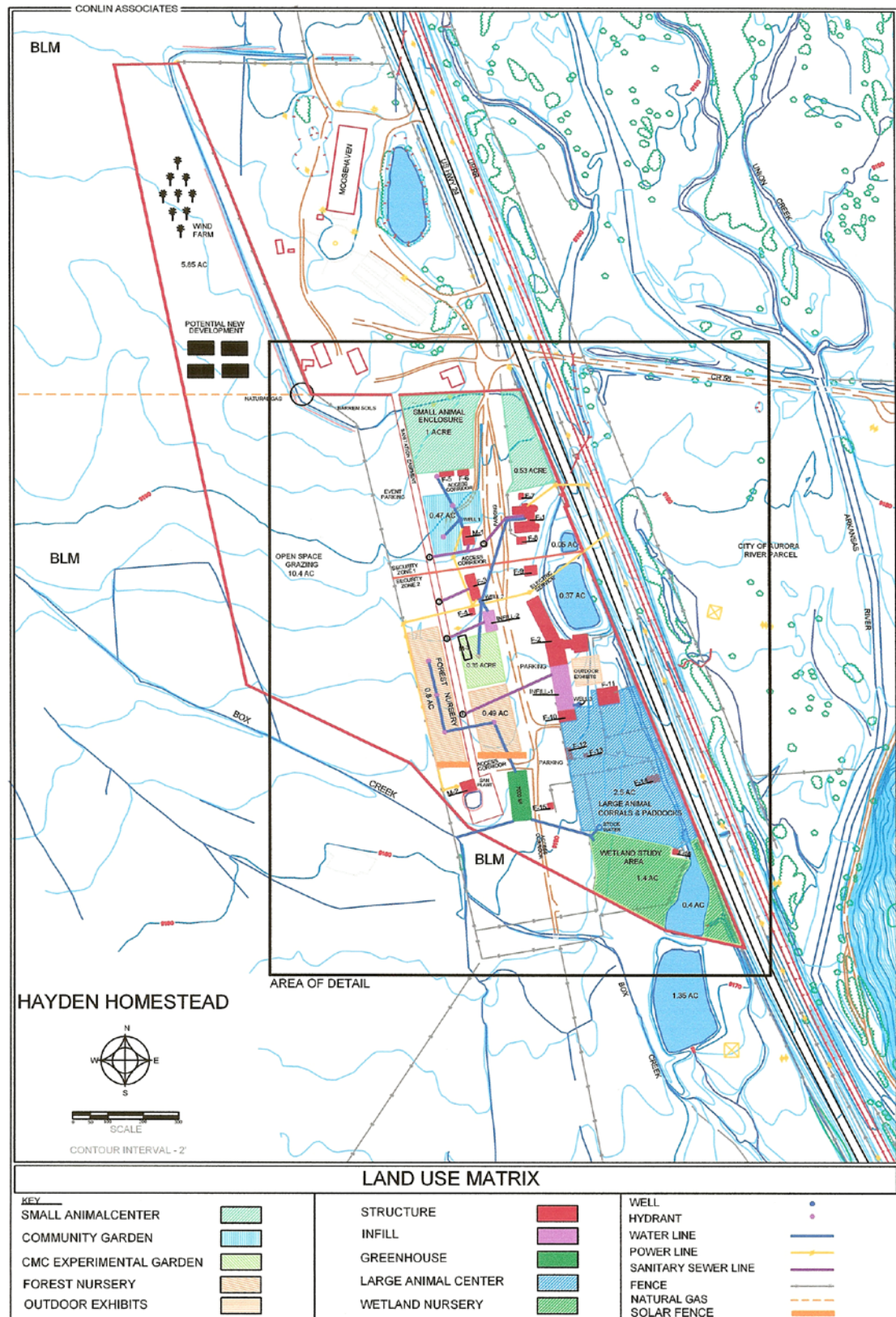
Map 5-1 provides an integrated overview of the structures, land uses, and infrastructure of the Homestead, as identified in this Plan.

Tables located in Section 5.8 provide a compilation of: the resources allocated to each programmatic adaptive use; map location; applicable Conservation Easement Zones; goals and objectives satisfied by the adaptive use; relationship of the adaptive use to the Deed of Conservation Easement and Secretary's Standards; and the infrastructure needs on a program by program basis.

Names used in this Section have been assigned for the sole purpose of providing consistent identification of adaptive uses or related actions.

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Map 5-1 Land Use Matrix



Hayden Homestead: Master Plan

Actions or adaptive uses that apply to the entire site or satisfy a common purpose include:

5.2.1 Preservation Plan

Preservation of the Hayden Homestead to date has been based on a triage approach of identifying and prioritizing the most urgent and threatening issues, and stabilizing those structures that required immediate attention due to their rapidly advancing deterioration. In some cases, this approach is the only reason that buildings of the Hayden Homestead remain standing today.

In August of 2000, AE Design, completed the Lake County Open Space Initiative Historic Ranches Survey (Survey), and the nomination forms to place the Hayden Homestead on the State and National Registers of Historic Places. That plan was intended to address the “degree and rapidly accelerating deterioration of the structures,” and to “convey the professional opinion that immediate stabilization and remediation was critical and clearly warranted.”¹

That Survey (incorporated herein by reference) is now over 10 years old, and no longer accurately depicts the current condition of the Homestead. Some structures inventoried in the original Survey have since been lost or have suffered additional deterioration, while others have been effectively stabilized.

The Survey “does not address a recommended long-term rehabilitation, restoration, reconstruction and building reuse plan.” The document recommends that “Such a plan for the entire district, and every building within it, should be completed as a high priority.”²

The report goes on to state that if the current deterioration and weather exposure continue undeterred, and the buildings remain unprotected, it is quite possible that the district could soon lose its significance and historic integrity.

As the stewards of the historic elements of the Homestead, it is incumbent upon CMC to take the lead in developing long term plans for the site’s preservation.

¹ Lake County Open Space Initiative Historic Ranches Survey, CHS/SHF Project #99-02-053, August 2000

² Ibid

Hayden Homestead: Master Plan

5.2.1.1 Sitewide Action 1

Prepare a sitewide Preservation Plan

Identify any additional projects necessary to complete the initial stabilization phase, and prepare plans for the rehabilitation of historic structures, as defined in the Secretary of the Interiors Standards, in coordination with the adaptive use plan developed from this Master Plan.

The purpose of a site-wide Preservation Plan would be to:

- Broaden the understanding and appreciation of the Hayden Homestead property;
- Enable development of an operating plan that maximizes respect for historic fabric in conjunction with program needs and student outcomes of the College;
- Inform curatorial and interpretive issues;
- Develop Interpretive Plans for the Homestead and inform other planning efforts;
- Assist in the development of a Maintenance Plan;
- Assess the impacts of proposed alterations;
- Prepare construction documents for capital Improvements;
- Provide information in response to management or development issues;
- Provide information for fundraising efforts to support future studies or construction projects;
- Guide future research.

A model for the preparation of a Preservation Plan, entitled *Historic Structure Reports & Preservation Plans, A preparation Guide*, is included in Appendix D.

Hayden Homestead: Master Plan

5.2.2 Sitewide Historic Building Monitoring & Maintenance Plan

General maintenance is a critical part of the preservation of any historic site. Lack of regular upkeep can make a significant difference in the acceleration of structural deterioration and diminishment of the financial investment made in the site's rehabilitation.

A Historic Building Monitoring & Maintenance Plan (Maintenance Plan) provides informed guidance in minimizing the deterioration of the resource, its features, and its finishes. It establishes maintenance guidelines for each type of material utilizing sustainable and minimally invasive methods and products, and identifies necessary materials and equipment to perform the work. The maintenance plan also identifies the presence and location of hazardous materials, such as asbestos floor covering and shingles or lead paint, and establishes protocols for maintaining site elements in a manner that does not present a human health risk.

Although it is not possible to anticipate repairs based upon unforeseen conditions or events, the maintenance plan should describe items or areas of work which necessitate attention or action at regular cyclical intervals. This allows the College to anticipate and budget for the work prior to the onset of costly and irreversible deterioration of the historic fabric.

The Maintenance Plan should include an informal inspection program that can be performed by the Historic Preservation Program staff and students, and should identify those inspections that should be performed by professionals on a regular basis that are either more technical, or present hazardous conditions to which the students and staff should not be exposed.

5.1.2.1 Sitewide Action 2

Prepare a sitewide maintenance plan

- Prepare a Historic Building Monitoring & Maintenance Plan for the structures and historic landscape of the Hayden Homestead. A model for preparation of a conservation maintenance plan can be accessed through the Office of Archaeology and Historic Preservation. The publication is entitled *Preservation Maintenance: A universal Manual for developing Conservation Maintenance Plans*, dated April 2006, developed by Humphries Poli Architects, P.C. of Denver, Colorado. A copy of the document is included in Appendix D.

Hayden Homestead: Master Plan

5.2.3 Balancing Curriculum Development to Seasons of Use

Many of the opportunities for experiential use of the Hayden Homestead are dependent upon the season of use. Examples would include the use of the site to teach the principles and field techniques of archaeology. The typical fall and spring semesters at CMC coincide with periods when the earth is typically frozen or covered with snow, making site work impractical. The short summer field season that is best suited to site work, also coincides with the time of year that the cost of heating of conditioned space and the maintenance of the grounds (e.g. snow plowing) is at its lowest.

To maximize the efficacy of seasonally constrained experiential learning opportunities, summer classes or workshops should be scheduled during the appropriate time frame.

5.2.3.1 Sitewide Action 3

Address scheduling issues through programming and curriculum changes.

Hayden Homestead: Master Plan

5.2.4 Operating and Business Plan

The Operating Plan provides the primary guidance tool for managing the various uses that are planned for the Hayden Homestead. The Operations Plan should establish operating parameters and protocols including seasons and hours of operation, security and fire protection provisions, staffing needs, a general buildings and grounds maintenance plan, and other day-to-day operational requirements. It should also outline work plans and task lists for operating the site, assign management responsibilities, and set schedules.

The Operating Plan should also establish the philosophy and protocols for determining and managing how the historic aspects of the site will be presented to the public. As part of the Operating Plan, an interpretation plan should be developed to provide guidance and protocols about how historic collections are displayed and curated, how physical and visual historic resources are explained and how historical associations, such as events, important people, and the site's historic land uses are presented. An interpretive plan should also provide standards and guidelines for the design and construction of displays, signage, markers, plaques, and monuments.

The Business Plan should establish how Colorado Mountain College manages the site, and should be formulated to provide information about the management team and their duties and responsibilities in operating the site, including marketing, developing and managing the budget, hiring practices, purchasing procedures, and contracting for services.

A Financial Plan is an integral component of the Business Plan, articulating how funding the historic site's operational and developmental needs will be achieved. The financial plan should include information on budgets, income, expenses, taxes, accounting and auditing practices, user fees, funding, and projects costs.

5.2.4.1 Site Wide Action 4

Prepare a sitewide Operating and Business Plan

Prepare an Operating and Business Plan for the Hayden Homestead, based on CMC's standard template, to address such issues as: seasons and hours of operation; security protocols; staffing requirements; scheduled grounds and building maintenance; protocols for collection, curation, and display of artifacts; Interpretive sign guidelines; marketing plan; hiring and contracting services; and budget management protocols.

Hayden Homestead: Master Plan

5.2.5 Site Security

The distance of the Homestead from occupied structures and a local law enforcement presence leaves it vulnerable to trespass and vandalism.

A planning dichotomy occurs when the protection of the site, and the desire to make it available for public participation come into conflict. On one hand, the CMC mission to serve the local population has generated numerous recommendations for adaptive uses of the property for community activities, such as a cooperative garden and egg co-op, or a self guided interpretive trail, that warrant consideration of open access to the Homestead. On the other hand, irreplaceable artifacts, fragile and sometimes dangerous structures, and sensitive research areas are in need of protection, and warrant restricted access. This plan recommends that the site be divided into two security zones.

The first zone would be located at the entry portal to the ranch and includes the caretaker's unit, community garden, storage garage, and exhibit hall (Map 5-2). In this manner, community project areas are concentrated within clear sight of the caretaker's unit, and do not require passage through sensitive historic areas to gain access to public activities. Access to Zone 1 would be by key or smart card at the entry gate during those times when the gate is not open to the general public. Members of the public participating in activities such as the community garden or tending animals would be issued smart cards or keys only after attending an orientation on the rules and protocols of the ranch. The advantage of a smart card would be the ability to track user days for accounting purposes, and to determine who was on site in the event that vandalism occurred.

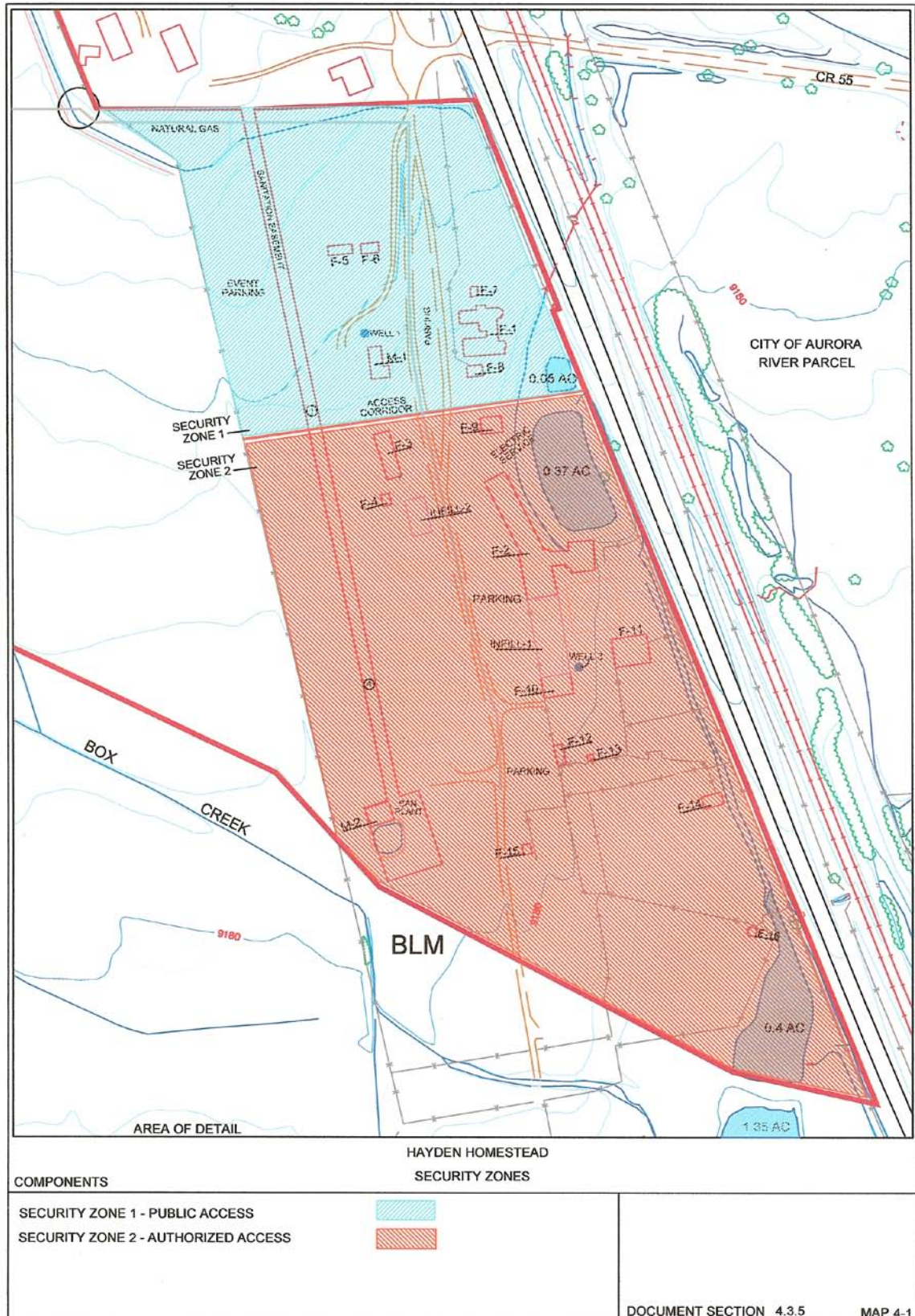
The second zone would be restricted to CMC authorized personnel only and would be controlled by a second fence and gate located to the south of the caretakers unit. Only individuals with college authorization would have keys or smart cards to open both the first and second gates. The primary function of the gates would be to control vehicular access to the historic structures and research areas at those times when the Homestead is not open to the general public. The gates can be left open for community events, or when CMC personnel are present on site, but locked at night or when the site is un-staffed.

5.2.5.1 Sitewide Action 5

Construct a fence with locking gates to divide the property into two security zones and establish protocols for authorized entry.

Hayden Homestead: Master Plan

Map 5-2 Security Zones



5.2.6 *Hayden Homestead Classroom and Conference Center*

The effective teaching of classes and labs on a year round basis will require the creation of conditioned, ADA accessible space that can be heated, wired, and plumbed to modern classroom standards. These improvements will be executed in accordance with the Deed of Conservation Easement and the Secretary of the Interior's Standards for Rehabilitation.

The Deed of Conservation Easement allows for new construction to occur in Zone 3, or on the footprints of historic structures that have been lost to deterioration and collapse. One of those footprints is the 5,474 square foot section of the Main Barn (Building F-2) that collapsed and was removed from the site in the 1980's. Zone 1 Map of the Deed of Conservation (Appendix A) identifies this space as a "Potential connection between Large Barn and Barn Manger", where new construction is allowed.

Map 5-3, entitled Structures with Sitewide Application identifies the location of the Classroom / Conference Center (Infill – 1) relative to the structures and infrastructure of the Homestead. Compatibility of Adaptive Use 1 with the goals and objectives of the Plan, the Secretary's Standards, the Deed of Conservation Easement, and infrastructure demand, are illustrated on Table 1 in Section 5.8.

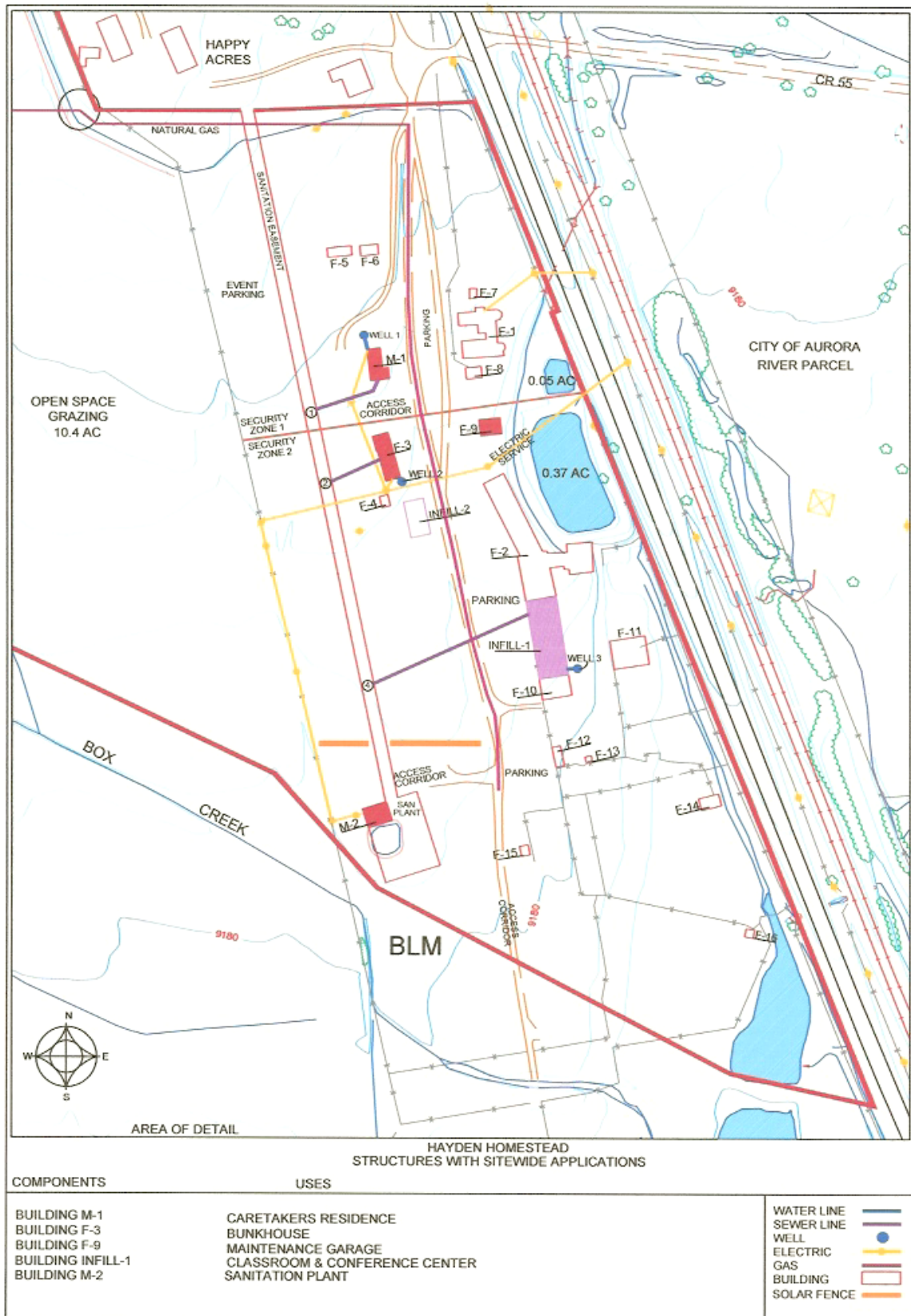
Construction drawings were prepared, and a permit application was submitted and approved in 2009 to construct an un-conditioned, core and shell "infill" building on the footprint. The construction plans for this structure are located in Appendix E of this document.

Under the permit from the Colorado Division of Oil and Public Safety, Department of Labor and Employment, a foundation was excavated and foundation walls were poured, wall framing was pre-fabricated, and materials for constructing the roof truss system were procured.

Architectural and Structural drawings have been completed for the shell by Agency CTA and are on file at the Timberline Campus of Colorado Mountain College. The drawings are titled, "Hayden Ranch Barn Reconstruction," and are dated February 6, 2009. No further work will be conducted until a program for the infill building is developed pursuant to this Master Plan.

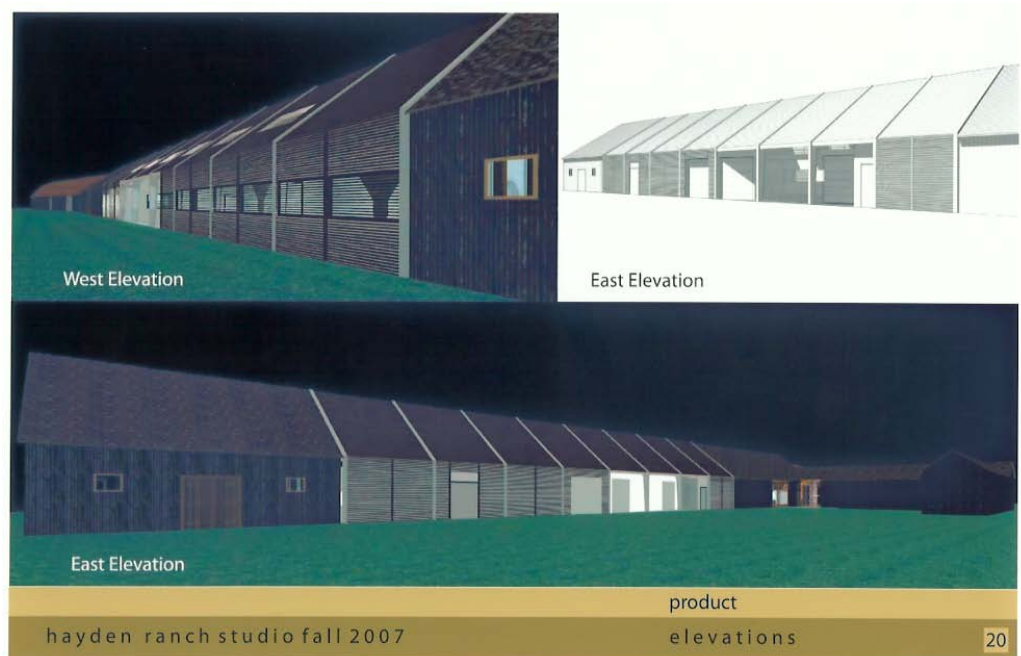
Hayden Homestead: Master Plan

Map 5-3 Structures with Sitewide Applications



Hayden Homestead: Master Plan

Figure 5-1 Infill Elevations



Elevations, Infill – 1, Classroom and Conference Center

The structure would provide one of the few locations on site for new construction of sufficient conditioned space to accommodate classrooms, labs, and shop space to serve the needs of the multiple programs that would utilize the Hayden Homestead.

The concept would be to design and construct the Learning Center on the footprint of the collapsed structure between the north and south barns, to accommodate classrooms, offices, lab, and shop space to meet the multiple needs of the programs that would utilize the building.

ADA accessible lavatories would be designed and sized to provide the primary restroom facilities for the site, and application would be made for a commercial exempt well to serve the potable water demands of the facility. Disposal of sanitary waste would be accommodated through the use of one of the four authorized taps on the Moosehaven Sanitation System.

Power and heat would come from solar and geothermal systems, if they can be shown to be cost effective. Connections to Sangre de Cristo Electric and Xcel High Pressure Gas would provide backup power and heat to the primary solar and geothermal systems. Net metering would be used to secure credit for power generated on-site.

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5.2.6.1 Sitewide Action 6

Develop plans for constructing the Classroom / Conference Center

- Develop a program for the infill that fulfills the programmatic requirements for the EEC
- Maximize conditioned space needs and capacities for water and sewer
- Consult with the architect to confirm usability of the frost walls and materials previously ordered and stored on site. Make changes as necessary to the floor plan and shell design to meet program needs and comply with the Deed of Conservation Easement;
- Develop an infrastructure plan to accommodate connection to power, water, communications, and sanitation;
- Apply for a Commercial Exempt Well Permit from the State Water Engineer to provide a potable water source that also meets the needs of the facility;
- Contact the Moosehaven Homeowners Association to confirm the protocol for connecting the facility to the Sanitation System;
- Proceed with design development for review and approval followed by construction drawings;
- Re-apply for a building permit that reflects the changes from un-conditioned core and shell construction to the conditioned space of the facility.

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5.2.7 Ranch Manager / Caretaker

The remote nature of the Homestead makes it vulnerable to vandalism, theft and arson. Additionally, project elements such as livestock feeding or tending to the greenhouse are ongoing and daily responsibilities that must be accomplished even when CMC staff and students are on break or classes are not in session. Security and maintenance of the site will require the physical presence of a caretaker.



Caretaker's residence

The goal is to provide modern accommodations for an on-site caretaker to oversee site security and general maintenance of the structures and grounds of the Hayden Ranch. Duties could include management and care of livestock, training on the use of fire fighting apparatus, and acting in a "fill-in" capacity to perform the chores and duties of program participants and staff when CMC is not in session or when gaps in student participation occur.

Building M-1 is a single story wood frame structure located near the entrance to the Hayden Homestead (See Map 5-3). Built in 1962 to provide accommodations for the ranch manager and his family, the 1200 square foot structure has three bedrooms, one bath, a living room, and kitchen/dining room. The house was occupied by caretakers as recently as 2004

As the home is less than 50 years old, it is not considered to be a contributing structure to the Hayden Homestead historic district, and is, therefore, not subject to the Secretary's Standards for Rehabilitation. Alterations to the structure would be required to make it habitable³.

³ Jack Saunders representing the Saunders Company, General Contractors, performed a walk-through of the building in the fall of 2010, and delineated the alterations that he felt should be undertaken in order to bring the house up to modern living conditions and codes. Included in his estimate were a new roof, new flooring and floor covering, new double pane windows and doors, new heating system (either solar, electric, or gas), rewiring of the electrical system, gutting and remodeling of the kitchen and bathroom, drywall repair, interior and exterior paint, new fixtures and appliances, and connecting the plumbing system to the new well and the Moose Haven Sanitation System. His estimated cost for the complete remodel was approximately \$75,000.00.

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The structure sits on a poured concrete foundation. Sanitary waste disposal for the structure was originally provided by a septic system that failed and has since been disconnected. Sanitation for the Caretakers house can be accommodated within the four sewer taps allocated to the site in the 2004 Easement Agreement with the Moose Haven Homeowners Association (Appendix B).

Potable water for the house was historically provided by a hand dug well at the northwest corner of the house. A permit was submitted and approved by the State Water Engineer (Permit # 281004 A) to replace the hand dug well, and a replacement well was drilled in the summer of 2009. The well permit allows pumping of water up to 15 gallons per minute to support one residence, outside irrigation of up to one half acre of land, fire suppression, and livestock watering.

Electric power was provided by Sangre de Cristo Electric, but has been disconnected. Evidence of copper gas lines would suggest that propane provided the primary source of space and hot water heat. A Mountain Bell connection box on the outside of the house would suggest that phone service was available at one time.

5.2.7.1 Sitewide Action 7

Rehabilitate and remodel Building M-1 for occupancy and solicit a caretaker for the site.

- Prepare any necessary documentation for permitting the remodeling of the structure;
- Submit permit application;
- Connect to water, sewer, electrical and gas (as appropriate);
- Renovate house;
- Establish job description and duties of the caretaker; and,
- Determine compensation package (rent, utilities, compensation etc.)

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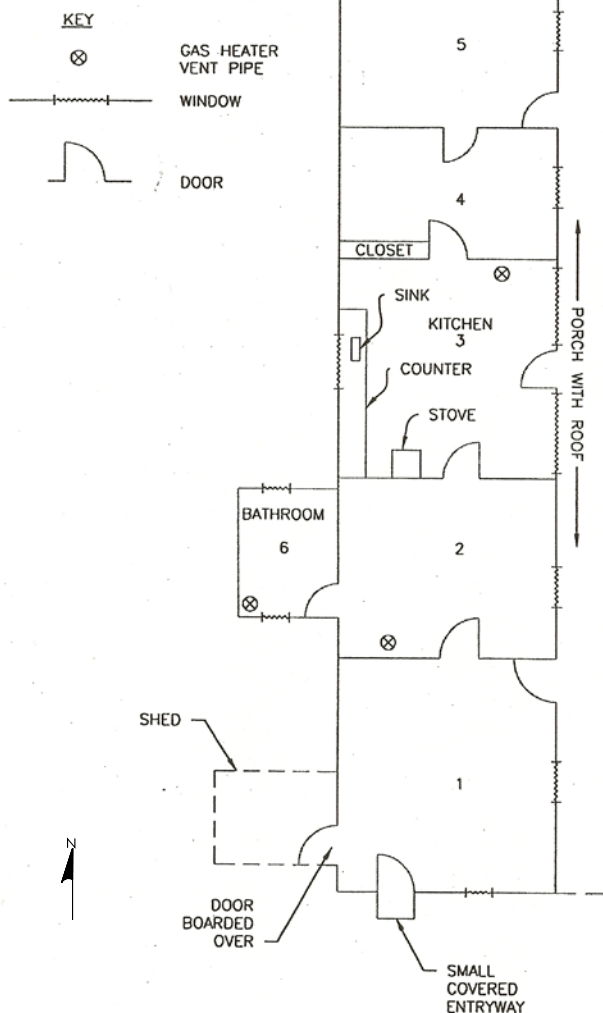
5.2.8 Hayden Bunkhouse



Hayden Bunkhouse, Betty Farrington Collection

Building F-3 was traditionally used to house the Ranch Manager. It is a wood frame, single story structure with a linear or “shotgun” layout that aligns the rooms in a straight row, and requires passage through one room to access the next.

Figure 5-2



Although no construction date was recorded, it is estimated that the six room house was built in stages between 1918 and 1950.

The location of the Bunkhouse is illustrated on Map 5-3, and its compatibility with planning objectives is demonstrated in Table 3, Section 5.8

According to the Historic Ranch Survey, the existing structure encompasses approximately 1304 square feet, and consists of a kitchen, four rooms that may alternately have been used as common areas or bedrooms, depending on the needs of the individuals in residence at any given time, and a bathroom addition off of the west elevation of the structure built in the late 1940's. The Patton and Farrington families resided in the structure during their tenures as Ranch Managers in the 1940's and 50's. A storage shed with a boarded over interior door is located on the southwest corner of the building. (Floor plan left)

The Deed of Conservation Easement stipulates that “New construction is allowable on the western elevation of the Ranch House; said addition will be no greater than 1.5 times the historic building footprint.”

Expansion on the western elevation would allow

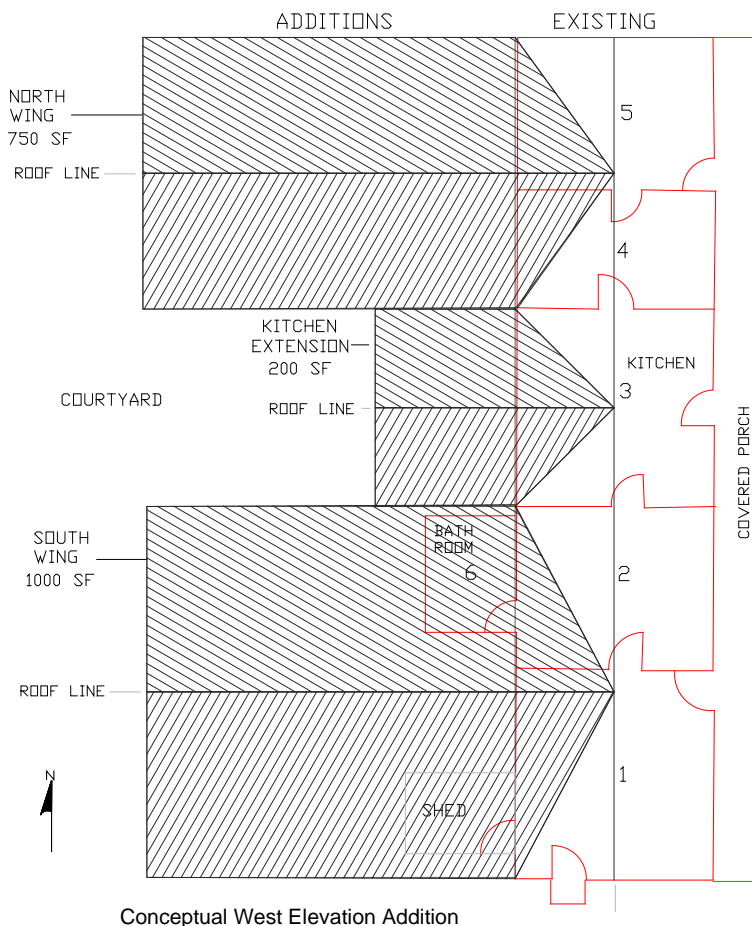
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for a maximum addition of 1950 square feet, or a total bunkhouse footprint of approximately 3250 square feet.

The concept for adaptive use of the Bunkhouse would be to capitalize on the stipulation identified in Exhibit F of the Deed of Conservation Easement that allows for the expansion of the west elevation of the structure, to create rustic bunkhouse accommodations for use by participants in the Experiential Education Center, including students in the CMC STEM Program, science camps, elder hostel, 4-H and scouting groups, volunteer organizations, school outings, retreats, private events, and workshop participants.

Roof lines of any addition would have to match the elevation of existing, staggered roofline. One possible configuration is presented for illustration purposes in Figure 5-3. Design of the addition is outside the scope of this document.

Figure 5-3



The additional space could serve to more effectively connect existing rooms, so that it is not necessary to pass through bunk rooms to access bathrooms and common areas.

Additional space could be partitioned to provide expanded kitchen / dining capacity, ADA accessible restrooms, common space for living / meeting rooms, and additional bunk space.

The creation of an alcove between the additions can integrate indoor and outdoor space in a courtyard protected from the wind, and facing the peaks of the Sawatch Range.

Treatment of the existing shed and bathroom extensions off of the west elevation would have to be taken into consideration.

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5.2.8.1 Sitewide Action 8

Rehabilitation of existing structure

- Rehabilitate the existing structure for resident accommodations;
- Drill the permitted well (Permit # 281005 A) to supply domestic water to the structure;
- Connect the structure to the Moosehaven Sanitation System, Xcel natural gas line, and the Sangre de Cristo power grid;

Design and construction of west wing additions

- Using a contract design firm or faculty-led design team, design additions to the west elevation in accordance with the Deed of Conservation Easement and the Secretary's Standards to meet modern residential codes and accessibility standards;
- Explore the feasibility of utilizing solar and geothermal sources of renewable energy for heating and powering the structure.

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5.2.9 Maintenance Shop



Building F-9, Maintenance Shop

The Maintenance Garage (Building F-9) is a one and a half story, wood frame structure located between the Ranch Owners house and the main barn (see Map 5-3). Evidence of work benches and shop tools would suggest its historic use for maintenance of the vehicles and ranch implements that were part of the agricultural history of the site, and for the day-to-day maintenance of the ranch.

There are no potable water or sanitary facilities located within the structure, but there is evidence that the structure had electrical power at one time. A stove pipe penetrating the north roof would suggest that the structure was once heated by a wood stove.

The relationship of the proposed use with project objectives, the Secretary's Standards for Rehabilitation, and the Deed of Conservation Easement are found in table 3, Section 5.8.

The concept would be to return the garage to its original utilitarian function as shop space for day-to-day maintenance of the property, mechanical repairs, and secure storage for hand tools and power equipment. The structure can also provide shop space for the Historic Preservation students.



The Maintenance Garage can house the fire truck donated to CMC by the Climax Mine. The brush truck has first responder capabilities in the event of a grass or structural fire. The proximity of the Building F-9 to surface water provides a source of water that can be suctioned by the brush truck for use in fighting fires until the arrival of the local fire department. The two permitted domestic wells also may be used for fire protection.

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The closest fire station is located in Leadville; 10 to 15 minutes travel time to the north of the Homestead. An on-site caretaker could be trained in the use of the fire truck to provide immediate response and protection.

5.2.9.1 Sitewide Action 9

Rehabilitate the Garage to provide maintenance shop space and storage of fire protection equipment

- Stabilize and rehabilitate the garage to the Secretary's Standards and in compliance with the Deed of Conservation Easement.
- Ensure compliance with accessibility and code regulations
- Bring electrical power to the structure and re-wire the structure for light and power tools
- Pursue a permit to use water from the adjacent pond for fire protection
- Make necessary accommodations for housing the fire truck
- Determine an appropriate energy source for heating the shop space, including installation of photo voltaic solar cells on the south facing roof exposure

5.2.10 **Green Construction**

The scoping process elicited the recommendation to provide fundamental instruction in “Green Construction” and LEED Certification. LEED is the acronym for Leadership in Energy & Environmental Design, and is an internationally recognized green building certification system, providing third-party verification that a building was designed and built using strategies intended to improve performance in areas such as energy savings, water efficiency, CO₂ emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

LEED certification is getting more and more attention in the context of historic building rehabilitation. “The greenest buildings are the ones that are already built” and “historic building rehabilitation is the ultimate in recycling” are becoming part of the green building lexicon. More importantly, the United Nation’s 2007 Intergovernmental Panel on Climate Change (IPCC) Report “identifies [existing] buildings as the sector offering the greatest opportunity for cost-effective mitigation of greenhouse gas emissions.”⁴

*Over the whole building stock the largest portion of carbon savings by 2030 is in retrofitting existing buildings and replacing energy using equipment due to the slow turnover of the stock.*⁵

Hayden Homestead is positioned to be a demonstration project in energy retrofitting and achieving LEED certification in historic building rehabilitation. The Master Plan recommends using LEED certification at the most appropriate and long term cost effective level (silver, gold, platinum) as the standard for all rehabilitation work undertaken.

The scoping process also identified the desire for construction of a modern structure that could provide short-term on-site accommodations at the Homestead to house visiting dignitaries, stakeholders, and instructors, and to allow members of the CMC Foundation and Administration the opportunity to stay on site to observe and experience the Experiential Education Center first hand.

⁴ Tilly, Steve. Positioning Preservation in the Center of the Green Arena, Preservation Forum, Spring 2009, I. 23, No. 03

⁵ Ibid. Quote from IPCC Report.

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The opportunity exists to construct a “green” building on the Hayden Homestead that satisfies both recommendations.



Log bunkhouse with cook shed in background, Farrington Collection

Hired hands' working the Hayden Ranch in the early 1900's lived in a log structure located just south of the Bunkhouse (Building F-3) and cook shed (Building F-4). The spatial relationship of the footprint to the existing structures is illustrated on Map 5-4. The structure was lost to a fire in the 1940's.

Just south of the log bunkhouse was the blacksmith shop, visible on the 1939 air photo (Appendix A, Maps & Graphics). The blacksmith shop was also lost to fire in the 1940's.

The Deed of Conservation Easement states that “New construction is allowable in all historic building footprints, which includes additional buildings that are discovered by future research, archaeological or otherwise, on the site.”⁶

The concept would be to construct a new residential structure on the approximate footprint of the log bunkhouse, built to LEED standards and demonstrating the principles of renewable energy and sustainability.

The appearance of the new building would be designed to blend with the materiality and color schemes of the surrounding historic structures, and would be built to meet today's codes and requirements for residential construction. In accordance with the Secretary of the Interior's Standards, it would be distinguishable from the contributing structures so that it is identifiable as a contemporary, rather than historic structure.

⁶ Deed of Conservation Easement, Exhibit F
Hayden Homestead Master Plan: Section 5

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Original hand dug well

The original bunkhouse shared a hand dug well with Building F-3 (photo left). The new dwelling could be served by its replacement well (Permit # 281005A), which has been permitted but has not yet been drilled⁷. That well can be used for ordinary household purposes for up to 3 single family dwellings, fire protection, the watering of domestic livestock on a farm or ranch, and the irrigation of not more than 0.5 acres of home gardens and lawns.”

Sanitary disposal could be accommodated by connecting to the Moose Haven Sanitation Plant, but may require separate negotiations with the Homeowners Association if the construction of the building exceeds the four guaranteed sewer taps provided in the Easement Agreement and Conveyance (see Appendix B). Excess treatment capacity in the system is capable of accommodating the anticipated use⁸.

Natural gas and electricity are available on site to provide backup power and heat, and a Net Metering agreement with Sangre de Cristo Electric is available to channel any excess generated power back into their system for energy credit to offset electricity drawn from the grid anywhere on the Homestead.

The dwelling could provide instructional opportunities in the installation, service, and maintenance of passive solar, photo voltaic, wind, biomass heating, and geothermal exchange energy sources. The building could provide a working model of sustainable building, showcasing the use of renewable energy sources.

⁷ Office of the State Water Engineer, Well Permit # 281005A

⁸ Discussions with Jerry Knudsen, Moosehaven sanitation engineer

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5.2.10.1 Sitewide Action 10

- Contract with a design firm or create a faculty-led student team to prepare supporting documentation for appropriate treatments, materiality, and construction techniques for rehabilitation of historic buildings that meet LEED standards for certification.
- Contract with outside architectural and engineering firms, in collaboration with faculty-led student teams to design of a LEED certified, sustainable residential structure;
- Incorporate renewable energy technologies to provide an instructional model for student education in installation, maintenance, and operation of wind, solar, and geothermal energy;
- Prepare construction documents for authorization by the holder of the Deed of Conservation Easement and permitting agencies;
- Utilize the structure as a functional model of CMC's commitment to sustainability and as a teaching tool for LEED certification, and the application of renewable energy.

5.2.11 Dormitory

The scoping process identified the desirability of constructing new dormitory space on the Hayden Homestead to immerse students in the culture of sustainable ranch living as part of their experiential learning process.

In the event that dormitory space is deemed to be warranted on site, the Deed of Conservation Easement has identified Zone 3 as providing a location for new construction.⁹ (See Map 5-1)

Dormitories are assumed to be commercial uses from the standpoint of water consumption since, as is the case in a hotel or motel room, reimbursement for occupation of dorm rooms is collected.¹⁰ As such, it is assumed that a commercial exempt well permit would be required under Colorado Water Law, Section 37-92-602, to support construction of on-site dormitories.

The Hayden Homestead property encompasses 35.38 acres of land that was separated from the Hayden Ranch under an exemption from subdivision rulings prior to transfer to Colorado Preservation Inc. in 2005. Colorado Water Law limits the permitting of commercial exempt well permits to a single well on a 35 acre property subdivided after 1972, serving the drinking and sanitation needs of a single business, and limited to a pumping rate of 15 gallons per minute for a total of 1/3 of an acre foot of water (108,600 gallons) per year. (See Section 4.4.5)

One commercial exempt well permit has been prepared for the proposed Infill project between the two segments of the main barn. The space would be used for shops, labs and classrooms, with the assumption that students' payment for use of the building would classify the structure as a commercial use. The commercial exempt well would provide water and sanitation for the classrooms.

Additionally, the capacity to treat sewage from the dormitories in the Moosehaven Sanitation Plant would be assumed to exceed capacity of the four sewer taps (1200 Gallons / Day) for residential and light commercial use authorized by the Easement Agreement with the Homeowner's Association. (See Appendix B)

The construction of dormitories would, therefore, exceed the current carrying capacity of the infrastructure, and would require the purchase

⁹ Deed of Conservation Easement, Zone Map 3 and Exhibit F

¹⁰ Communication: Bruce Smith, Office of the State Water Engineer

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of water rights and preparation of a court approved augmentation plan to allow its permitting, as well as negotiations for additional sanitary treatment capacity at the Moosehaven Sanitation Plant.

5.2.11.1 Sitewide Action 11

Establish the infrastructure capacity necessary to support the addition of dormitory rooms on the Hayden Homestead

- Estimate the size and occupancy of the proposed structure;
- Quantify the water and sanitation needs;
- Contact the State Water Engineer to determine whether a commercial well permit could be issued on a 35 acre site subdivided after 1972, that already has one commercial exempt and two domestic wells in place, and if not;
- Locate a source of water, prepare an augmentation plan, and petition the water court to authorize the legal right to put the water to the desired end use (See Section 4.4.5)
- Contact the Moosehaven Homeowners Association to determine whether, and under what conditions they would allow the effluent from a dormitory to be treated in their sanitation plant;

Design and permit the Structure

- Prepare architectural drawings and engineering plans;
- Make application to the appropriate jurisdictions for required permits;
- Commence construction.

5.2.12 Infrastructure

No construction, alteration, or remodeling that would affect the present façade will be undertaken without prior written permission of the Colorado Historical Foundation. Infrastructure will be developed in compliance with Exhibit F of the Deed of Conservation Easement (Appendix C) and the Secretary's Standards. All construction will comply with the governmental regulations, ordinances, and appropriate codes relating to building materials, construction, and use.

No topographical or landscaping changes will be allowed except as expressly described in Exhibit F, and only when such changes are consistent with and reasonably necessary to promote the conservation purposes of the Easement.

No above ground utility transmission lines will be constructed, except those reasonably necessary for serving the existing buildings and for which utility easements have been recorded. All other utilities will be buried.

Natural gas is delivered to the site via a high pressure farm tap and feeds the residential dwellings north of the main core of the Homestead and the Moosehaven Condominiums. The service tap is on CMC property, and has sufficient capacity to serve the anticipated adaptive uses of the site. The service line can be extended east along the boundary between the Homestead and the private properties, and then buried beneath the main access road to service structures on either side of the roadway.¹¹

Potable water will be provided through the drilling of wells, as permitted by the office of the State Water Engineer. Currently two replacement wells are under permit (Section 3.5.4) that can support a total of four residential units, one acre of outside irrigation, fire protection, and livestock watering. Any change in use of residential structures (e.g. the adaptive use of the Ranch Owner's house as a Visitor's Center and Exhibit Hall) will require discussion with, and authorization from the State Engineer.

A permit application for a commercial exempt well to service the Classroom and Conference Center has been prepared, but has not been submitted pending completion of this Plan. Any additional potable water use will require acquisition of water rights and an Augmentation Plan authorized through Colorado Water Court.

¹¹ Jake Farber, Xcel Energy Engineering Department, site visit, 8/24/10

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Effluent will be treated at the Moosehaven Sanitation Treatment Plant unless otherwise indicated (Section 3.5.3). CMC has the right to four taps on the plant, not to exceed 1200 gallons per day, for light commercial and residential use. Additional capacity on the system exists, but would have to be negotiated with the Homeowners Association. Portable sanitation units (Porto-Potties) may be required for special events, where the capacity of the on-site sanitation is exceeded. Vault or composting toilets, which are pumped or otherwise cleaned out, and do not require a leach field or water supply may also be considered.

Electrical service will be provided by photovoltaic cells and wind turbines, where appropriate, with backup power provided by Sangre de Cristo Electric. A net metering agreement with Sangre de Cristo will be used to provide backup power when needed, and to accept surplus energy generated by renewable sources on-site for credit against the use of their power.

Transportation corridors, trails, and parking areas intended for light intensity of usage compatible with ordinary activities at the site will be gravel or porous pavement, and be consistent with the color and texture of the existing core road. Temporary parking for special events, in excess of the capacity of designated parking areas, will be on designated lands (Section 5.5.4) that have been mowed to prevent contact of dry grass and hot catalytic converters.

5.2.12.1 Sitewide Action 12

Design infrastructure in compliance with the Deed of Conservation Easement and governmental regulations, ordinances and codes.

- Negotiate with the Moosehaven Homeowners Association for any additional taps onto their Sanitation System;
- Negotiate with Xcel Energy for expansion of their natural gas line to serve the Homestead;
- Discuss any changes in use of residential structures with the State Water Engineer to determine the right to apply water from the replacement wells to adaptive uses;
- Submit application for the Commercial Exempt Well to serve the Classroom and Conference Center;
- Enter into a Net Metering Agreement with Sangre de Cristo Electric;
- Consult with and receive authorization from the Conservation Easement holder prior to any infrastructure construction or installation.

5.2.13 Renewable Energy



Typical solar Photovoltaic cell

Renewable energy is energy generated from natural resources such as sunlight, wind, tides, burning of biomass, and geothermal heat, that are naturally replenished. The additional benefit of renewable energy sources is that they produce fewer greenhouse gasses than traditional carbon based means of power production, reducing carbon dioxide emissions to the atmosphere.

The use of renewable energy sources makes economic and environmental sense for providing heat and electricity for structures at the Hayden Homestead, and also provides the added benefit of making infrastructure available on which to train CMC students in the technologies and operations of one of the fastest growing employment sectors in the U.S. today. A recent article in USA Today predicts that clean energy jobs will triple in the next 10 years, and that many of these jobs will be available to students with associates degrees and vocational training from a community college.¹²

Colorado Mountain College is at the forefront in providing education and training in renewable energy through its Solar Energy Certificate Program at the Rifle Campus, which provides certificates in the areas of Basic Solar Photovoltaic, Photovoltaic Installer, and Solar Thermal Installer. The courses prepare students for National Board of Certified Energy Practitioners (NABCEP) certification. These courses are currently not available on the Timberline Campus in Leadville, Colorado.

The Hayden Homestead provides the natural resource base and lands suitable for expanding the existing Solar Energy curriculum to incorporate instruction in renewable energy technologies such as wind power, geothermal exchange, and biomass heating, while providing heat and power to the structures of the Hayden Homestead.

¹² 'Hot' jobs? Health care, energy, many not requiring bachelor's, Lindsey Anderson, USA Today, Sept. 2, 2009

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5.2.13.1 Photovoltaic and Solar Thermal Power

Leadville Colorado boasts over 300 days of sunshine a year. At an elevation of 9180 feet above sea level, the intensity of the radiant energy from the sun is significantly greater than at sea level. Total global irradiance has been estimated at $8\% \pm 2\%$ per 1000 meters in elevation gain¹³. At an elevation of over 9100 feet, the Hayden Ranch receives from 18 to 28% more energy from the sun than at sea level. The location of the Homestead in the broad valley floor of the Arkansas River, away from topographic and vegetative screening, affords it excellent exposure to available sunlight throughout the daylight hours.

The proposed Hayden Homestead Center for Sustainable Agronomy will incorporate the use of passive solar gain and solar thermal storage for heating the greenhouse, and photo-voltaic cells for generating the energy to run lights, fans, irrigation pumps, vents, heat exchange pumps etc.

The Deed of Conservation Easement also allows for the placement of roof mounted photovoltaic cells on the south facing roof pitches of the historic structures located in Zones 1 and 2 (See Map 5-4), as well as the installation of solar fences in Zone 2¹⁴. This offers the potential to demonstrate clean energy consumption at the point of generation, and provide instruction for renewable solar energy technologies at the residential and commercial levels on the site.

New construction, such as the expansion on the west side of the bunkhouse (Building F-3), or the residential structure (Infill-2) that may be constructed on the historic footprint of the Bunkhouse that burned down in the 1940's, can incorporate solar power into their design and construction.

CMC can benefit from Sangre de Cristo Electric's net metering program that buys power generated in excess of demand, and provides power as needed when demand exceeds the power generated on site.

The concept would be to encourage energy generation at the point of consumption, with the ultimate goal of arriving at an energy neutral position where supply and demand are balanced through the net metering agreement with Sangre de Cristo Electric.

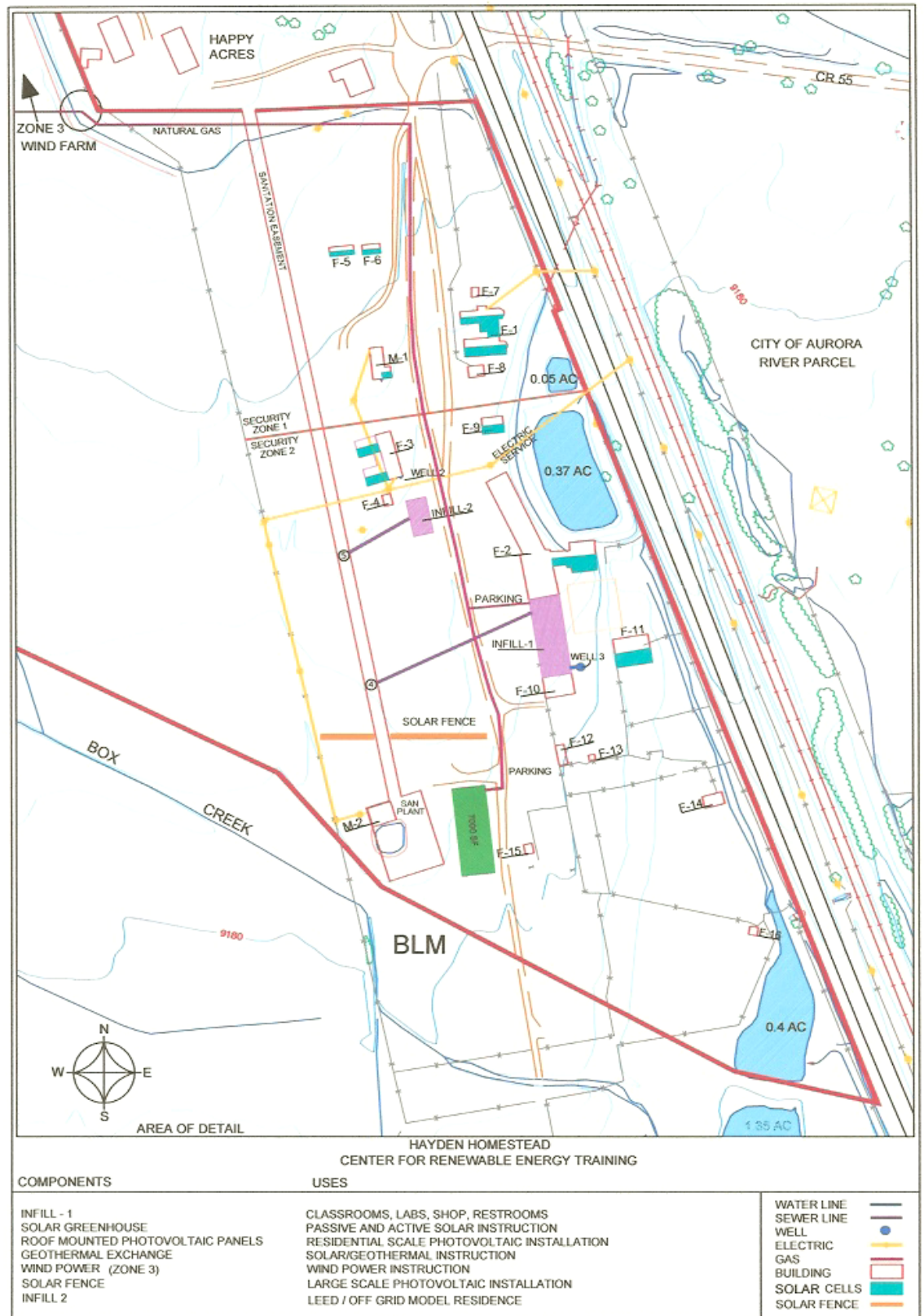
The goal would be to convert the energy and heat provided by the sun for supplemental space and water heating, and generation of electricity to support the utilization of the structures of the Hayden Homestead.

¹³ Increase in Solar UV radiation with altitude, University of Innsbruck

¹⁴ Deed of Conservation, Exhibit F, pp2

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Map 5-4 Renewable Energy: Solar Applications



5.2.13.2 Geothermal Exchange

The Hayden Ranch Headquarters sits atop a vast underground aquifer that stores millions of gallons of water at a relatively constant temperature, acting as a “thermal bank.” Based on data observed from the existing wells that have served the Homestead since the late 1800’s, the water table beneath the homestead is typically only 5 to 10 feet below the surface, reducing the distance that fluid has to be “lifted” to reach the facility for use in geothermal exchange.

Geothermal exchange technology takes advantage of the moderate heat energy stored in the groundwater. The temperature of the shallow groundwater is warmer than the outside air in the winter and cooler in the summer. Like a refrigerator or air conditioner, geothermal exchange systems use a heat pump and heat exchanger to force the transfer of heat from the groundwater source in cold months, or transfer heat back to the ground in hot months.

In the heating mode, the external fluid is pumped from the earth (heat field) at 8-16 degrees Celsius and passes through the heat exchange unit. Within the heat exchanger the internal fluid is allowed to expand and change state into a gas (vaporization) drawing the heat of vaporization from the external fluid. This gaseous fluid is then pumped to the compressor which compresses and liquefies the fluid releasing the heat of vaporization into the airflow within the heating system. The cooled external fluid is then pumped back into the loop (closed loop system) or the ground (open system) outside the heated space, where its temperature is lower than the temperature of the surrounding soil. It once again absorbs the heat from the earth and the cycle repeats.

Systems can be either open or closed. Open systems pump water from one place to another, remove or add heat, and then return the water to the ground. Since the groundwater table is tapped in an open system, a well permit is required, even though the system is considered to be non-consumptive. Permitting of a well for geothermal exchange should not impact the regulatory status of the consumptive use wells that serve the residential and commercial needs of the site.

Closed systems circulate a fluid which never leaves the heat pump system. A fluid is circulated through the pipe and absorbs heat from the Earth in heating mode or sinks heat into the Earth in cooling mode. The fluid is typically water, to which antifreeze such as propylene glycol, denatured ethanol, or methanol is added.

The pipe in a closed loop system is installed under the surface of the Earth below the frost line in either a horizontal or vertical layout (drilled

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well), depending upon space restrictions. The length of the pipe varies with the heating or cooling requirements, the soil type, pipe installation layout, and the location of the installation. Geothermal exchange may be combined with solar heating to form a geo-solar system.

5.3.13.3 Wind Power



Those who have worked in the Hayden Ranch area of the Upper Arkansas River Valley know too well the frequency and velocity of the winds that channel through the valley. Framed by some of Colorado's highest peaks the surrounding mountains often generate their own diurnal weather patterns. These airflows can be captured to run wind turbines, without producing greenhouse gasses, and provide a renewable source of electrical energy to help power the Hayden Homestead.

The Homestead location also benefits from 1) proximity to transmission lines enabling surplus power to be channeled to the grid for net metering, displacing purchased energy costs 2) an adequate land base for siting turbines, and 3) the provision for the construction of wind power infrastructure within Zone 3 (Map 5-1) of the Deed of Conservation Easement. (Appendix C, Deed of Conservation Easement)

Wind power is said to be growing at a rate of 30% annually. As a rapidly expanding industry, there is an increasing need for trained practitioners. In his USA Today article, Lindsey Anderson predicts that wind energy jobs will expand at the fastest rate amongst the renewable energy job markets, generating 285,000 new jobs in the next decade.¹⁵

5.2.13.4 Biomass Heating

Colorado Mountain College has initiated a Certificate of Proficiency program in Forestry at its Timberline Campus. The program trains practitioners in the skills and best management practices of the forest industry, and provides practical, hands on experience in harvesting and processing forest products. In the process of clearing trees destroyed by infestations such as the mountain pine beetle, and harvesting salvageable forest products, such as saw lumber, posts and

¹⁵ 'Hot' jobs? Health care, energy, many not requiring bachelor's, Lindsey Anderson, USA Today, Sept. 2, 2009

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poles etc., a waste stream of chipped combustible material is produced that could be used to fuel a biomass heating system to heat the structures of the Homestead, replacing non-renewable fossil fuel sources.

The opportunity also exists to study or do research on biofuel production from the forest product waste stream, agricultural products, or organic materials such as algae as part of the educational process. Since these biofuel products are typically considered to be “energy negative”, that is, requiring more energy to produce than is contained in the final product, they are not currently being considered as an energy source for sustaining the project, but may have application in the education and understanding of renewable fuels, and could be taught within the conditioned space of the greenhouse.

5.2.13.5 Sitewide Action 13

Incorporate renewable energy technology into the rehabilitation of historic structures and the design of all new construction on the site

- Gather site specific data and analyze site solar, wind, and geothermal potentials;
- Design and orient new structures to incorporate and maximize passive solar gain and geothermal potential;
- Select building materials with favorable thermal properties for maximizing solar mass and heat storage, and insulating against heat loss;
- Design interior spaces that naturally circulate air;
- Design new structures to incorporate selective shading (overhangs etc.) to protect against seasonal heat gain;
- Design new structures with a low surface area to volume ratio to make efficient use of solar gain and limit heat loss;
- Retrofit historic structures to maintain the exterior façade to the greatest extent possible per the provisions of the Deed of Conservation Easement;
- Establish a net metering agreement with Sangre de Cristo Electric;
- Develop curriculum for renewable energy instruction.

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5.3 Historic Preservation Program



Hayden Homestead experiential learning center

The over-arching goal of the Hayden Homestead Center for Historic Preservation (HP) Studies is to adapt the property to become an experiential education laboratory for teaching the skills and trades that support the field and business of historic preservation.

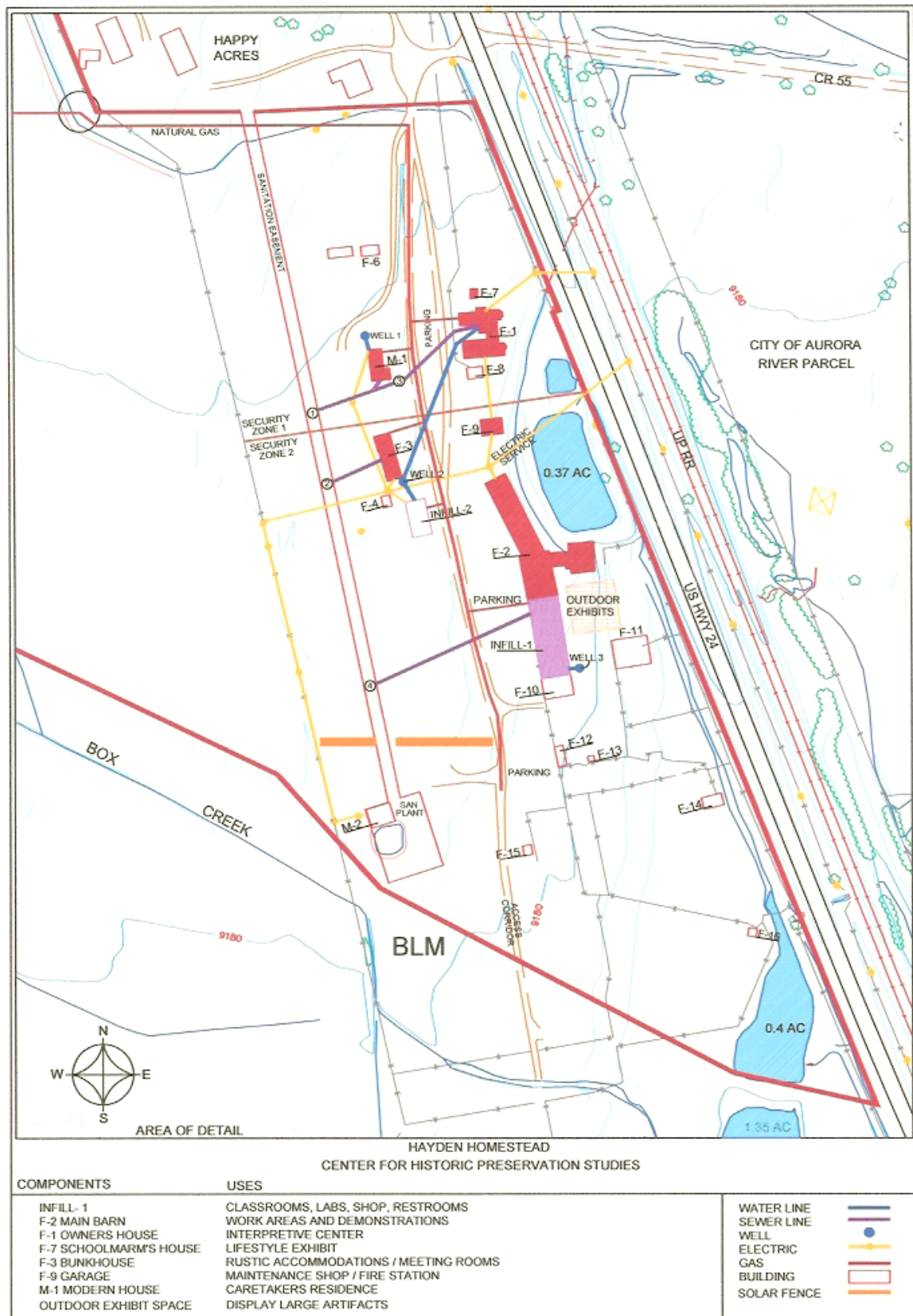
The Hayden Homestead National Historic District provides numerous real-world opportunities for preservation projects in the areas of masonry, metal working, carpentry, archaeology, HABS documentation, artifact preparation and curation, and interpretation.

Organized educational activities would make use of the classrooms, labs, and shops contained within the conditioned space of the Classroom and Conference Center (Infill – 1) and work space and demonstration areas available in the Main Barn (Building F-2). Suggested adaptive uses associated with the Program would also include sitewide adaptive uses of the bunkhouse accommodations, the interpretive center, maintenance shop, and caretaker's residence.

Map 5-5 depicts the spatial relationship of these structures within the Homestead. Table 3, located in Section 5.8 lists resources, infrastructure needs and compatibility with the Deed of Conservation Easement and the Secretaries Standards.

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Map 5-5 Historic Preservation



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Components

In addition to the sitewide uses and actions listed in Section 5.2, the HP program would incorporate the following adaptive uses:

5.3.1 Main Barn



Main Barn, north and south wings, looking east

The main barn was constructed for the primary purposes of storing hay, tending to the needs of the livestock, and activities and maintenance consistent with operating a self sustaining hay and cattle ranch. In its original configuration (See 1939 air photo, Appendix A), the main barn and South Barn / Manger (Building F-10) were connected by a 120 foot long center section.

In the mid 1980's, this center section of the barn was propped up with railroad rails in a failed attempt to keep it from collapsing. Walt Clotworthy, the ranch manager at the time, made the decision to remove this section before its collapse could adversely affect the structurally stable portions of the building. It was deconstructed and the barn board was salvaged and sold.¹

During their tenure as landowner in 2002, the City of Aurora contracted with K.W. Woodworks to straighten and stabilize the exposed ends of the Main and South barns, and to enclose the gabled ends to keep out the weather. The south end of the north barn was listing almost 15 degrees to the east (see photo), and in imminent threat of collapse.

¹ Personal communication, Bobby Hockett, former Hayden Ranch hand
Hayden Homestead Master Plan: Section 5

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North Barn before stabilization, circa 1999



North Barn following stabilization, circa 2002

Dry rotted posts were cut off above the point of deterioration and set on concrete pedestals, and the straightened walls were cabled to concrete anchors to bring them back to near vertical, braced, framed and sheeted with Oriented Strand Board.



Collapse of East Wing, September, 2002

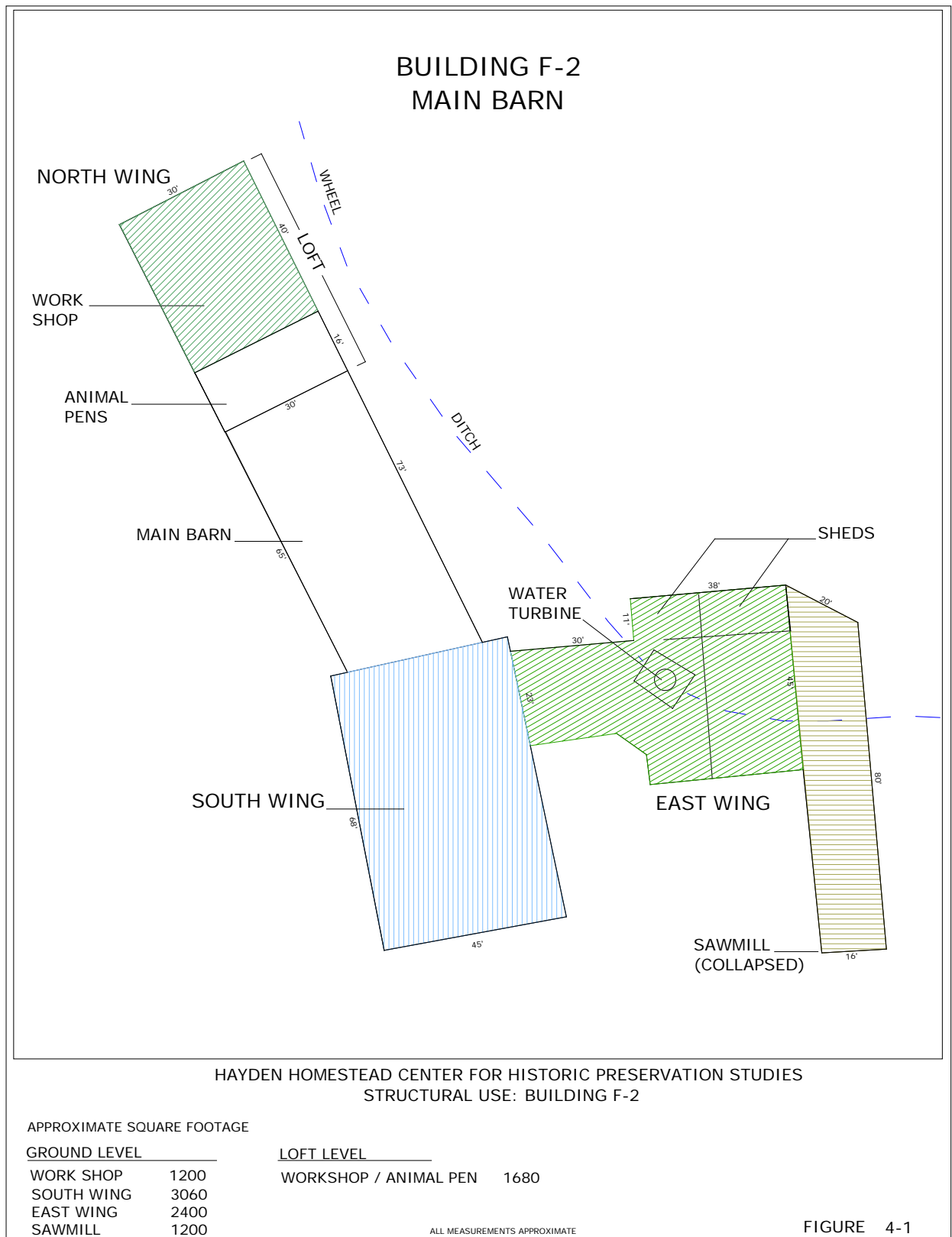
The sawmill section of the east wing collapsed during a high wind event in September of 2002.

The remaining barn (Building F-2) is described as consisting of three wings, encapsulating approximately 12,000 square feet of enclosed space. The north and south wings were structurally stabilized and re-roofed as part of Phase I Stabilization in 2008. The East wing is scheduled for stabilization in Phase III, anticipated for implementation in Spring 2011.

The elements of the barn that would support the needs of the Historic Preservation Trades Program are highlighted in Figure 5-4, and consist of the workshop and loft at the north end of the North wing, the South Wing, and the turbine room and sawmill of the East wing.

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Figure 5 -4 Main Barn Partitions



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5.3.1.1 North Wing



North Wing, east elevation

The North Wing of the Main Barn is partitioned into three sections, including a workshop, indoor animal pen, and the main hay barn. A hay loft extends over the workshop and animal pens on the second level.

The barn was constructed to “breathe”, in order to allow air circulation around the stored hay and animal enclosure, and is neither air tight or insulated. The space is not wired for electricity, and has no potable water source or sanitary facilities.

The north workshop consists of approximately 1200 square feet of enclosed space and is accessed by two large exterior doors on the western elevation. The shop includes two windows on the north and east elevations, providing minimal natural light and air circulation. The floor is dirt, and the current use of the space is for storage. An evaluation of items stored in the workshop is recommended to separate historically significant artifacts from common “household junk.”



Hay loft, North Wing of Main Barn

A stairway ascends from the shop to a second story hay loft. The gambrel-roofed hay loft extends over both the workshop and the animal pens, encompassing approximately 1,680 square feet of enclosed space.

The workshop space could house the metal working shop that was donated to CMC by a historical group in Georgetown, Colorado. The metal working shop, including tools and templates for tin smithing and metal forming, is from the same period of significance as the Hayden Ranch.

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The metal working shop provides an opportunity for students to attain a working knowledge of the tools and techniques used to fabricate the common and ornate metal products of the era, and reproduce components for both on site and off site restoration and rehabilitation Projects. The overhead loft can be used as secure storage for HP equipment and materials.

The main chamber of the North Wing of the barn and the animal pen enclosure could be used by the HP Program for meeting space, demonstrations, or activities requiring protected indoor space. This section of the Main Barn could also be used for community events, described in further detail in Section 5-5.4.

5.3.1.2 South Wing

The South Wing of the Main Barn encompasses approximately 3060 square feet of enclosed space, and is currently partitioned off with pole corrals. The corrals and a calf scale located in the South Wing suggest historic use of the space for tending to the needs of livestock.



South Wing, west elevation

The South Wing is contiguous with the north wing and will be connected to the Infill (Classrooms and Conference Center). It can expand the useable area of the Infill, or it can provide flexible space associated with the Community Activity Center, the HP program, or demonstrations and exhibits of the line-shaft equipment acquired by the College.



Interior, South Wing and stabilized south wall

Stabilization of the South Wing gable wall was undertaken by the City of Aurora in 2002. Phase I of the Stabilization Plan continued the effort with the application of a new shake shingle roof.

Restrooms to service the Main Barn would be located in the Learning Center, and could be accessed through the South Wing. There is currently only temporary electrical service within the Main Barn.

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5.3.1.3 East Wing

The East Wing originally accommodated the water turbine and the line shaft equipment that powered the stationary hay baler, sawmill, and machine shop in what constituted the industrial core of the ranch. The East Wing encompassed approximately 3600 square feet of enclosed space prior to the collapse of the 1200 square foot sawmill section in September of 2002.



East Wing looking west

The East Wing offers the opportunity to restore the water turbine and reconstruct the line shaft belts and pulleys and machines for demonstration and interpretive purposes. Reconstruction of the collapsed sawmill could occur as a component of the rehabilitation of the Main Barn.

The purchase of the Hayden Ranch by the City of Aurora in 1998 was for the purpose of acquiring ranch water rights for their municipal use, therefore, the 16 c.f.s. of water in the Wheel Ditch that historically fed the water turbine is no longer available. An analysis of acquiring consumptive or non-consumptive water rights to fill the ditch and power the turbine indicated that historic use of the ditch was not financially feasible.

A schematic of a non-consumptive use of water from the pond located immediately east of the Main Barn to power a demonstration version of the water turbine was provided to the State Water Engineer who determined that, "As long as your water system remains as a closed type of system with no consumption you would not need a permit for the water wheel use."² (See Appendix E, Water Turbine Demonstration Project)

The east wing could also provide display space for historic exhibits interpreting the impacts of the industrial revolution and the ingenuity of the ranch's early inhabitants circa 1900 - 1925.

² Correspondence, Steve Kastner, Office of the State Water Engineer, 10/2/09
Hayden Homestead Master Plan: Section 5

5.3.1.4 Action Plan

Design and lay out shop space and demonstration areas within the Main Barn

- Conduct research and archaeological investigations and document the turbine and line shaft equipment;
- Design either by an outside design team or internal faculty-led student design team to lay out the shop space and demonstration areas within the Main Barn to incorporate the metal working shop, carpentry areas, saw mill, material storage, and the water wheel/ line shaft demonstration areas;
- Design any conditioned space within the Main Barn in compliance with code requirements and the Deed of Conservation Easement;
- Design and engineer heating, insulation, ventilation, fire detection and protection, and power requirements to current code;
- Prepare rehabilitation plans for review and approval by appropriate stakeholders and jurisdictional agencies;

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5.3.2 Hayden Homestead Interpretive Center



The Hayden Homestead is one of a handful of intact ranches in Colorado representing the architecture, industry, technology, and lifestyle of the state's ranching heritage during the late 19th and early 20th century. The Hayden Ranch pre-dates the recognition of Colorado as a State, fueled the literal "horsepower" that supported the Leadville mining boom, displays a record of ownership by some of the most influential pioneers in Colorado history, is officially recognized on both the State and National Registers of Historic Places, is framed by Colorado's highest peaks and the headwaters of one of Colorado's most visited and used rivers, and is a visual icon along the Top of the Rockies National Scenic and Historic Byway

Ownership of the Homestead by Colorado Mountain College provides not only the opportunity to add a significant historic district to Lake County's portfolio of cultural heritage tourism opportunities, but to provide education in the fields of interpretation, information and visitor services, preparation and curation of artifacts, design and presentation of historic displays, and managing of historic properties

As defined by The National Trust for Historic Preservation, "Cultural heritage tourism is traveling to experience the places, artifacts and activities that authentically represent the stories and people of the past and present. It includes cultural, historic, and natural resources." Additionally, heritage assets universally appeal to visitors and residents alike, increasing support for preservation and conservation.

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Heritage tourism is one of the fastest growing segments of the Colorado tourism industry, and is a cornerstone of the local Leadville economy. A 2005 study commissioned by the Colorado Tourism Board³ indicated that heritage tourism generated \$3.4 billion in direct and indirect economic impacts, and accounted for 60,964 jobs throughout the state of Colorado.

The Historic Preservation Program at Colorado Mountain College is already incorporating heritage tourism into its curriculum. Ownership of a National Historic Register property presents numerous opportunities for not only research and documentation, archaeological investigations, and restoration and rehabilitation, but also the collection, display and interpretation of historic artifacts.

Discussions with CPI and AE Design suggest that the Ranch Owner's house (Building F-1) and the adjacent Schoolmarm's residence (Building F-7), could become an interpretive and visitor center for the Homestead.

This Plan would recommend that Building F-1, the Ranch Owners House, and Building F-7, the Schoolmarm's residence (See Map 5-5) could be rehabilitated to exhibit photography, tools, crafts, and relics depicting living conditions and technologies during the period of significance; teach the methodology of archaeology and techniques of collection, preservation, preparation, interpretation, display, and curation of historic artifacts; and provide seasonal classroom and community gathering space.

The relationship of this adaptive use with the Secretary's Standards and the Deed of Conservation Easement are illustrated on Table 3, Section 5.8.

Students would have opportunities to participate in the collection and preparation of artifacts, research, planning, design and construction of displays, and collection and presentation of written and oral histories. At events such as Ranch Heritage Days, students could demonstrate the crafts and skills that they have learned in their respective courses and programs and act as docents and guides for visitors to the ranch. Existing college classes such as speech and creative writing could be tailored to enhance student's interpretive "story telling" skills with real world application.

³ The Economic Benefits of Historic Preservation in Colorado, Clarion Associates, July 2005.

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Displays and interpretive signage could be refreshed at regular intervals providing successive opportunities for students to participate in their design and construction, and, in turn, providing the visiting public with an evolving and ever changing glimpse into the role of the Homestead in the development of Leadville and Colorado History.

Students could also design a self guided interpretive trail through Zones 1 and 2 of the site, utilizing signage and displays that highlight the utilitarian functions and architectural significance of the remaining structures and the related natural and historic landscape. Buildings F-12, F-13, and F-15, which have limited adaptive use, could be interpreted along the trail.

Infrastructure needs will vary depending on the final design and desired outcome of the adaptive re-use of the structures.

For example, If the structures are to be used as exhibit space on a seasonal basis, only electrical service for power tools, lights, security and monitoring, and animated displays would be required. Power poles that traditionally served the buildings are located in close proximity to the structures, and excess capacity within the grid is available to service the anticipated loads⁴.

However, if building occupancy during the winter months is anticipated, the conditioned space of Building F-1 will require a heat source. Options for providing heat can range from the traditional wood burning stoves that historically heated the space, to the retrofitting of the structure to accommodate a natural gas furnace, electric baseboard heat, or a combination of solar and geothermal exchange.

Natural gas is available⁵ on site, and the addition of roof mounted solar panels on the south facing exposures of the Ranch Owners House is an allowable use under the Deed of Conservation Easement⁶.

If the structure is only intended to provide exhibit space, restrooms located elsewhere on the Homestead can provide sanitary facilities and potable water. If rooms within the structure are to be used as classrooms, offices, or community meeting space, planning should incorporate rehabilitation of the existing restrooms, and connecting them to the Moosehaven Sanitation System. Given the high water table underlying Building F-1, a conventional septic system would be expected to fail. Depending on the relative elevations of the outfall at

⁴ Discussion with Sangre de Cristo Electric engineering department

⁵ Discussion, Xcel High Pressure Gas engineering Department

⁶ Deed of Conservation Easement, Exhibit F

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the building and the main line, a lift station may be required to pump effluent from the restrooms to the main collection line.

Potable water may be available from permitted well number 281005 A, which can accommodate up to 3 residential units, but would require consultation and authorization from the State Water Engineer, since the traditional residential use of the structure would be modified in its adaptive re-use to classroom/meeting space. In the event that the existing well permit will not allow a potable water supply to the Ranch Owner's House, a composting or vault toilet and portable hand wash station, which would not require a dedicated water source, could be constructed to meet both the needs of the Interpretive Center, and the multiple community needs identified in Section 5.5.

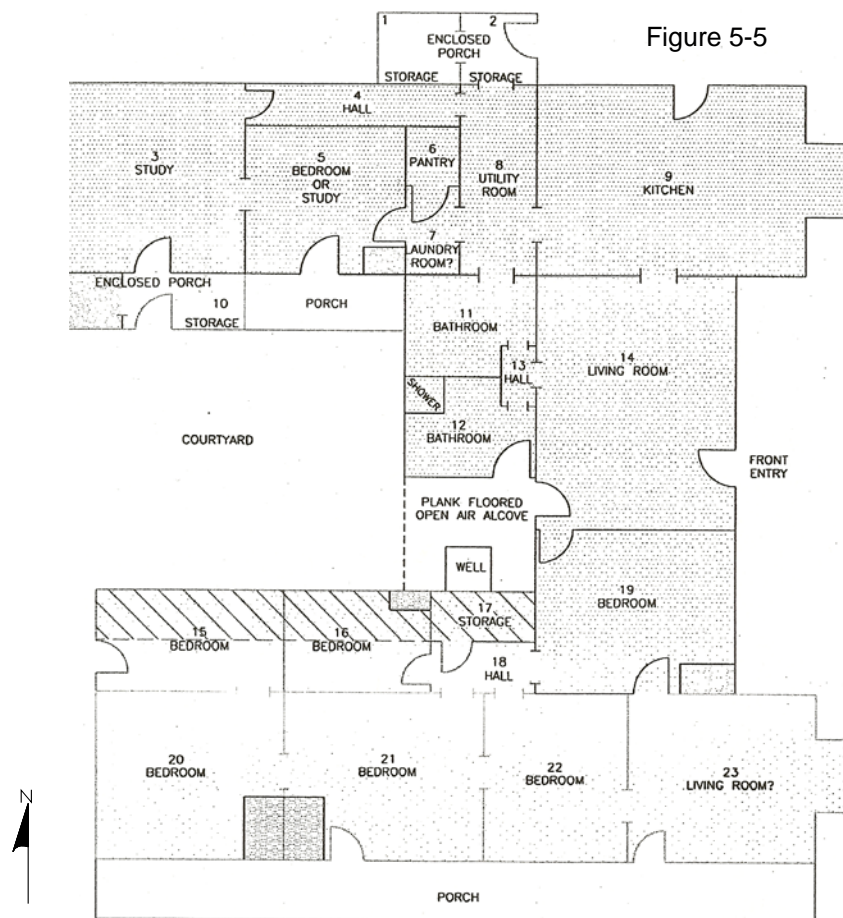


Figure 5-5

Potential adaptive uses of the structure (Figure 5-5) could include:

1) The larger rooms along the eastern elevation of the structure (9, 14, and 19) would be conducive to day-uses, such as community meeting rooms or classroom space.

2) Rooms on the north wing (3, 5, 6, 7, 8 and 11) could serve as reception, restroom, and office space for servicing visitor needs.

3) The bathroom (12) on the east wing provides an exterior door off the alcove that could service ancillary community uses identified in Section 5.5.

4) The rooms located along the south wing could be used for storage (15, 16, 17) and display of artifacts (20, 21, 22, 23), media rooms for displaying historic photographs or video and multimedia presentations

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depicting the history and rehabilitation of the Homestead, period décor and technology from the turn of the century.

Actions required to rehabilitate the structure for the adaptive use would depend on the level of activity and period of use anticipated. At a minimum electrical power and restrooms would be required.

5.3.2.1 Action Plan

a) Rehabilitation of the Ranch Owners house (Building F-1) for adaptive use

- Use the design exercise to provide hands-on education in complying with the Secretary's Standards and the Deed of Conservation Easement;
- Match the infrastructure requirements for power, sanitation, and communications with the seasonal or year round use, whichever is decided;
- Pursue discussions with State Water Engineer to determine whether the adaptive re-use of the historic residential structure as a visitor/interpretive center would be an allowable use of domestic well #281005;
- Contract with a design firm or create a faculty- led student team to determine and prepare supporting documentation for appropriate treatments, materiality, and construction techniques to implement rehabilitation;
- Use students to rehabilitate the interior of the structure for the desired end use in order to provide hands-on preservation trades experience;
- Connect the structure to infrastructure (water, power, sanitation) as appropriate;
- Develop the interpretive program in coordination with the overall ranch plan; and,
- Develop protocols for operations and maintenance.

b) Rehabilitation of the "Schoolmarm's" residence (Building F-7) as an interpretive display

- Faculty-led student design for rehabilitation of Building F-7, based upon research and documentation of use as a Schoolmarm's residence;
- Consultation with and approval of plans from appropriate stakeholders;
- Connection to electrical power;
- Develop protocols for operations and maintenance

5.4 Sustainable Agronomy



The story of the Hayden Ranch provides a model of self sufficiency and sustainability. Its agricultural history demonstrates the sustainable use of the land for the cultivation of hay, but also reveals adaptive uses including 1) the grazing of cattle for subsistence and sale on the open market, 2) raising and selling of poultry, eggs, milk, and vegetables to support local nutritional needs⁷ 3) harnessing the power of moving water to process agricultural and forest products, and 4) the mining and processing of peat moss for sale to the agronomy industry. Combined, these adaptive uses secured the Ranch's economic viability.

Sustainability is described as an economic, social, and ecological concept. It is intended to be a means of configuring human activity so that society and its members are able to meet their needs and express their greatest potential in the present, without compromising intrinsic values and resources for future generations.

In a 2009 USA Today article, Julian Dautremont-Smith of the Association for Sustainability in Higher Education observed that "The past few years, society as a whole has become increasingly interested in sustainability. Higher education has been swept up as well."⁸

According to David Soto of the Princeton Review, "Student interest is driving colleges to create programs that offer training in sustainability. Two thirds of students surveyed for the company's recent *College Hopes and Worries* survey said a college's environmental commitment would be a factor in where they applied." He also notes, "Students are really savvy shoppers these days, so they're realizing with a changing economy and green jobs looking to take a leap within the next couple of years, they want to be armed with these types of skills."⁹ The article also reports that "A growing number of schools, including community colleges are training students to operate "green technology."

The Hayden Homestead is uniquely positioned to enhance Colorado Mountain College's commitment to sustainable practices and education through leadership, hands-on education, advocacy, and service to the community in areas such as waste reduction, recycling, energy and renewable power, green building, environmental best practices, and healthy and sustainable food systems.

⁷ Oral histories, Betty Farrington 09/28/05, and Marianne Patton 06/06/06

⁸ *Sustainability could secure a good future: College students flock to "green" degrees, careers*, Jillian Berman, USA Today, August 3, 2009

⁹ Ibid

Hayden Homestead: Master Plan

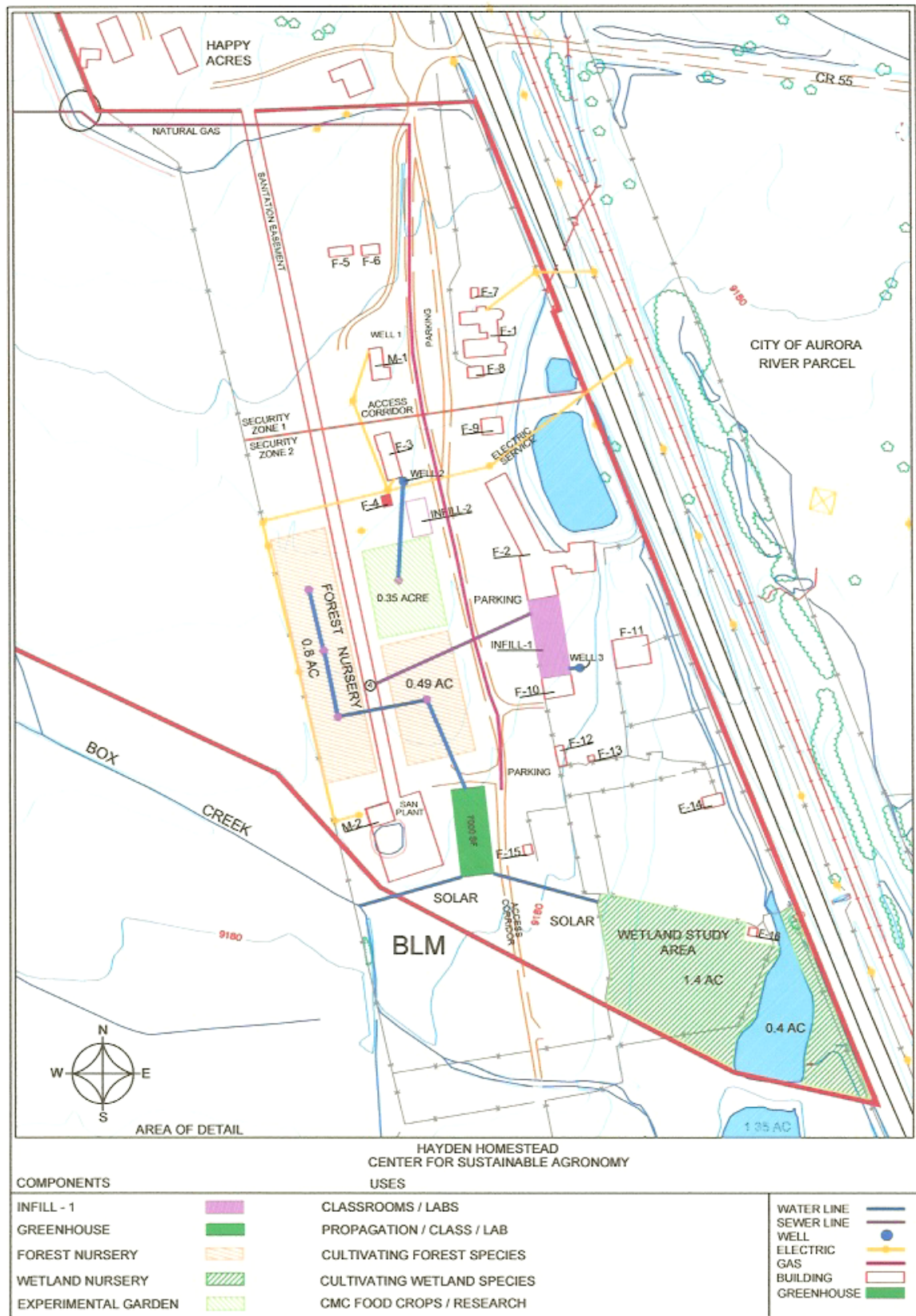
Desired educational outcomes satisfied by the Sustainable Agronomy Project would include:

- Providing a hands-on, experiential learning opportunity for students of Colorado Mountain College as a platform for pursuing advanced studies or entry level employment in the areas of sustainable agronomy, re-forestation, operation and maintenance of renewable energy technologies, wetland mitigation, and environmental best practices;
- Advancing the current state of environmental knowledge through research and development of methodologies and techniques for terrestrial and wetland species propagation and habitat restoration;
- Providing the vegetative species necessary to support in-house reclamation work currently being undertaken by the CMC Natural Resource Management Program (NTM), such as the sulfate reducing bioreactors and constructed wetlands at the Dinero Tunnel and Tiger Mine sites;
- Providing a source of regionally appropriate terrestrial and wetland vegetative species to the public and state and federal resource agencies for restoration of natural resource damages from past mining practices, and to lessen the impacts of naturally occurring events, such as the invasion of the mountain pine beetle;
- Providing an adaptive re-use for the Hayden Ranch Homestead that is appropriate within the historic agricultural context of the site, and that has the potential to become economically self-sustaining;
- Providing food sources close to home for the College and the local community in support of the concept of sustainability and the College mission of community outreach and service.

The components of the Sustainable Agronomy Center are illustrated on Map 5-6. Table 4 in Section 5.8 provides the listing of resources and infrastructure needs generated by the project, as well as the relationship of the adaptive Use with the Secretary's Standards and Deed of Conservation Easement.

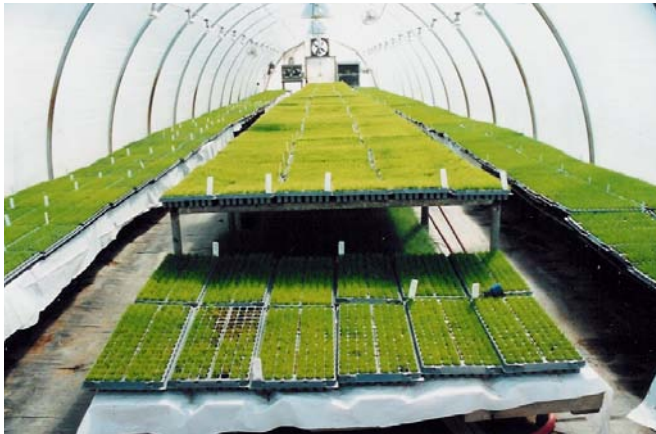
Hayden Homestead: Master Plan

Map 5-6 Center for Sustainable Agronomy



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5.4.1 Hayden Homestead Greenhouse



Typical wetland propagation Greenhouse, Fort Lupton, Colorado

At elevations ranging from 9,000 to over 14,000 feet above sea level, the growing season in the Upper Arkansas River Basin is extremely short, with a frost-free season of only 25 to 60 days in the valley bottoms, and as little as 10 days at higher elevations.¹⁰ In order to extend the growing season and enhance propagation and harvest success, a greenhouse will be required to support the Sustainable Agronomy Program.



Referenced hay barn circa 1947, prior to collapse

The greenhouse, as conceptualized, would occupy all or a portion of the footprint of a historic hay barn on the Hayden Homestead that originally covered a footprint of approximately 180' by 40', or 7,200 square foot. The general location is indicated on Planning Map 5-6. A 1956 air photo of the Homestead, showing the barn prior to its collapse, is included in Appendix A. The exact date of its collapse is unknown.

The Deed of conservation Easement for the Homestead allows for new construction on the approximate footprint of historic structures that have been lost to deterioration and collapse.¹¹ The Zone 2 Map of the Deed (Appendix A) specifically identifies the footprint of the subject barn as a "Potential site for a new building on historic footprint, as determined by further study."

The onslaught of the mountain pine beetle in the Rocky Mountain west, in combination with the need for vegetative species to rehabilitate both upland and wetland remediation sites damaged by past mining activities in the Upper Arkansas River Valley creates a demand for root stock and nursery seedlings of species endemic to the topographic,

¹⁰ Soil Survey of Chaffee – Lake County Area, Colorado, USDA Soil Conservation Service

¹¹ Deed of Conservation Easement, Exhibit F

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climatological, hydrologic, and soil conditions unique to the Alpine, Sub-Alpine, and Montane life zones of the Valley.

Although there is a demonstrated demand for these non-traditional crops, no local source currently exists.

The Lake County Open Space Initiative and Colorado Mountain College jointly submitted a funding proposal to the Natural Resource Damages Assessment (NRDA) Trustees for the money to plan and construct a greenhouse and nursery on the Hayden Homestead property to meet this demand, and to provide an educational opportunity to NRM and Forestry students that spanned the full range of environmental best practices, from seed collection, germination and nursery propagation, to harvesting and putting the resultant upland and wetland species to use in environmental remediation.¹² The Restoration Plan and Environmental Assessment for the Upper Arkansas River Watershed subsequently allocated \$200,000.00 in NRDA funding to the project

The Greenhouse would serve as conditioned space for classroom and laboratory activities. It would be used to conduct research and testing of sustainable agronomic principles in areas such as wetland species propagation, and to propagate both traditional food crops and non-traditional crops such as tree seedlings and wetland vegetation. Once propagated, forest and wetland species would be transplanted into outdoor plots to mature for later use in remediation and re-forestation projects.

The greenhouse would take advantage of passive solar energy as a primary heating source, and students would explore the use of geothermal exchange, active solar collection / storage systems, biomass heating, and wind generation to power electronic components and supplement the passive solar heat exchange. The goal would be to reach a self-sustaining, net positive energy position for powering the Hayden Homestead Greenhouse.

High altitude solar radiation and a high percentage of cloud free days in the rain shadow of the Sawatch Range make solar gain highly efficient in the broad valley bottom, where little topographic or vegetative screening is present to intercept the rays of the sun.

The greenhouse could also be used to extend the growing season, providing vegetable starts for use in the community garden (Section 5.5.1) and year round production of organic vegetables for consumption at the residential Timberline campus at Colorado Mountain College.

¹² Colorado Mountain College Center for Sustainable Agronomy: Preliminary Feasibility Analysis, Conlin Associates, October, 2009

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A physical source of surface water for irrigation within the greenhouse is located in Box Creek, which runs in close proximity to the proposed greenhouse footprint on BLM land. Discussions to institute a reciprocal easement agreement with BLM to deliver water from Box Creek to the Homestead have been initiated.

Offers of assistance from water rights owners, including the City of Aurora, Pueblo Board of Water Works and Lake County, to locate and secure water rights for exchange to Box Creek are documented in the Preliminary Feasibility Analysis for the Agronomy Center¹³, and funding to take the Box Creek water through Colorado Water Court to make it legally available for the desired end use has been budgeted in the NRDA allocation of funds for the Native Plant Propagation project at the Hayden Homestead.¹⁴

5.4.1.1 Action Plan

Design the Hayden Homestead Greenhouse

- Establish design capacities for each of the desired end uses of greenhouse space and size greenhouse appropriately;
- Prepare Architectural Design plans;
- Prepare Structural Engineering plans;
- Perform Energy Analysis;
- Complete environmental data collection;
- Complete archaeological inventory of the site;
- Develop an irrigation water supply and augmentation plan;
- Confirm compliance with Deed of Conservation Easement;
- Prepare estimate of cost;
- Prepare and submit land use and construction permitting;
- Prepare RFP, solicit bids, award contracts or perform work in-house;
- Utilize NRDA funding as match and secure additional funding;
- Commence Construction

¹³ Colorado Mountain College Center for Sustainable Agronomy: Preliminary Feasibility Analysis, Conlin Associates, October, 2009

¹⁴ Restoration Plan and Environmental Assessment for the Upper Arkansas River Watershed, Stratus Consulting

5.4.2 Outdoor Nurseries

Following greenhouse propagation, non-traditional agricultural crops, such as tree seedlings and wetland plants, will be moved from the greenhouse to outdoor plots to harden them to the natural environmental conditions of the Valley. They will be grown to a harvestable size or mass for use in resource damage restoration or reforestation.

The Hayden Ranch Headquarters encompasses approximately 36-acres of formerly irrigated ranchland that borders Box Creek, a tributary to the Arkansas River. Map 5-6 provides the locations of potential nurseries relative to the greenhouse and Box Creek. In the current concept, surface water from Box Creek would be used to charge the greenhouse, saturate wetland plots, and irrigate the tree nursery.

The identified landmass (Map 5-6) would be prepared for adaptive use as outdoor nurseries to mature and harden wetland and forest species propagated in the greenhouse to the environmental conditions in which they will be transplanted.

The location of the proposed wetland nursery / research plot is illustrated on Planning Map 5-6. It is approximately 1.8 acres in size; including a shallow 0.4 acre spring fed pond and its wetland fringe. It is located down gradient of Box Creek, allowing gravity flow to deliver recharge water from the creek to the nursery plot.



Eastern end of wetland nursery and adjacent return flow pond

Water passing through the wetland plot would re-enter the Box Creek drainage by way of the adjacent pond, reducing the distance the water has to travel to return to the creek and limiting the associated evapo-transpiration and transmission losses.

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Initial indications are that the underlying soils and gently sloping geomorphology would support wetland vegetation if periodically saturated.¹⁵

The importance of propagating and harvesting wetland species is rooted in both agronomy and regulation. Many of the native wetland species indigenous to the Upper Arkansas River Basin propagate primarily through the spread of rhizomes, not through the distribution of seeds. As such, it is not as simple as preparing the soil and seeding a lawn.

Several institutions involved in wetland research are exploring the revegetation of damaged wetlands through transplantation of vegetation plugs or distribution of live rhizomes. In either case, wetland restoration typically requires disturbing viable wetland plant communities to transplant live wetland species into a damaged area. Where does one acquire the live plants to rehabilitate a damaged wetland or to construct a new one?

Typical responses include “rob Peter to pay Paul”, e.g. digging plants from a viable wetland to propagate the new or rehabilitated site, which can result in compliance issues with Section 404 of the Clean Water Act, or purchase them from a wetland nursery.

The cost of a nursery raised wetland sedge mat on the Front Range is currently in the range of \$15.00 per square foot, not including transportation costs and travel/transplant mortality loss.

CMC projects such as the construction of staged wetlands and sulfate reducing bioreactors at the Dinero and Tiger sites will depend on the availability of wetland vegetation, initially in the construction of the cells, and perpetually for periodic replacement of sacrificial cells and failed vegetation. Harvesting from existing wetlands poses environmental and regulatory constraints, and purchase from Front Range nurseries can become cost prohibitive. A locally cultivated product makes both environmental and economic sense.

NRDA funding for the Agronomy Center design will be utilized to determine the final size, design, and location of the wetland plot, secure an easement across BLM property to deliver water from Box Creek to the greenhouse, wetland, and forest plots, and secure a Court appropriated source of surface water for irrigation.

A conceptual schematic for the greenhouse / nursery irrigation system is included in Appendix E.

¹⁵ Correspondence from Dr. Brad Johnson, Appendix D

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The forest nursery can be placed in a number of locations on the site, but will most logically be located where it can be easily irrigated from the pump that charges water from Box Creek for irrigation and water circulation within the greenhouse. The proposed 1.3 acre location is identified on planning Map 5-6. The study/design phase will determine the best hydrologic and agronomic location for siting the nursery.

The construction of the wetland and forest nursery will result in ground disturbance and a change in vegetative cover, but will not result in modification of the external facades of the historic structures. The disturbance of the ground and planting of vegetative crops is in keeping with the agricultural history of the site. Consultation with the Conservation Easement holder prior to any ground disturbance is recommended.

5.3.2.1 Action Plan

Design and lay out outdoor nursery plots

- Confirmation of allowance for adaptive use with the Colorado Historic Foundation;
- Design and lay out plots, including irrigation systems and protection from herbivores;
- Secure archaeological clearance to allow surface disturbance;
- Secure a physical and legal source of irrigation water;
- Design irrigation system;
- Identify sources of seeds and root stock.

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5.4.3 CMC Experimental Garden

The CMC Natural Resource Management Program, or programs yet to be developed may have need for additional outdoor garden space separated from the publically accessed Community Garden to conduct research in agronomy, soil sampling, high altitude gardening, metals uptake in plants and other related topics. Additionally, the College food program may find it advantageous to have crop growing space for the production of organically grown vegetables. Provision for that space is in this plan (See Map 5-6).

Well permit #281005A (Well # 2) has been authorized, but has not yet been drilled. When put into productivity, it will allow for a flow rate of 15 gallons per minute to service up to 3 residential dwellings, fire protection, livestock watering, and up to ½ acre of outside irrigation of lawn or garden space. This could provide irrigation to the experimental garden.



Broccoli grown in Leadville, Colorado, elevation 10,100 ft

CMC initiated a well received high altitude gardening program in the summer of 2010, drawing participants from Lake and Chaffee Counties. Space for conducting classes in the field could be provided in this garden space.

College administration has suggested that greenhouses and gardens should be integrated into each campus to provide locally grown organic produce for table fare at campus cafeterias. This garden could increase the potential yield of the greenhouse to provide seasonal produce for college consumption.

The concept would be to create CMC garden space within Security Zone 2 that can be separate from the community garden space to allow for research and crop production in a secure and controlled environment.

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5.4.3.1 Action Plan

Prepare a CMC garden plot on the Hayden Homestead for research, education and crop production

- Test soils for the presence of metals or compounds that could pose a human health risk, either during work with the soil, planting and cultivation, or by consuming plants grown in it
- Lay out garden plot
- Clear the area of archaeological artifacts
- Prepare an irrigation plan using Well Permit #281005A
- Design irrigation water delivery system that accounts for the dry, desiccating winds that disrupt aerial application
- Prepare a fencing plan to prevent herbivory by both big game and small burrowing animals

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5.4.4 Cook House



Building F-8, Cookhouse

Building F-8 is referred to in oral history interviews as the “Cook house”, and provided housing for the cook as well as the location for meal preparation for seasonal ranch hands¹⁶.

The cost of rehabilitation to meet modern codes for a commercial kitchen, and the redundancy of its use as kitchen space in the event that the Bunkhouse (Building F-3) is rehabilitated for on-site accommodations, suggests that other uses of the space may be more appropriate.

The Cookhouse would be adjacent to the CMC experimental garden, the maintenance of which will require secure storage for seed, soil amendments, gardening tools, seasonal irrigation components, and analytical equipment. The conceptual use for the cookhouse would be to provide secure storage of CMC equipment and tools used in the experimental garden. No services or utilities would be anticipated.

5.4.4.1 Action Plan

Stabilize the cookhouse for use as secure storage.

- Stabilize roof and foundation components;
- Replace damaged or missing siding;
- Apply historically appropriate paint treatment;
- Replace window glass and door hardware;
- Provide locking hardware to create protected and secure space.

¹⁶ Oral histories, Marianne Patton and Betty Farrington
Hayden Homestead Master Plan: Section 5

5.5 Community Learning and Enrichment

Colorado Mountain College's mission extends beyond the classroom to provide outreach to, and partnerships with, surrounding communities. The Hayden Homestead offers numerous opportunities for providing service, extending outreach, and promoting experiential learning in the philosophy and practice of sustainability. Elements of the Community Learning and Enrichment Center are depicted on Map 5-7, and illustrated in tabular form in Table 5, Section 5.8.

5.5.1 Community Garden

Sustainable agriculture is a pattern of resource use that aims to meet human food needs while preserving the environment, fulfilling the elemental need to feed the population, not only in the present, but also in future generations.

The Hayden Ranch historically provided both the fuel for the horsepower of the day, and beef, pork, poultry, eggs, vegetables and milk for the residents of the ranch and the local community¹⁷. The community garden is intended to continue the tradition of providing locally grown "food close to home" for residents of the Upper Arkansas River Valley.

It is estimated that the typical packaged/processed food item has required some 2,000 miles of transportation before hitting the local grocery store.



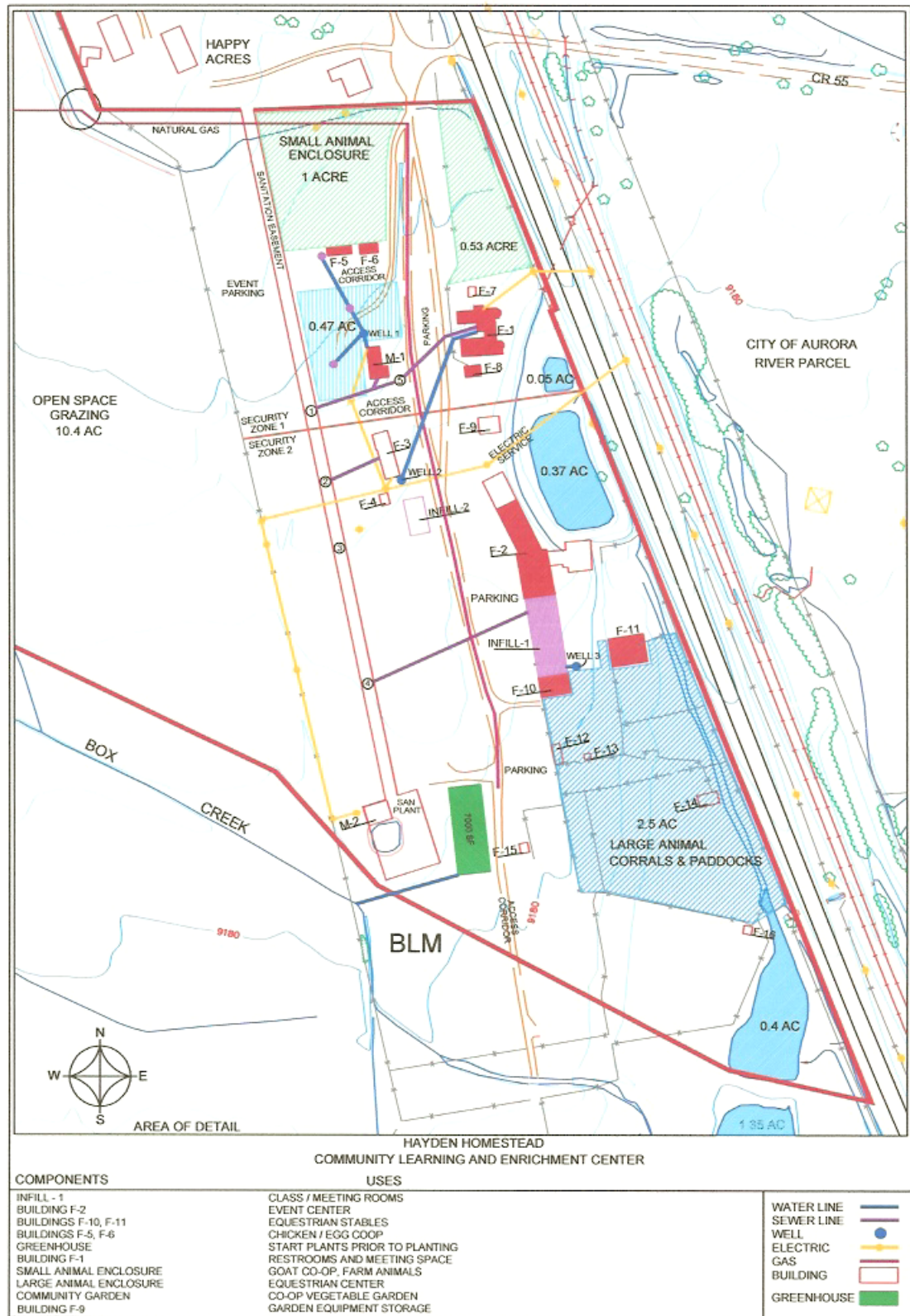
Family garden plot, Leadville, Colorado

The Center for Community Learning and Enrichment would seek to provide a community garden as a hands-on teaching tool, modeling local food production as a means of reducing the costs and greenhouse gas emissions associated with harvesting, processing, packaging, transporting, and delivering processed foods to your table, while providing healthy, organically grown local food products.

¹⁷ Oral History, Betty Farrington, 9/28/05

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Map 5-7 Community Learning and Enrichment



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Whether for lack of space, short growing season, or lack of suitable soils, most residents of Leadville do not have the opportunity to grow their own produce.

The growing season at the 9,100 foot elevation of the Homestead is sometimes weeks longer than the growing season at 10,400 feet in Leadville, and could be jump-started by even more time through propagation of vegetable “starts” in the greenhouse prior to transplanting them to the community garden when the native soils and ambient temperatures warm.

Since the Hayden Homestead, located up-gradient of Box Creek, was traditionally irrigated by water diverted from the Arkansas River, it must be assumed that water contaminated by mining activities in the Leadville Mining District was historically applied to irrigated fields, gardens, and meadows of the Ranch. Acid rock and mine drainage from the sulfate ores that leached out of mine workings and waste piles, or were carried by surface runoff into the tributaries of the Arkansas, allowed heavy metals to go into solution and be carried downstream to the points of diversion of the Hayden’s five main water rights.

From their diversion points on the river, irrigation waters would be transported by ditches to the point of beneficial use. Flood irrigation would apply the water to the ground surface of the hay fields and gardens of the Homestead.

To determine whether heavy metals are present in the soils of the Homestead and bio-available through consumption of vegetables grown on the site, Colorado Mountain College has initiated a series of studies of the chemical composition of the soils and of the metals uptake of plants grown in the soil. The studies are directed at determining whether the native soils can be 1) used for crop production in their current state, 2) amended to enhance growth rates and reduce metal uptake, or 3) will need to be replaced with an outside source of topsoil to produce garden vegetables that are safe for human consumption.

The final results of that study effort are not available for this document’s publication, but will significantly influence the garden’s location and the application of soil amendments or the replacement of native soils in the garden.

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The garden location presented on planning Map 5-7 was selected for its proximity to the entrance to the ranch and the caretaker's residence, within Security Zone 1, allowing for monitored public use while protecting sensitive historic and research resources located in Zone 2. It is also adjacent to well number 1 (Permit # 281004 A), which in addition to allowing water use for ordinary household purposes within the caretaker's unit, allows for ½ acre of outside irrigation of gardens and lawns.



Eight test plots with different soil compositions

Eight test plots were constructed on site in 2010 for the purpose of comparing plant growth rates and contrasting metals uptake in four vegetable types that sequester metals in different locations on their edible parts. Each test plot contained different combinations of native soil, imported topsoil, and soil amendments.



Richardson Ground Squirrel, Hayden Ranch

A five foot tall metal wire mesh fence was installed to prevent large herbivores, such as deer and elk, from devouring the vegetation, and a temporary irrigation sprinkler on a timer was installed to provide aerial application of irrigation water from well number one. Chicken wire was being installed along the base of the wire mesh fence to keep smaller herbivores, such as ground squirrels and rabbits from entering the enclosure. However, sprouting occurred before the enclosure was fully completed, and burrowing ground squirrels decimated the test crop.

Lessons learned included the inefficiency of aerial delivery of irrigation water in the presence of strong diurnal wind patterns, and the need to bury fine wire mesh well below ground level to preclude herbivory by burrowing animals.

Soils excavated from each test plot are currently being seeded indoors in the controlled environment of the Colorado Mountain College soils lab to eliminate the variable of herbivory and allow for contrasting growth rates and analysis of metals uptake into the vegetation.

The concept would be to construct a community garden on the Hayden Homestead to enable food production close to home for residents of the local community. It would be a model for teaching the principles of sustainable organic gardening.

The College could also supplement their cafeteria meals with produce locally grown by students who tend to the crops and learn the principles of sustainable agronomy.

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Similar cooperative gardens in surrounding communities have been highly successful in providing not only the aesthetic and edible products of gardening, but in facilitating public outreach and education in sustainability and promoting the social interaction and health benefits that come from working outdoors in pursuit of a common goal.

The area proposed for use as a community garden has been reviewed by archaeologist Mark Sullivan, and has been cleared for the desired end use.

5.5.1.1 Action Plan

Plan and implement construction of a Community Garden on the Hayden Homestead

- Complete soils and uptake studies to determine whether the native soils are suitable to support sustainable crop production for human consumption or soil amendments or replacement will be required;
- Establish the optimal location for the garden relative to availability of irrigation water and the ability to ensure site security;
- Design an herbivore-proof enclosure to protect the food crop from large game species and small burrowing animals that complies with the visual quality objectives of the Deed of Conservation Easement;
- Design a drip or soaker irrigation system for effective delivery and conservation of the water resource;
- Establish a local stakeholder core group to advise the College and to operate and maintain the facility;
- Establish protocols and educational requirements preceding authorization for the public to enter onto the property;
- Establish an operating philosophy for sharing of tasks and produce;
- Initiate composting of organic materials at the college to build and enhance soils;
- Initiate a program of vermaculture to enhance compost decomposition and soil aeration;
- Construct the community garden.

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5.5.2 Agricultural Co-op



Farm animals, Hayden Ranch



Oral histories¹⁸ and public records indicate that aside from hay and cattle raised primarily as cash crops, the inhabitants of the Hayden Ranch also raised farmyard livestock and poultry that were either consumed on site, or sold within the surrounding community.¹⁹

Farm animals and poultry were part of everyday life and frequent “dinner guests” at the tables of the ranch managers and hired hands in the days before transportation improvements made the trip into Leadville less than an all day affair. Chores related to the care and feeding of the livestock were a critical and time consuming part of the day-to-day discipline and work ethic passed down from generation to

¹⁸ Oral histories, Marianne Patton and Betty Farrington

¹⁹ Betty Farrington, wife of Bill Farrington, Ranch Manager from 1946 through 1954, remembers keeping their camp trailer at 90 degrees all winter to keep 100 baby chicks living in the trailer with them from freezing during the winter of 1946 / 47. They were moved to the outdoor chicken coops in the spring, to Betty’s relief. She also recalls the north end of the main barn housing dozens of rabbit coops, and selling eggs and garden produce to Safeway in Leadville to supplement their income.

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generation. As such, farmyard animals were an integral part of the cultural heritage of the Hayden Ranch.

Much of the work done to date at the Hayden Homestead has been directed toward the stabilization of its structural skeleton, but restoration of the soul of a ranch is more than just preserving its structural elements. It lies in the interaction of people, animals, soil, plants, and water.

The goal of the Agricultural co-op is to re-connect people with the land and critters that were an integral part of subsistence living during the formative years in the history of Lake County and the State of Colorado. Paraphrasing Chris Koziol, "History should be more than the pickling of its remnants for storage on the shelf"²⁰. It should bring the story to life.

The concept for the Agricultural co-op is to put people back in touch with animals that historically shared the lands of the Hayden Homestead, and to provide sources of organically grown food within their own community.



Buildings F-5 and F-6, chicken and rabbit coops

Central to the concept would be the rehabilitation of the chicken and rabbit coops (Buildings F-5 and F-6) for return to their historic use as a place to raise and harvest farm animals, game birds, poultry, and eggs.

Approximately 1.5 acres of land surrounding the structures (Map 5-7) could also be used to pasture farm animals such as sheep and goats, providing goat milk products and fiber for homespun goods.

It is understood that supplemental feeding will be required if the carrying capacity of the pasture land is exceeded.

²⁰ Chris Koziol, Associate Professor and Director, Master of Science in Historic Preservation Program, University of Colorado, Denver

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Since goats will eat virtually anything, they can also provide a sustainable means of maintaining the turf that accumulates against and deteriorates the wooden foundation sills of historic structures, eliminating the need to use mechanical implements that disturb archaeological artifacts hidden in the grass. Goats are also an effective tool for controlling noxious weeds without poisoning the earth.

The location of the historic coops is within Security Zone 1, and proximal to the Caretakers Unit (Building M-1), allowing monitoring of public access. The proximity to human habitation also facilitates care of the animals and protection from predation. Well Permit #281004A serving the Caretakers Unit allows for watering of domestic animals.

Livestock on the property also opens opportunities for education in animal husbandry, and enhances public outreach through activities such as a “petting zoo” and teaching environment for local school groups, scouting and 4-H. The synergy of animals eating the weeds and vegetation not suited for human consumption from the community garden and in return producing fertilizer to put nutrients back into the garden soil provides a tangible example of sustainability.

Larger livestock, such as cattle are more problematic. Ranchland in Lake County is only capable of sustaining about one cow per 30 acres of pasture, without supplemental feeding. The Hayden Homestead property contains only 35.38 acres, with a significant portion of that acreage lying under structures and roads.

The surrounding 1411 acres of the Hayden Ranch, west of U.S. Highway 24, were purchased from the City of Aurora by the U.S. Bureau of Land Management, and are currently leased to a concessionaire who practices rotational grazing through seven fenced pastures over the course of the summer grazing season. Rotational grazing has been shown to improve range conditions for the wintering elk herd.

Discussions with the BLM about grazing CMC cattle on the surrounding ranch land have been initiated. The concept of allocating one of the 7 pastures for CMC use was eliminated as being counter-productive to the rotational grazing methodology. The idea of mixing concessionaire and CMC brands within the same herd was discounted as posing too many liabilities for the concessionaire.

Another option of placing CMC student interns in the field with the concessionaire to learn skills such as branding, castration, vaccination, fencing, rotational grazing techniques, and other ranching and range management skills was explored, as it could provide a labor force to

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help the concessionaire while providing valuable hands-on instruction for students.

At the end of the summer season, free range cattle, grazed locally on the Hayden Ranch, could be purchased for consumption at the College or distribution through a local food co-op, reinforcing the sustainability philosophy and providing “food close to home.”

5.5.2.1 Action Plan

Creation of a community agricultural co-op to operate and manage the raising and use of poultry and livestock for education and sustainable food production close to home

- Formation of a community based co-op to procure and care for the animals, assign cooperative chores, and manage the distribution of food products;
- Community participation to rehabilitate Buildings F-5 and F-6 for the desired end use;
- Establish a fencing and enclosure design to limit predation and avoid fatal predator control measures;
- Connection of well #1 to heated watering troughs and a public hand washing station in the animal pens and enclosures;
- Continue discussions with the U.S. BLM regarding the use of surrounding federal lands.
- Secure archaeological clearance for areas of ground disturbance

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5.5.3 Storage Garage



Storage Garage, Building F-8 on right

Building F-8 is a garage located just south of the Ranch Owner's House (Building F-1). It is a 392 square foot single story, unconditioned wood frame structure with double doors on the main (western) elevation, a single door on its northern elevation, and two windows on its eastern elevation. It is currently in fair condition, and is being used to store the components of the metal shop that was donated to the College.

Little reference to Building F-8 is found in literature or oral histories. The structure has no chimney or evidence of a stove pipe hole, indicating that it was not used as conditioned or heated space. It is likely that it provided storage for equipment or machinery, or possibly served as a carriage shed for the Ranch Owners House. There is some speculation that it may have housed the generator that powered the Ranch Owners residence, but there is no evidence to support that assumption other than its proximity to the house and the knowledge that a generator provided electricity to the main house until the arrival of rural electric service.

Building F-8 could continue its original function of providing storage. Its location within Security Zone 1 would make it available to authorized public access by individuals participating in the community garden program or tending to the poultry and livestock. Those activities will require tools, materials, and equipment, and a secure place to store them.

Similarly, the inadvisability of parking cars with hot catalytic converters over dry grass dictates those tall grasses be mowed periodically to prevent the initiation and spread of grass fire. A small utility tractor to mow grass and till the community garden may be justified and would require secure storage.

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5.5.3.1 Action Plan

Provide public access to storage space within security Zone 1 for tools and equipment needed to maintain the community garden and livestock co-op programs

- Complete stabilization of the structure;
- Complete rehabilitation, as needed, to accommodate the desired end use;
- Clean out materials stored in the interior space, evaluate contents for historical significance, dispose of trash;
- Move the metal shop components to the workshop on north end of Main Barn (Building F-2);
- Secure doors and windows with locking mechanisms to provide secure storage for tools and equipment.

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5.5.4 Community Event Center

One of the common threads running through the public scoping process was the desire to showcase the preservation of the Hayden Homestead, and to make it accessible to the public. Suggestions ranged from providing a venue to hold an old fashioned barn dance, to supporting summer-stock theater, to accommodating a community garden and farmers market, music concerts, art shows and workshops, cowboy poetry readings, sustainability fairs, weddings, competitions, heritage celebrations, and a kids' petting zoo and fishing pond.



A poll in the local newspaper outlining several of the suggested uses of the Homestead found that the use of the ranch as an event center led all other uses by a significant margin.



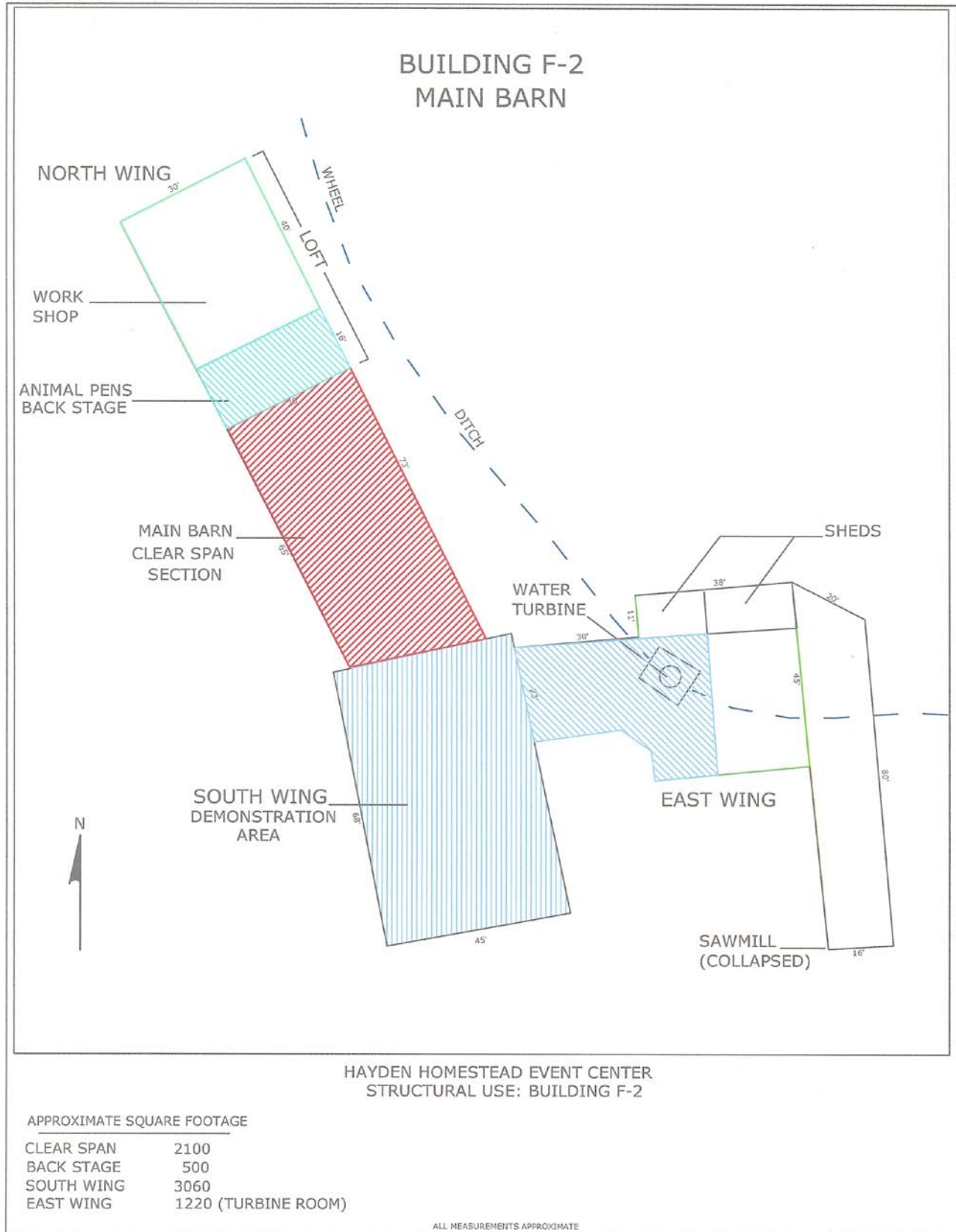
Clear span section of the Main Barn

The central thrust of the discussion on the use of the Hayden Homestead as a community event center was the utilization of the central clear span section of the Main Barn. The gambrel roof and weathered wood of the structure convey a sense of the history and cultural heritage that were an integral part of Leadville's fabled past. The interior of this section of the main barn epitomizes the architectural form that many people associate with ranching in the early years of Colorado's history.

To the north of the clear span section of the main barn is a ground floor chamber that originally housed livestock, which could act as a backstage area for performers waiting to take the stage, props and instruments, and lighting and sound equipment. (See Fig 5-6)

Hayden Homestead: Master Plan

Figure 5-6 Main Barn Event Center



Hayden Homestead: Master Plan

The Community Event Center is dependent upon viable partnerships, community support, economic sustainability, availability of space that can meet the requirements for public access and use, and other variables that may not be foreseen at this time.

Temporary parking for events can be accommodated in the areas designated on Map 5-8, with the caveat that grass should be mowed prior to the event in order to reduce the potential for tall grass coming in contact with hot catalytic converters and igniting a grass fire.



Music in the Barn, Ranch Heritage Days 2007

As illustrated on Map 5-8, structures that could be used for supporting community events would also include the Hayden Homestead Classroom and Conference Center (Building Infill-1), the Bunkhouse (Building F-3), and the Visitor and Interpretive Center (Buildings F-1 and F-7).

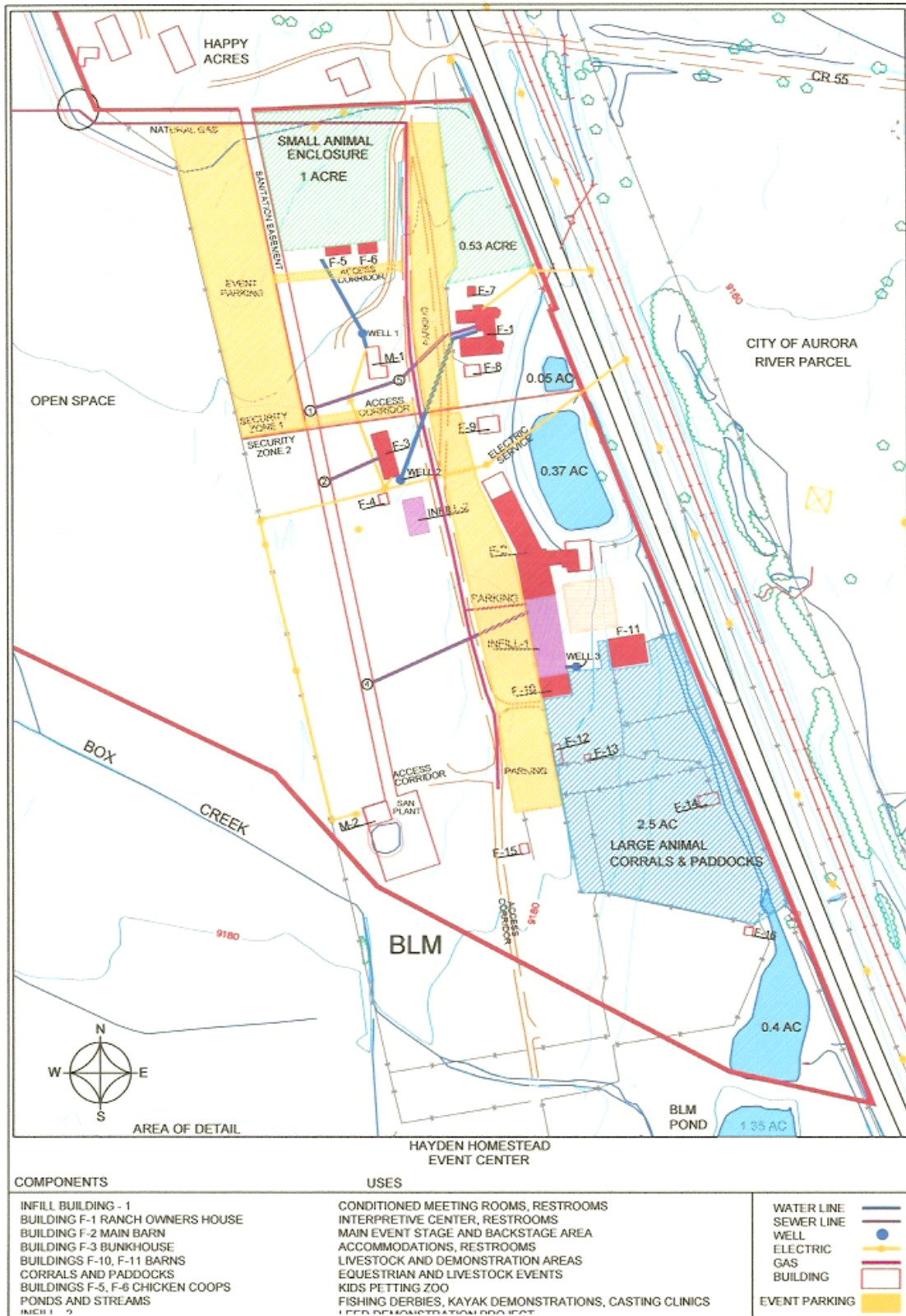
The chicken and rabbit coops (Buildings F-5 and F-6) and surrounding small animal enclosures could support community events with Farmer's markets and a kids' petting zoo, and the livestock barns (Buildings F-10 and F-11) and adjacent corrals and paddocks could stage livestock shows, equestrian events, and County Fairs.



The ponds located on and adjacent to the Homestead on BLM lands can also be used to support kids' fishing derbies, fly fishing instruction, and hands-on demonstrations of water craft.

Hayden Homestead: Master Plan

Map 5-8 Event Center



Hayden Homestead: Master Plan

Recreational use of the Natural Resources of the Homestead



Kids' Fishing Derby, Ranch Heritage Days 2007



Fly fishing class

5.5.4.1 Action Plan

Prepare the Hayden Homestead for use as a public event center

- Determine and establish compliance with fire code and insurance liability for public use of the facilities;
- Rehabilitate structures to conform to the desired end use;
- Establish policies and protocols for use of structures and land, including but not limited to fire prevention, site readiness, liquor and smoking policies, fee structures, sanitation, site prep and cleanup responsibilities, public access protocols, and insurance waivers.



ORL Watercraft Demo, Ranch Heritage Days 2007

5.6 Natural Resource Management

The Natural Resource Management Program (NRM) at CMC provides hands-on learning opportunities in areas such as hydrology, soil science, Geographic Information Systems (GIS), field monitoring, reclamation site monitoring, and hazardous waste operations and emergency response. Additionally, NRM partners with Lake County schools and the Keystone Science School, and it participates in the Science, Technology, Engineering and Math (STEM) program that engages K-12 students in real-world experiential learning in the environmental field.

The Hayden Homestead provides a varied landscape, including terrestrial and aquatic habitats that lend themselves to the fields of study offered through the NRM Program.

5.6.1 Natural Resource Management Field Station

The Hayden Homestead provides the natural resource base to expand experiential learning opportunities to CMC students on lands owned and controlled by the College.



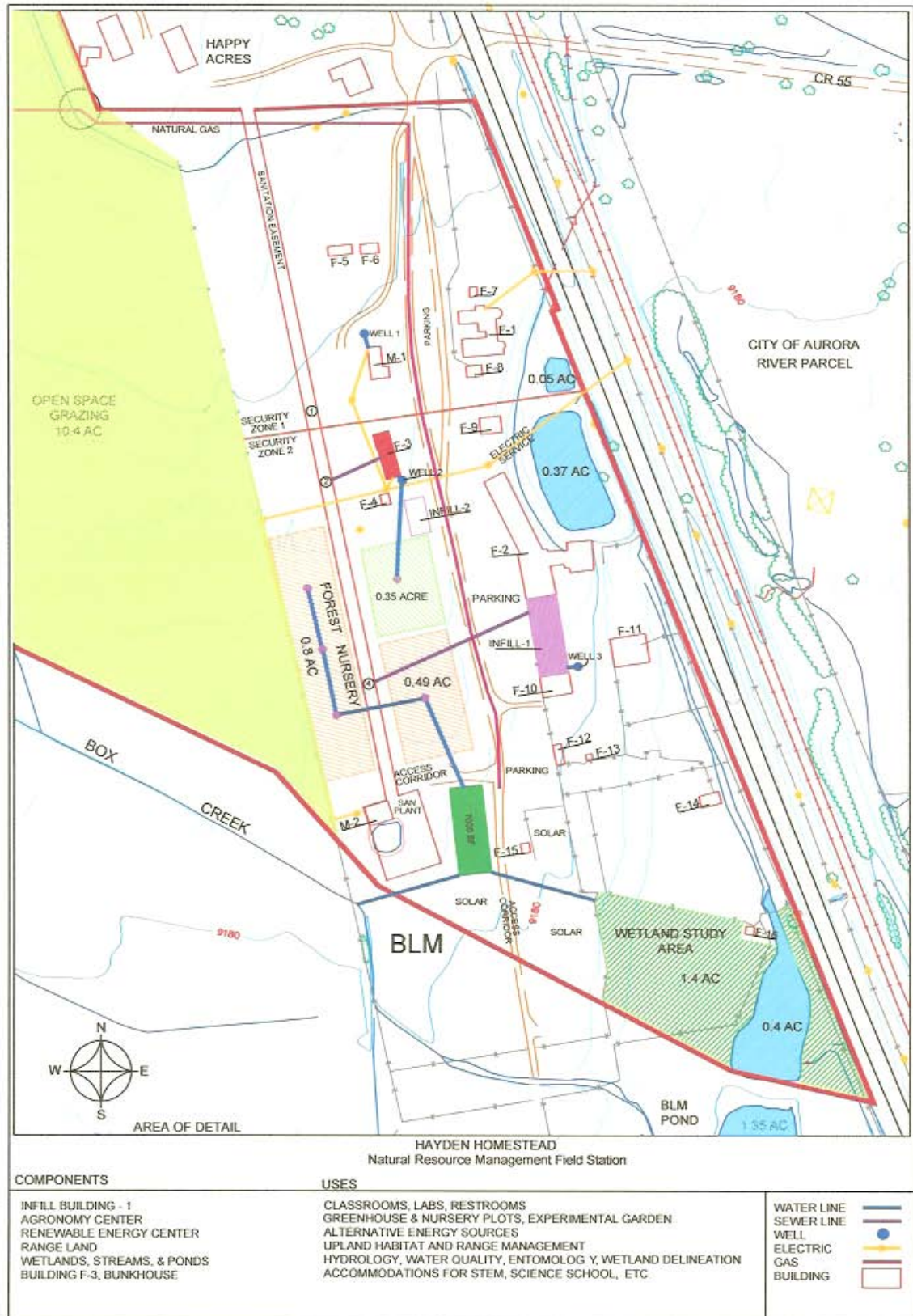
Hayden Homestead spring creek

The Homestead includes a spring fed creek and three small ponds with associated wetlands (See Map 5-9) that provide the platform for learning the basics of hydrology, water chemistry, aquatic biology, entomology, fisheries, and wetland dynamics. Directly across the highway from the Homestead lies the Arkansas River, affording access to EPA remediated fluvial tailings deposits along the 11-mile reach of the California Gulch Superfund site, demonstrating the state of the art principles of river restoration and remediation of past acid mine drainage and metal loading.

The Homestead also has approximately 16 acres of open range, providing the land base to teach the principles of soil science, terrestrial botany, upland ecology, and range management. The open range land surrounding the Homestead is home to wintering elk herds numbering in the hundreds and over 250 species of mammals, birds, reptiles, fish, and amphibians have been catalogued in the Valley.

Hayden Homestead: Master Plan

Map 5-9 Natural Resource Management Field Station



Hayden Homestead: Master Plan

With the completion of the Center for Sustainable Agronomy, NRM students would have a unique “cradle to grave” educational opportunity, from selection and collection of seeds, through propagation of forest and wetland species, to environmental best practices in the application of phytoremediation for projects such as wetland restoration and construction of sulfate reducing bioreactors.

The Hayden Homestead Classroom and Conference Center (See Section 5.2.6) would provide on-site classrooms and labs for the Stem program, science camps, or visiting students who could board at the Hayden Bunkhouse (See Section 5.2.8).

5.6.1.1 Action Plan

Prepare the site for use as a field station for the Natural Resource Management Program

- Rehabilitation of subject structures for the desired end use (See Sections 5.1.6, 5.1.8);
- Secure irrigation water for the greenhouse and the wetland and forest nurseries;
- Construction of the Center for Sustainable Agronomy (See Section 5.3);
- Fencing of property lines to control cattle access onto study areas;
- Incorporate site wide Renewable Energy actions (See Section 5.1.10).

Hayden Homestead: Master Plan

5.6.2 Animal Husbandry / Equestrian Center



Horses were part of every-day life on the Hayden

The Hayden Ranch has a long standing relationship with animals, large and small. From the horses that provided the primary mode of transportation and movement of goods well into the 20th century, to the cattle, farmyard animals, and poultry that fed the Ranch inhabitants or were sold at market, animals have always been an integral part of the cultural heritage of the Ranch.

As such, the natural and built environments of the Homestead lend themselves to the continued practice and instruction of animal husbandry, as well as the use of horses for recreation, therapy, leadership training, and education (See Map 5-10).



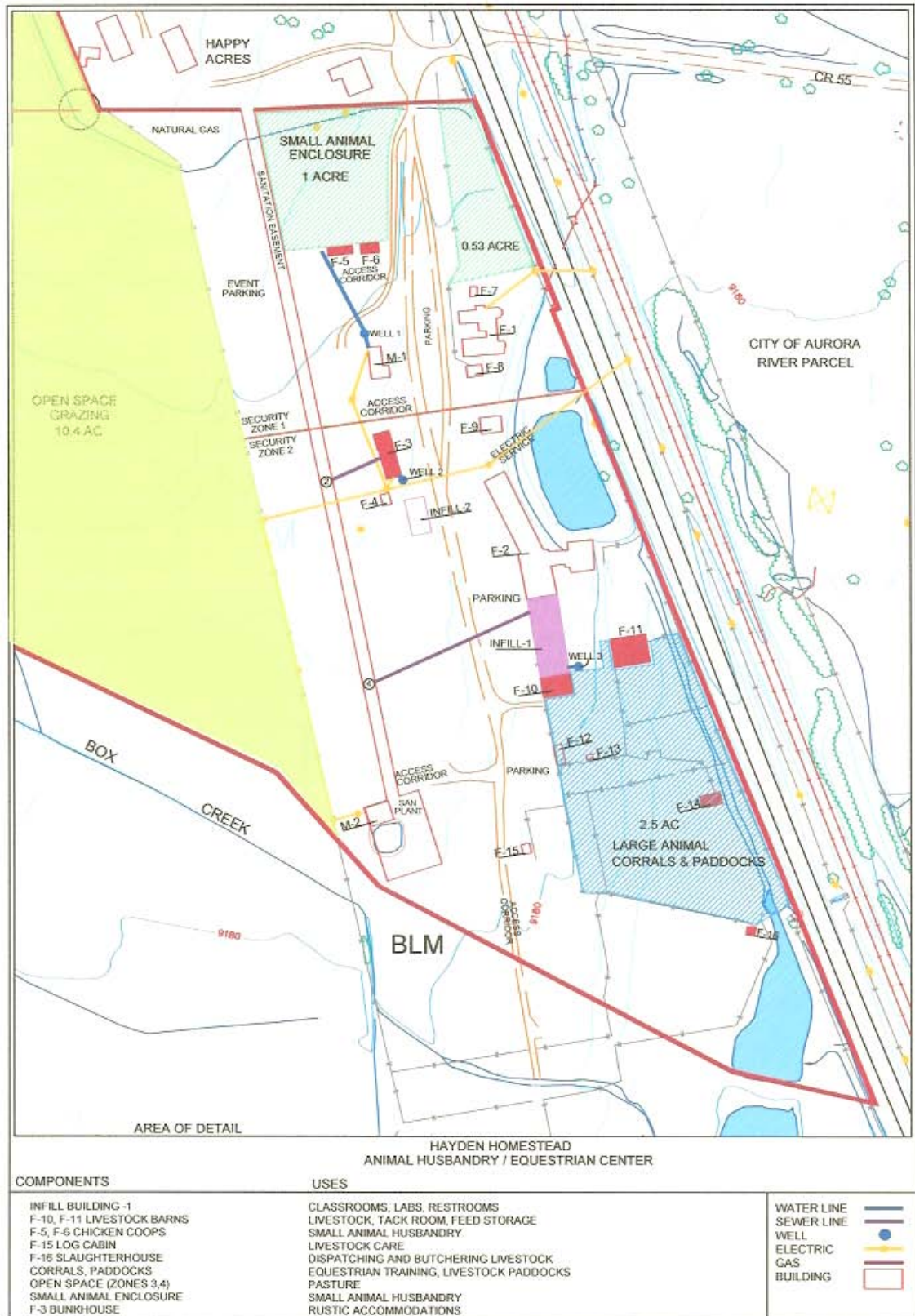
Kids helping with animal husbandry chores, Hayden Ranch

William Gardiner, District Conservationist for the USDA Natural Resource Conservation Service in the Arkansas Valley has indicated that the historic trend of ranches and farms being passed from generation to generation is no longer the norm, as today's younger generations move away from the rural lifestyle to more lucrative job opportunities outside of the agricultural arena, or inheritance tax structures force the sale of family held agricultural properties. The inter-generational passage of knowledge gained by growing up in the culture is being lost, leaving a void in the skill sets necessary to successfully manage agricultural properties.

At the same time, there is a "back to the earth" movement where individuals without the skills derived from growing up in the ranching/farming culture are looking for ways to return to the ranching lifestyle, or simply to produce their own organically grown food. Gardiner reports that there is a growing need for training in areas such as animal husbandry and agronomy to support sustainable stewardship of agricultural lands.

Hayden Homestead: Master Plan

Map 5-10 Animal Husbandry / Equestrian Center



Hayden Homestead: Master Plan

The built environment of the Homestead includes two intact livestock barns, chicken and rabbit coops, and livestock corrals. The Cow Barn (Building F-11) was stabilized during Phase II, while the South Barn / Manger (Building F-10) is scheduled for roofing and stabilization in Phase III of the ongoing State Historic Fund grant project. Adjacent corrals and paddocks are in a state of disrepair, but provide the blueprint for rehabilitation of their historic location, form, materiality, and function. Table 7, Section 5.8 summarizes project components and the relationship of the adaptive use to the Secretary's Standards and the deed of Conservation Easement.

The primary difference between historic and current uses of the ranch for raising and caring for livestock is the fact that the 35.38 acre Homestead has been separated from the nearly 3000 acres of forage base that was once part of the operating ranch. Any use of the Homestead for livestock grazing would quickly deplete available forage, and supplemental feeding, either through the lease of surrounding range or the purchase of hay would be required.

The Animal Husbandry Program would utilize the two barns, adjacent corrals, chicken and rabbit coops, pasture land, and small animal enclosure to contain animals for the study of the care and maintenance of domestic livestock.

Public input during the scoping process indicated the desire to see opportunities for equestrian training and recreation on the Homestead. In order to reduce the forage requirements of boarding horses on a year round basis, opportunities to partner with organizations that own and could transport horses to the Homestead during times they would be needed have been explored. Activities could include teaching equestrian skills, organizing trail rides, providing physical, mental, and emotional therapy, and conducting leadership training.

An Animal Husbandry and Equestrian Center is dependent upon viable partnerships, community support, economic sustainability, availability of space that can meet the requirements for public access and use, and other variables that may not be foreseen at this time.

Hayden Homestead: Master Plan

5.6.2.1 Action Plan

Prepare the site for use as an animal husbandry/equestrian center

- Rehabilitate the barns and chicken coops to support the desired end uses;
- Rehabilitate the existing timber corral fencing;
- Install livestock fencing around the perimeter of the pasture land in Zones 3 and 4 of the Deed of Conservation Easement;
- Secure a source of agricultural water for livestock;
- Expand the Natural Resource Management program to include Animal Husbandry.

5.7 Outdoor Recreation

The Outdoor Recreation programs developed and taught at the CMC Timberline Campus provide unique educational opportunities both on and off campus. While some classes can be taught in the classroom, most of the specialized courses are experiential and require hands-on participation in an outdoor setting.

The natural and built environment of the Hayden Homestead can enhance the experiential opportunities in one of the most beautiful natural settings anywhere in the United States (See Map 5-11).

The built environment includes the Classroom and Conference Center for on-site instruction and workshops, the Bunkhouse for rustic overnight accommodations, and the indoor clear span section of the Main Barn for staging before trips, moving classes, such as fly casting into a protected space out of the weather or teaching rope skills or other classes requiring a large clear span space. Storage of outdoor gear may also be accommodated in secured areas.

The natural setting provides a small spring creek and three small ponds (plus the adjacent BLM pond) that can provide a place to teach fly casting, aquatic entomology, and technique, with a natural progression to the Arkansas River just across the road, where CMC has a Guide Outfitter Permit to allow walk & wade and float fishing.

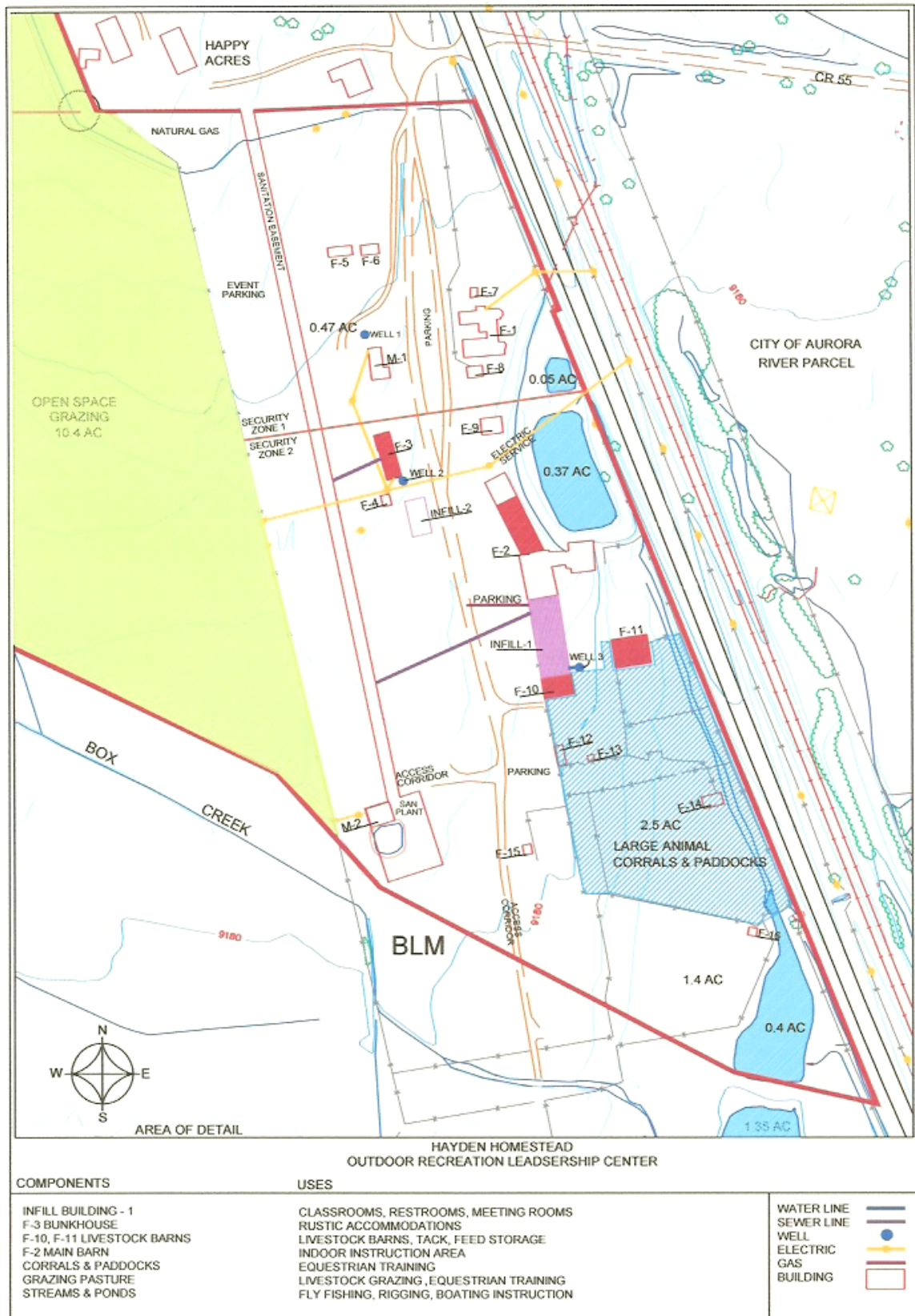


Fly Fishing the Arkansas River across from the Hayden Homestead

Beginning instruction in canoeing and kayaking can be accommodated on the shallow ponds, and rigging of both whitewater and drift boats can be taught and practiced on the stillwater of the ponds before stepping up to moving water and advanced classes such as swift water rescue.

Hayden Homestead: Master Plan

Map 5-11 Outdoor Recreation



Hayden Homestead: Master Plan

Many of today's guides and outfitters, park rangers, and search and rescue personnel are also required to have a working knowledge of equestrian skills, including working with horses, mules, and even llamas, and handling pack trains to access and provision remote camps. They also must be able to perform search and rescue in wilderness areas where mechanized or motorized modes of transportation are prohibited. The two livestock barns, corrals, and open pasture of Zones 3 and 4 provide the infrastructure and open space necessary for training students the skills of working with beasts of burden.

5.7.1 Action Plan

Prepare the site for use by the Outdoor Recreation Programs at CMC

- Rehabilitate structures to meet desired end uses;
- Work with U.S. BLM to secure student access to the pond adjacent to the south boundary for fly fishing and non-motorized watercraft instruction;
- Explore options for securing stock for equestrian and pack train instruction;
- Rehabilitate the existing timber corral fencing;
- Install livestock fencing around the perimeter of the pasture land in Zones 3 and 4 of the Deed of Conservation Easement;
- Secure a source of agricultural water for livestock;
- Explore options for having horses and other beasts of burden available on an as-needed basis.

Hayden Homestead: Master Plan

5.8 Summary Tables

The following tables provide a compilation of the resources, map locations, Conservation Easement Zones, goals and objectives satisfied by the adaptive re-use, relationship to the Deed of Conservation Easement and Secretary's Standards and the infrastructure needs on a program by program basis.

Table 1 Sitewide Adaptive Uses

Resource Allocation/ Use	Site Map/ Easement Zone	Goals & Objectives	Secretary's Standards	Conformance: Deed of Conservation Easement	Infrastructure Needs
Infill Building 1 Conditioned classrooms, labs, offices, shop space, meeting rooms, rest rooms	Map 5-3 Zone 1	Goal 1 (a) Goal 3 (b) Goal 4 (f)	New Construction Rehabilitation Principles 9, 10	New Construction on historic building footprint	Electricity Natural Gas Comm. Well #3 Sanitary Tap 4 Solar Geothermal
Building F-2 Main Barn Enclosed work space, demonstration, event, and exhibit space	Map 5-3 Zone 1	Goal 1 (a), (b) Goal 2 (a), (b),(c),(d)	Rehabilitation Principles 1-8	Compatible, Adaptive use, no alteration of facade	Electricity
Building F-3 Bunkhouse Accommodations - students, volunteers, workshops, retreats, elder hostel, STEM, science camps	Map 5-3 Zone 2	Goal 2 (a),(b),(d) Goal 3 (a), (c),(d),(e) Goal 4 (e), (h),(i),(k)	Rehabilitation for historic use Principles 1-8 New Construction Rehabilitation Principles 9, 10	Allowance for new construction to 1- ½ x existing building footprint	Electricity Natural Gas Well # 2 Sanitary Tap 2 Solar Geothermal
Building F-9 Maint. Garage Maintenance shop, fire protection station	Map 5-3 Zone 1	Goal 1 (b) Goal 2 (b),(d),(e) Goal 3 (a)	Rehabilitation For adaptive use Principles 1-8	Compatible, Adaptive use, no alteration of facade	Electricity Natural gas
Building M-1 Caretakers Res. Caretakers residence	Map 5-3 Zone 2	Goal 2 (e) Goal 3 (a) Goal 4 (j)	Non-contributing structure	Non-contributing structure	Electricity Natural Gas Well # 1 Sanitary Tap 1 Solar Geothermal
Building M-2 Moosehaven Sanitation Plant Treatment of effluent	Map 5-3 Zone 2	Goal 4	Existing Use	Existing Use	Existing Use

Hayden Homestead: Master Plan

Table 2 Renewable Energy Education

Resource Allocation/ Use	Site Map/ Easement Zone	Goals & Objectives	Secretary's Standards	Conformance: Deed of Conservation Easement	Infrastructure Needs
Infill Building 1 Conditioned classrooms, labs, offices, shop space, meeting rooms, rest rooms	Map 5-4 Zone 1	Goal 1 (a) Goal 3 (b) Goal 4 (f)	New Construction Rehabilitation Principles 9, 10	New Construction on historic building footprint	Electrical Natural Gas Comm. Well #3 Sanitary Tap 4 Solar Geothermal
Solar Greenhouse Passive and active solar, geothermal exchange, wind power	Map 5-4 Zone 2	Goal 1 (d) Goal 2 (c) Goal 3 (b),(c), (d),(e)	New Construction Rehabilitation Principles 9, 10	New Construction on historic building footprint	Solar Geothermal Wind Natural Gas Electricity (backup)
Photovoltaic Cells Roof mounted on listed existing buildings and new construction, solar fence where permitted	Map 5-4 Zones 1,2	Goal 1 (d) Goal 2 (c) Goal 3 (b),(c), (d),(e)	New Construction Rehabilitation Principles 9, 10	Compatible use in Zones 1 & 2	Distribution and control equipment
Geothermal Exchange Excavation, distribution, heat exchange elements	Map 5 –4 Zones 1, 2	Goal 1 (d) Goal 2 (c) Goal 3 (b), (c),(d),(e)	New Construction Rehabilitation Principles 9, 10	Not considered in Easement - Request variance	On-grid or solar electric power, Distribution and control equipment
Wind Power Rotors, turbines, mechanical and electrical elements	Map 5 –4 Zone 3	Goal 1 (d) Goal 2 (c) Goal 3 (b),(c), (d),(e)	New Construction Rehabilitation Principles 9, 10	Allowable in Zone 3	Distribution and control equipment
Infill Building -2 New residential structure, guest and VIP accommodations Model for LEED sustainable residential building	Map 5-4 Zone 2	Goal (4 l)	New Construction Rehabilitation Principles 9, 10	New Construction on historic bunkhouse building footprint	Electricity Natural Gas Solar Geothermal Well # 2 Sanitary tap 3

Hayden Homestead: Master Plan

Table 3 Historic Preservation Studies

Resource Allocation/ Use	Site Map/ Easement Zone	Goals & Objectives	Secretary's Standards	Conformance: Deed of Conservation	Infrastructure Needs
Infill Building 1 Conditioned classrooms, labs, offices, shop space. meeting rooms, rest rooms	Map 5-5 Zone 1	Goal 1 (a) Goal 3 (b) Goal 4 (f)	New Construction Rehabilitation Principles 9, 10	New Construction on historic building footprint	Electricity Natural Gas Comm. Well #3 Sanitary Tap 4 Solar Geothermal
Building F-2 Main Barn Enclosed work space, demonstration and exhibit space	Map 5-5 Zone 1	Goal 1 (a),(b) Goal 2 (a),(b),(c),(d)	Rehabilitation Principles 1-8	Compatible, Adaptive use, no alteration of facade	Electricity
Building F-1 Ranch House Exhibit hall, Interpretive center, office, restrooms, artifact storage & display	Map 5-5 Zone 1	Goal 1 (a) Goal 2 (b),(d),(f),(g), (h),(i) Goal 3 (a)	Rehabilitation For adaptive use Principles 1-8	Compatible, Interpretation of historic use, no alteration of facade	Electricity Natural Gas Solar Well # 2 Sanitary tap 5
Building F-7 Schoolmarm's Cabin Exhibit – early day living conditions for local school teacher	Map 5-5 Zone 1	Goal 2 (a),(b),(d),(f), (g)	Rehabilitation For adaptive use Principles 1-8	Compatible, Interpretation of historic use, no alteration of facade	Electricity
Building F-3 Bunkhouse Accommodations - students, volunteers, workshops, retreats, elder hostel	Map 5-5 Zone 2	Goal 2 (a),(b),(d) Goal 3 (a),(c), (d),(e) Goal 4 (e),(h),(i),(k)	Rehabilitation for historic use Principles 1-8 New Construction Rehabilitation Principles 9, 10	Allowance for new construction to 1 ½ x existing building footprint	Electricity Natural Gas Well # 2 Sanitary Tap 2 Solar Geothermal
Building F-9 Maintenance Shop Maintenance shop, fire protection station	Map 5-5 Zone 1	Goal 1 (b) Goal 2 (b),(d),(e) Goal 3 (a)	Rehabilitation For adaptive use Principles 1-8	Compatible, Adaptive use, no alteration of facade	Electricity Natural gas
Building M-1 Caretakers Res. Caretakers residence	Map –5 Zone 2	Goal 2 (e) Goal 3 (a) Goal 4 (j)	Non-contributing structure	Non-contributing structure	Electricity Natural Gas Well # 1 Sanitary Tap 1 Solar Geothermal

Hayden Homestead: Master Plan

Table 4 Center for Sustainable Agronomy

Resource Allocation/ Use	Site Map/ Easement Zone	Goals & Objectives	Secretary's Standards	Conformance: Deed of Conservation Easement	Infrastructure Needs
Infill Building 1 Conditioned classrooms, labs, offices, shop space, meeting rooms, rest rooms	Map 5-6 Zone 1	Goal 1 (a) Goal 3 (b) Goal 4 (f)	New Construction Rehabilitation Principles 9, 10	New Construction on historic building footprint	Electrical Natural Gas Comm. Well #3 Sanitary Tap 4 Solar Geothermal
Greenhouse Wetland and Forest plant propagation, CMC organic food, Community garden, extend season	Map 5-6 Zone 2	Goal 1 (c),(d) Goal 2 (c) Goal 3 (a),(b),(c),(d) (e) Goal 4 (a),(b),(c)	New Construction Rehabilitation Principles 9, 10	New Construction on historic building footprint	Solar Geothermal Wind Natural Gas Electricity Irrigation Water
Outdoor Nurseries Outdoor nursery for hardening forest and wetland plants propagated in the greenhouse	Map 5-6 Zone 2, 5	Goal 1 (c) Goal 2 (c) Goal 3 (a),(c), (d)	N/A	Compatible with historic agricultural use of the ranch – request variance	Irrigation water Fencing
Building F-4 Equipment Storage	Map 5-6 Zone 2	Goal 1 (g) Goal 3 (d)	Rehabilitation for adaptive use Principles 1-8	Compatible, adaptive use, no alteration of facade	None
CMC Experimental Garden Research, CMC food	Map 5-6 Zone 2	Goal 1 (c) Goal 2 (c) Goal 3 (a) Goal 4 (a)	N/A	Request variance	Irrigation water Fencing

Hayden Homestead: Master Plan

Table 5 Community Learning and Enrichment

Resource Allocation/ Use	Site Map/ Easement Zone	Goals & Objectives	Secretary's Standards	Conformance: Deed of Conservation Easement	Infrastructure Needs
Infill Building 1 Conditioned classrooms, labs, offices, shop space, meeting rooms, rest rooms	Maps 5-7, 5-8 Zone 1	Goal 1 (a) Goal 3 (b) Goal 4 (f)	New Construction Rehabilitation Principles 9, 10	New Construction on historic building footprint	Electrical Natural Gas Comm. Well #3 Sanitary Tap 4 Solar Geothermal
Building F-1 Exhibit hall, Interpretive center, office, restrooms, artifact storage & display	Maps 5-7 5-8 Zone 1	Goal 1 (a) Goal 2 (b),(d),(f),(g),(h),(i) Goal 3 (a),(d) Goal 4 (d),(e),(f),(g),(h)	Rehabilitation For adaptive use Principles 1-8	Compatible, Interpretation of historic use, no alteration of facade	Electricity Natural Gas Solar Well # 2 Sanitary tap 5
Building F-2 Indoor / outdoor space for farmers markets, music festivals, barn dances, art exhibits, workshops, Ranch Heritage Days etc.	Maps 5-7 5-8 Zone 1	Goal 1 (a) Goal 3 (d) Goal 4 (d),(e),(f),(g),(h)	Rehabilitation Principles 1-8	Rehabilitation for adaptive use no alteration of facade	Electricity
Building F-3 Accommodations for event participants, youth groups, staging area for activities and events	Maps 5-8 Zone 2	Goal 2 (a),(e) Goal 3 (d) Goal 4 (h),(i)	Rehabilitation for historic use, Principles 1-8 New Construction Rehabilitation Principles 9, 10	Allowance for new construction to 1 ½ x existing building footprint	Electricity Natural Gas Well #2 Sanitary Tap 2 Solar Geothermal
Buildings F-5, F-6 Chicken and rabbit coops to house poultry and livestock for small animal husbandry studies	Maps 5-7 5-8 Zone 2	Goal 1 (g),(i) Goal (b),(d) Goal 3 (a),(d)	Rehabilitation Principles 1-8	Rehabilitation for historic use, no alteration of facade	Livestock water Electric Tank heater Hand wash station
Buildings F-10, F-11 Livestock barns for equestrian events and demonstrations of horse shoeing, period technology, livestock	Maps 5-7 5-8 Zone 1	Goal 1 (g) Goal 2 (a),(b),(d) Goal 3 (a),(c),(d) Goal 4 (f),(g),(h)	Rehabilitation for adaptive use Principles 1-8	Rehabilitation for historic use Compatible, no alteration of facade	Electricity Livestock water Tank heater Hand wash station
Corrals and Paddocks Equestrian skills training ring, corrals, and paddocks	Maps 5-7 5-8 Zone 1	Goal 1 (g),(i) Goal 2 (a),(b),(c),(d) Goal 3 (a),(d)	Rehabilitation For historic use Principles 1-8	Compatible, Historic use, no alteration of features	Livestock water, Fencing, Tank heater Hand wash station

Hayden Homestead: Master Plan

Table 5 Community Learning and Enrichment (Continued)

Resource Allocation/ Use	Site Map/ Easement Zone	Goals & Objectives	Secretary's Standards	Conformance: Deed of Conservation Easement	Infrastructure Needs
Greenhouse Propagation of vegetable starts prior to planting season	Maps 5-7 Zone 2, 5	Goal 1 (c),(d) Goal 3 (a),(b),(c),(d) (e) Goal 4 (a), b), c)	New Construction Rehabilitation Principles 9, 10	See Adaptive Use 5.3.1	Solar Geothermal Wind Natural Gas Electricity Irrigation Water
Streams, and Ponds Fishing and recreation	Maps 5-7 5-8 Zone 1	Goal 1 e),(f)	N/A	N/A	None
Small animal enclosure Pasture and enclosure area for small livestock animal husbandry	Maps 5-7 5-8 Zones 1, 2	Goal 1 (g),(i) Goal 3 (d)	N/A	Small animal enclosures were traditional use of areas delineated. Rehabilitate fencing	Livestock water Tank heater Hand wash station
Community Garden ½ acre irrigated / fenced garden space for education and community use	Maps 5-7 Zone 2	Goal 1 (c),(g) (h) Goal 2 (c) Goal 3 (a),(g), Goal 4 (a)	N/A	Small residential garden compatible in Zone 2 -request Size variance	Irrigation water Fencing
Building F-8 Storage Garage Garden Equip. storage	Maps 5-7 Zone 1	Goal 1(g) Goal 3 (d)	Rehabilitation Principals 1-8	Compatible, adaptive use, no alteration of facade	Electrical
Infill Building -2 New residential structure, guest and VIP accommodations Model for LEED sustainable residential building	Map 5-7 Zone 2	Goal 4(l)	New Construction Rehabilitation Principles 9, 10	New Construction on historic bunkhouse building footprint	Electricity Natural Gas Solar Geothermal Well # 2 Sanitary tap 3

Hayden Homestead: Master Plan

Table 6 Natural Resource Management Field Station

Resource Allocation/ Use	Site Map/ Easement Zone	Goals & Objectives	Secretary's Standards	Conformance: Deed of Conservation Easement	Infrastructure Needs
Infill Building 1 Conditioned classrooms, labs, offices, shop space, meeting rooms, rest rooms	Map 5-9 Zone 1	Goal 1 (a) Goal 3 (b) Goal 4 (f)	New Construction Rehabilitation Principles 9, 10	New Construction on historic building footprint	Electrical Natural Gas Comm. Well #3 Sanitary Tap 4 Solar Geothermal
Agronomy Center Propagation and raising forest & wetland plants, environmental best practices, sustainable agronomy	Map 5-9 Zone 2, 5	Goal 1 (c),(d) Goal 3 (a),(b),(c),(d) (e) Goal 4 (a),(b), (c)	New Construction Rehabilitation Principles 9, 10	See Adaptive Use 3	Solar Geothermal Wind Natural Gas Electricity Irrigation Water
Renewable Energy Education in renewable energy sources	Map 5-9 Zones 1,2	Goal 1 (d) Goal 3 (b),(c), (d),(e)	New Construction Rehabilitation Principles 9, 10	See Adaptive Use 4	See Adaptive Use 4
Corrals and Paddocks Animal Husbandry, equestrian skills	Map 5-9 Zone 1	Goal 1 g), i) Goal 2 a), b), c), d) Goal 3 a), d)	Rehabilitation For historic use Principles 1-8	Compatible, Historic use, no alteration of features	Livestock water Tank heater Hand wash station
Range Management Upland habitats, botany, rangeland ecology/management	Map 5-9 Zones 3,4	Goal 1 (e),(i)	N/A	N/A	None
Wetlands, Streams, and Ponds Hydrology, water chemistry / quality entomology, wetland habitats	Map 5-9 Zone 1	Goal 1 (e),(f)	N/A	N/A	None
Building F-3 Accommodations and meeting area for STEM Program, science camps etc.	Map 5-9 Zone 2	Goal 2 (a),(e) Goal 4 (h),(i)	Rehabilitation for historic use Principles 1-8 New Construction Rehabilitation for adaptive use Principles 9, 10	Allowance for new construction to 1.5x existing footprint allowable	Electrical Natural Gas Well # 2 Sanitary Tap 2 Solar Geothermal
Buildings F-10, F-11 Livestock barns, animal husbandry, equestrian training	Map 5-9 Zone 1	Goal 1 (b),(g),(i)	Rehabilitation for historic use Principles 1-8	Compatible, Historic use, no alteration of facade	Electricity Livestock water Tank heater Hand wash station

Hayden Homestead: Master Plan

Table 7 Animal Husbandry / Equestrian Center

Resource Allocation/ Use	Site Map/ Easement Zone	Goals & Objectives	Secretary's Standards	Conformance: Deed of Conservation Easement	Infrastructure Needs
Infill Building 1 Conditioned classrooms, labs, offices, shop space. Meeting rooms, rest rooms	Map 5-10 Zone 1	Goal 1 (a) Goal 3 (b) Goal 4 (f)	New Construction Rehabilitation Principles 9, 10	New Construction on historic building footprint	Electrical Natural Gas Comm. Well #3 Sanitary Tap 4 Solar Geothermal
Buildings F-10, F-11 Livestock barns, feed storage, tack room, instruction areas, horse boarding	Map 5-10 Zone 1	Goal 1 (g),(i) Goal 2 (d) Goal 3 (a),(d) Goal 4 f), h)	Rehabilitation Principles 1-8	Rehabilitation for historic use, no alteration of facade	Livestock water Tank heater Hand wash station
Buildings F-5, F-6 Chicken and rabbit coops to house poultry and livestock for small animal husbandry	Map 5-10 Zone 2	Goal 1 (g),(i) Goal (b),(d) Goal 3 (a),(d)	Rehabilitation Principles 1-8	Rehabilitation for historic use, no alteration of facade	Livestock water Electric Tank heater Hand wash station
Building F-14 Log barn traditionally used as part of cattle operation, squeeze chute, vaccination, branding	Map 5-10 Zone 1	Goal 1 (g),(i) Goal 2 (d),(g) Goal 3 (d)	Rehabilitation Principles 1-8	Rehabilitation for historic use, no alteration of facade	None
Building F-16 Slaughterhouse used for dispatching and butchering cattle and livestock	Map 5-10 Zone 1	Goal 1 (g),(i) Goal 2 (d),(g) Goal 3 (d)	Rehabilitation Principles 1-8	Rehabilitation for historic use, no alteration of facade	None
Corrals & Paddocks Equestrian training ring, corrals, and paddocks	Map 5-10 Zone 1	Goal 1 (g),(i) Goal 2 (d) Goal 3 d)	Rehabilitation Principles 1-8	Rehabilitation of existing fences and gates, no alteration of features	Livestock water Tank heater Hand wash station
Grazing Pasture land for grazing animals	Map 5=10 Zones 3, 4	Goal 1(g),(i)	N/A	Grazing was traditional use of pasture lands of Zones 3 & 4	Fencing Livestock water
Small animal enclosure Pasture and enclosure area for small livestock animal husbandry	Map 5-10 Zones 1, 2	Goal 1 (g),(i) Goal 3 (d)	N/A	Small animal enclosures were traditional use of areas delineated. Rehabilitate fencing	Livestock water Tank heater Hand wash station
Building F-3 Accommodations and meeting area for youth groups, elder hostel, equestrian groups	Map 5-10 Zone 2	Goal 4 (i) Goal 2 (d) Goal 3 (d)	Rehabilitation Principles 1-8 New Construction Rehabilitation Principles 9, 10	Allowance for new construction to 1.5x existing footprint	Electrical Natural Gas Well # 2 Sanitary Tap 2 Solar Geothermal

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Table 8 Outdoor Recreation Center

Resource Allocation/ Use	Site Map/ Easement Zone	Goals & Objectives	Secretary's Standards	Conformance: Deed of Conservation Easement	Infrastructure Needs
Infill Building 1 Conditioned classrooms, labs, offices, shop space. Meeting rooms, rest rooms	Map 5-11 Zone 1	Goal 1 (a) Goal 3 (b) Goal 4 (f)	New Construction Rehabilitation Principles 9, 10	New Construction on historic building footprint	Electrical Natural Gas Comm. Well #3 Sanitary Tap 4 Solar Geothermal
Building F-3 Accommodations for ORL students, staging area for activities and events on site and on Arkansas River	Map 5-11 Zone 2	Goal 2 (a),(e) Goal 4 (h),(i)	Rehabilitation for historic use Principles 1-8 New Construction Rehabilitation for adaptive use Principles 9, 10	Allowance for new construction to 1 ½ x existing building footprint	Electricity Natural Gas Well # 2 Sanitary Tap Solar Geothermal
Buildings F-10, F-11 Livestock barns for horses tack & feed for equestrian training, pack horse instruction, equipment storage	Map 5-11 Zone 1	Goal 1 (g),(i) Goal 2 (a),(b),(d) Goal 3 (a),(c), (d) Goal 4 (f), (g),(h)	Rehabilitation Principles 1-8	Rehabilitation for historic use Compatible, no alteration of facade	Electricity Livestock water Tank heater Hand wash station
Building F-2 Indoor instruction space, fly casting, archery, rigging, equipment storage	Map 5-11 Zone 1	Goal 1 (a)	Rehabilitation Principles 1-8	Rehabilitation for adaptive use no alteration of facade	Electricity
Corrals and Paddocks Equestrian training ring, corrals, and paddocks	Map 5-11 Zone 1	Goal 1 (g),(i) Goal 2 (c)	Rehabilitation Principles 1-8	Rehabilitation for historic use Compatible, no alteration of features	Livestock water Tank heater Hand wash station, Fence Rehabilitation
Ponds & Streams Aquatic entomology, stream ecology, fly casting, beginning water sports and rigging	Map 5-11 Zone 1	Goal 1 (f)	N/A	N/A	None

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Photo Credits

Historic photos

Unless otherwise noted, historic photos of the ranch were from the Betty Farrington Family Album.

Current day photos

Unless otherwise noted, current day photos were excerpted from the collections of Mike Conlin and Bill Scherer.