

Level 4 Potential Conservation Area (PCA) Report

Name Forest Lakes

Site Code S.USCOHP*28177

IDENTIFIERS

Site ID 2709 Site Class PCA
 Site Alias None

Network of Conservation Areas (NCA)

<u>NCA Site ID</u>	<u>NCA Site Code</u>	<u>NCA Site Name</u>
-		No Data

LOCATORS

Nation United States Latitude 395508N
 State Colorado Longitude 1054008W

Quad Code Quad Name
 39105-H6 East Portal

County
 Gilpin (CO)
 Grand (CO)

Watershed Code Watershed Name
 10190005 St. Vrain
 14010001 Colorado headwaters

SITE DESCRIPTION

Minimum Elevation 10,400.00 Feet 3,169.92 Meters
 Maximum Elevation 12,072.00 Feet 3,679.55 Meters

Site Description

The Forest Lakes site is located on the east side of the Continental Divide, in the James Peak Wilderness. High ridges along the Continental Divide delineate the western border of the site and east-west trending ridges delineate north and south boundaries. The site extends from the alpine down into the subalpine zones and encompasses complexly sculpted glacial cirques, with arêtes. Terrain varies from gentle to steep slopes with rock outcrops and cliffs, as well as glacially sculpted, terraced, slopes below the cirque. Valley trend is generally to the east and southeast but complex topography within the cirque also results in north- and south-trending hillslopes and ridges. Ecosystems in the site include alpine tundra at the highest elevations, transitioning at lower elevations to krummholz and then down to subalpine systems at the lower elevations of the site. Glacial activity also created the template for the formation of the numerous tarns and wetlands that are distributed like paternoster lakes throughout the site and which are the headwaters for numerous streams that are tributaries to South Boulder Creek. Site geology is composed of two types of rock units. Rocks that comprise the walls of the cirque, from the Continental Divide down to the toeslopes, are Precambrian age (1,700-1,800 m.y.) metamorphic units composed of biotitic gneiss, schist, and migmatite. These rocks are derived principally from sedimentary rocks and locally contain minor hornblende gneiss, calc-silicate rock, quartzite, and marble. Toeslopes and the floor of the cirque and slopes below are Quaternary age younger alluvium and surficial deposits that are comprised of glacial drift of the Pinedale and Bull Lake Glaciations with some unclassified glacial deposits (Tweto 1979). Soils in the Forest Lakes site vary with elevation and corresponding to glacial activity. On the crest and high slope of the Continental Divide, Bross-Matcher families-Lithic Cryorthents complex occur on 5 to 40 percent slopes. Upper and mid-slopes of the cirque walls are comprised of Cirque land. Small basins in the cirque with 5 to 25 percent slopes are Bross family-Cryaquepts complex. On low slopes and on the floor of the cirque and extending down onto the slopes below the terminus of the cirque, soils are comprised of Leighcan family, till substratum-Cryaquolls complex on 5 to 40 percent slopes. Numerous wetlands occur in this site and most are located on soils of the Leighcan family, till substratum-Cryaquolls complex. The Leighcan family, till substratum component occurs on moraines; parent material consists of residuum and/or till derived from igneous and metamorphic rock. Depth to a root restrictive layer is greater than 60 inches; the natural drainage class is somewhat excessively drained; this soil is not flooded and is not ponded; and organic matter content in the surface horizon is about 1 percent. The Cryaquolls component occurs on flood plains; parent material consists of gravelly alluvium and/or gravelly glaciofluvial deposits derived from igneous and metamorphic rock; depth to a root restrictive layer is greater than 60 inches; the natural drainage class is poorly drained; this soil is rarely flooded and is not ponded; and organic matter content in the surface horizon is about 85% (USDA 2010). Local wetland hydrology is strongly influenced by the interaction of climate and geomorphology. Wetland hydrology in this site is strongly connected to shallow ground and surface water flow and snowmelt contributes the largest

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proportion of water to these wetlands through its influence on ground and surface water dynamics. Snowmelt interacts with local geomorphology to maintain high water tables in wetlands and also exerts major control over riparian wetlands by influencing soil saturation characteristics (flooding frequency, duration, timing, and depth) that results from groundwater flow and out-of-bank flooding in the riparian zone (Rocchio 2005). Additionally, by releasing water throughout the growing season, these high altitude headwater wetlands make an important contribution to late summer flows in lower elevation streams. Late summer precipitation may also be important to the fen wetlands in this site in replenishing local aquifers thereby maintaining sufficiently high water tables to support fen development (Cooper 1990). Ecosystems and habitats in this site are diverse, responding to wide elevational gradients, differing aspects, slope, geology, soil, and hydrology. Upland ecosystems in the alpine zone include snowfields, boulder fields, scree and talus slopes, fellfields, turf meadows, gopher gardens and willow carrs. Snow distribution controls vegetation in the alpine. Krummholz stands mark the transition between alpine and subalpine systems and are characterized by stunted, patchy stands of subalpine fir (*Abies lasiocarpa*) and Engelmann spruce (*Picea engelmannii*) with intervening patches of wolf (*Salix wolfii*) and bareground (*Salix brachycarpa*) willow and dry meadow grasses including superturf (*Kobresia myosuroides*) and tufted hairgrass (*Deschampsia caespitosa*). The transition to the subalpine is also marked by a change in topography. Topography is characterized by a series of slopes and terraces that have been produced by glacial action and subsequent mass wasting of morainal material. The effect has been to produce paternoster tarns, wet meadows, marshes and fens that are connected by streams and shallow ground and surface water flow. Slopes are typically dominated by stands of Engelmann spruce - subalpine fir (*Abies lasiocarpa* - *Picea engelmannii*) forest that are interspersed with mesic or hydric herbaceous meadows, and low shrubs and herbs occupying canopy openings and rocky outcrops. Terraces and low-gradient slopes, swales and depressions are occupied by a complex mosaic of wetland plant communities and are typically ringed by spruce - fir forest. Often a solifluction lobe has formed at the downslope margin of the terraces and is occupied by willow shrubs (*Salix* spp.) and a diverse layer of forbs. Wetland plant communities include willow shrublands, graminoid wet meadows, marshes and fens and also riparian wetlands. Shrub dominated wetlands are characterized by planeleaf willow (*Salix planifolia*) with a forb-dominated understory. Fens occur on low slopes, depressions and adjacent to tarns and are characterized by graminoid vegetation dominated by few-flower spikerush (*Eleocharis quinqueflora*), intermixed with other graminoids including water sedge (*Carex aquatilis*), little sedge (*Carex paupercula*), silvery sedge (*C. canescens*), Rocky Mountain sedge (*C. scopulorum*), small-head sedge (*C. illota*), black alpine sedge (*C. nigricans*), and new sedge (*C. nova*), and a few forb species including marsh marigold (*Caltha leptosepala*), and elephantella (*Pedicularis groenlandica*). Fringe wetlands often occur along the margins of tarns and are dominated by mesic graminoids including water sedge, bluejoint reedgrass (*Calamagrostis canadensis*) and needle spikerush (*Eleocharis acicularis*). Streams often run through or adjacent to the fens connecting the wetlands and tarns. Stream riparian habitat is characterized by a lush cover of heartleaf bittercress-tall fringed bluebells-arrowleaf ragwort (*Cardamine cordifolia* - *Mertensia ciliata* - *Senecio triangularis* and *Caltha leptosepala*) herbaceous vegetation. Wet meadows, hummocks, mesic sites and fen margins are characterized by a rich diversity of forbs that includes globeflower (*Trollius biflorus*), queen's crown (*Sedum rhodanthum*), northern gentian (*Gentianella amarella*), bog saxifrage (*Saxifraga oregana*), hemlock parsley (*Conioselinum scopulorum*), alpine speedwell (*Veronica wormskjoldii*), Gray's angelica (*Angelica grayi*), saffron ragwort (*Senecio crocatus*) and star gentian (*Swertia perennis*).

Key Environmental Factors

Climate, hydrology, and geology are key driving factors that have enabled the development and maintenance of the plant communities and animal species present in the site.

Climate Description

Climate in Gilpin County varies dramatically with elevation, aspect and time of year. Higher elevations to the north and west are colder and wetter than lower elevations to the east and south. Temperature and precipitation varies from east to west corresponding to elevation change. Average annual temperature and length of the growing season decrease as elevation increases while average annual precipitation increases. In general, temperatures decrease at a rate of approximately 3 °F for every thousand feet of elevation gain. Additionally, the pattern of precipitation distribution varies from the eastern to the western parts of the county. Western locations at higher elevations receive the majority of their precipitation during late winter and early spring while eastern locations receive the majority of their moisture during early spring and summer (Siemer 1977). The Forest Lakes site is located in the western most part of the County from the Continental Divide at an elevation of 12,072 feet, southeast down to an elevation of 10,400 feet. Here, average annual precipitation from 1971 to 2000 was 34.34 inches per year; coldest temperatures occurred in January with an average maximum high of 25.9 °F and a low of 6.51 °F; warmest temperatures occurred in July with an average

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maximum high of 66.45 °F and a low of 39.06 °F (Prism 2010).

Land Use History

Although much of Gilpin County was impacted by mining exploration, most of the high elevations landscape near the Continental Divide, including this site, did not see mining exploration (Gilpin County 2010). The first humans to use the land in this site were likely Native Americans. Numerous sites in alpine ecosystems along the Continental Divide of the Front Range, including near the Rollins Pass area, have been identified as Paleoindian and Prehistoric age game drive sites (Benedict 2005).

Cultural Features

Paleoindian to Prehistoric age Native American artifacts are potentially present (Gellhorn 2002).

SITE DESIGN

Site Map Y - Yes

Mapped Date 11/29/2010

Designer Malone, D.G.

Boundary Justification

The site was delineated to include ecological systems and processes that are essential to maintaining the wetlands and provide a buffer against disturbance. Climate change was also considered in boundary delineation; alpine ecosystems are especially vulnerable and species that depend on tundra may disappear as alpine tundra diminishes with the advance of trees and shrubs (USFWS 2010). Hydrology is the primary process essential to long-term wetland plant community viability. Alpine/subalpine wetlands are often isolated hydrologically from other wetlands, and easily impacted by surrounding land use (Rondeau 2001). Thus, maintaining an intact and unfragmented hydrologic regime is essential to element viability. The wetlands in this site are reliant on water levels at or near the surface for much or all of the growing season (Rondeau 2001). Snowmelt from nearby surrounding ridges and slopes maintains abundant shallow ground and surface flow which contributes the primary source of water to depressional, slope and riparian wetlands.

Primary Area

641.78 Acres

259.72 Hectares

SITE SIGNIFICANCE

Biodiversity Significance Rank B4: Moderate Biodiversity Significance

Biodiversity Significance Comments

This site is drawn to encompass five fens which are dominated by an excellent (A-ranked) occurrence of the globally apparently secure (G4/S3S4) few-flower spikerush (*Eleocharis quinqueflora*) herbaceous vegetation.

Other Values Rank No Data

Other Values Comments

No Data

LAND MANAGEMENT ISSUES

Land Use Comments

No Data

Natural Hazard Comments

No Data

Exotics Comments

No Data

Offsite

No Data

Information Needs

No Data

ASSOCIATED ELEMENTS OF BIODIVERSITY

<u>Element</u>			<u>Global</u>	<u>State</u>	<u>Driving</u>
<u>State ID</u>	<u>State Scientific Name</u>	<u>State Common Name</u>	<u>Rank</u>	<u>Rank</u>	<u>Site Rank</u>
23155	<i>Eleocharis quinqueflora</i> Herbaceous Vegetation	Alpine Wetlands	G4	S3S4	Yes

REFERENCES

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<u>Reference ID</u>	<u>Full Citation</u>
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ADDITIONAL TOPICS

Additional Topics

No Data

VERSION

Version Date 11/29/2010
Version Author Malone, D.G.

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