10.0 RULE 6.4.10: EXHIBIT J–VEGETATION INFORMATION

10.1 NARRATIVE

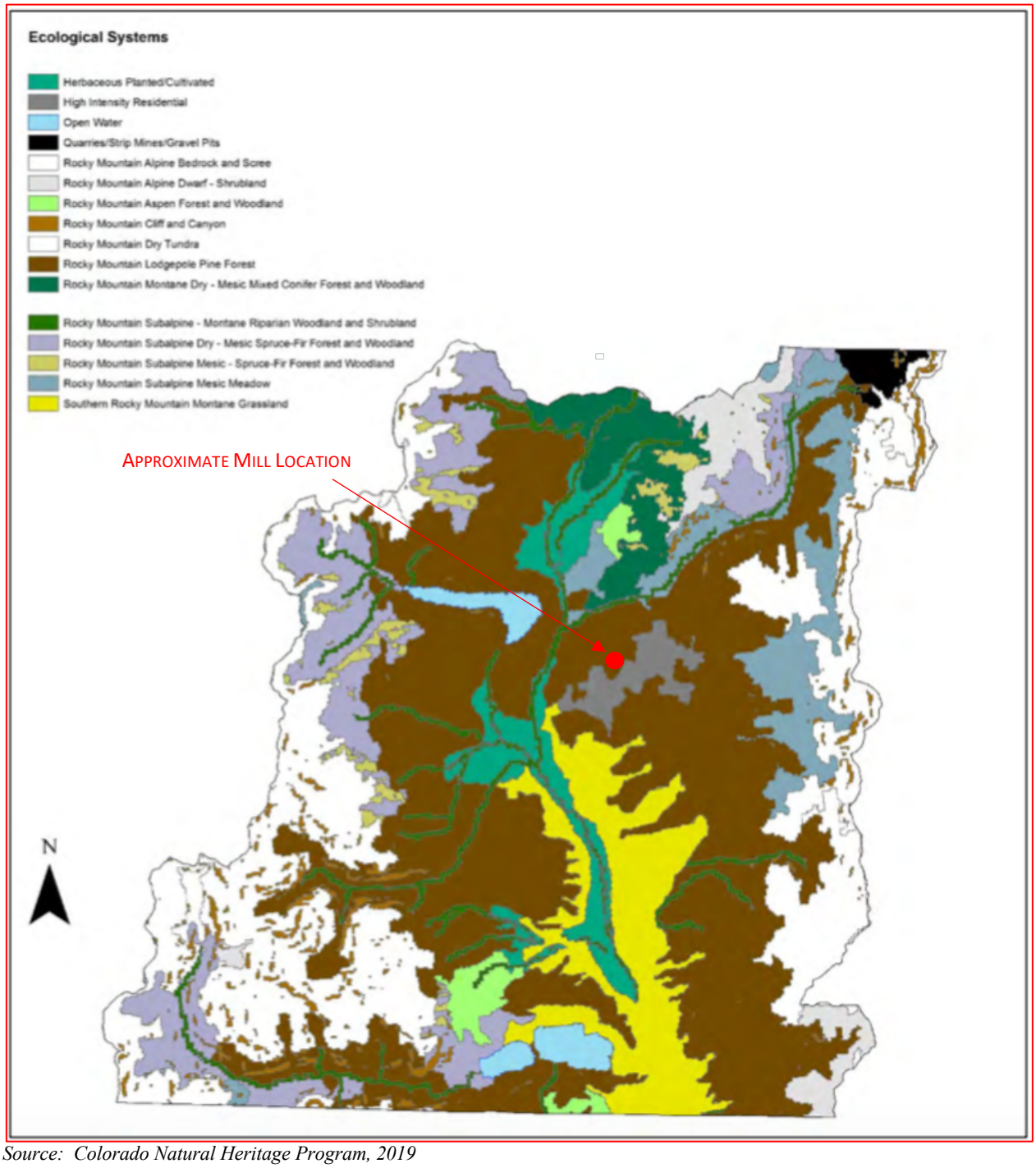
Lake County is dominated by subalpine and montane forests, and montane meadows – these ecological systems are characteristic of the Southern Rockies as shown in **Figure 10-1**.

The ecological system with the largest coverage - and completely dominating the Leadville Mill property – is the Rocky Mountain lodgepole pine forest that includes 23.9% of the county, covering 58,421 acres (shown in brown in **Figure 10-1**). The lowest coverage is High Intensity Residential development at less than 1% of the county. See **Table 10-1**.

The Rocky Mountain lodgepole pine forest (Pinus contorta) ecological system is widespread in upper montane to subalpine elevations of the Rocky Mountains. Most forests in this ecological system occur as early- to mid-successional forests which developed following fires. Following stand-replacing fires, lodgepole pine will rapidly colonize and develop into dense, even-aged stands. The majority of established stands range from 30ft to 40ft high. This system includes lodgepole pine-dominated stands that, while typically persistent for >100-year time frames, may succeed to spruce-fir; in the southern and central Rocky Mountains, it is seral to the Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland.

Soils supporting these forests are typically well-drained, gravelly, coarse-textured, acidic, and rarely formed from calcareous parent materials.

Figure 10-1: Major Ecological Systems in Lake County



Source: Colorado Natural Heritage Program, 2019

TABLE 10-1: ECOLOGICAL SYSTEMS OF LAKE COUNTY

Ecological System	Acres	Percent
Rocky Mountain Lodgepole Pine Forest	**58,421**	**23.9%**
Rocky Mountain Subalpine Mesic Meadow	20,393	13.8%
Rocky Mountain Subalpine Dry-Mesic-Spruce-Fir Forest and Woodland	29,190	10.6%
Southern Rock Mountain Montane Dry-Mesic Mixed Conifer Forest and Woodland	19,738	10.4%
Rocky Mountain Alpine Bedrock and Scree	18,793	9.8%
Southern Rocky Mountain Montane Grassland	11,151	7.4%
Rocky Mountain Alpine Dwarf-Shrubland	11,300	4.5%
Rocky Mountain Alpine Turf	10,699	4.3%
Rocky Mountain Subalpine-Montane Riparian Woodland and Shrubland	10,579	4.0%
Herbaceous Planted/Cultivated	8,803	3.0%
Rocky Mountain Cliff, Canyon, and Massive Bedrock	7,012	2.4%
Rocky Mountain Aspen Forest and Woodland	4,720	1.6%
Quarries/Strip Mine/Gravel Pits	4,577	1.6%
Open Water	3,665	1.3%
Rocky Mountain Subalpine Mesic-Spruce-fir Forest and Woodland	3,796	1.3%
High Intensity Residential	2,923	0.1%
TOTAL	**245,760**	**100.0%**

Source: Comer et. al. 2003)

These forests are reportedly dominated by lodgepole pine with shrub, grass, or barren understories. The shrub stratum may be conspicuous to absent; common species include kinnikinnick (Arctostaphylos uva-ursi), twinflower (Linnaea borealis), Oregon grape (Mahonia repens), buffaloberry (Shepherdia canadensis), grouse-whortleberries (Vaccinium cespitosum, Vaccinium scoparium), and common juniper (Juniperus communis). The shrub stratum is absent at the Mill Property, and barren understories dominate the forest. Overall, less than 5% of understories consist of shrubs and grasses.

It is also reported that sometimes there are intermingled mixed conifer/aspen (Populus tremuloides) stands, with the latter occurring with inclusions of deeper, typically fine-textured soils. This is not the case at the Leadville Mill property, as there are no conifer or aspen stands.

The lodgepole pine forest in Lake County has not been as severely impacted by the massive mortality, as seen in the rest of the state, caused by the mountain pine beetle and the associated fungus that infects trees and interferes with its ability to transport water and nutrients.

The property is not suitable for hay meadows for cropland.

10.2 VEGETATION TYPES

Information in this exhibit is sourced from the April 2019 report prepared by the Colorado Natural Heritage Program, Warner College of Natural Resources, Colorado State University. The following excerpt is from the Executive Summary of this report.

> In September 2015, the Lake County Commissioners unanimously approved the Colorado Natural Heritage Program's (CNHP) project, Survey for Critical Biological Resources in Lake County. Funding was provided by the U.S. Environmental Protection Agency, Region 8 Wetland Program Development Grant, with matching funds from Colorado Department of Transportation and Colorado State University. In 2017, CNHP was awarded a Great Outdoors Colorado (GOCO) Conservation Excellence Grant to leverage and compliment the wetland project, with matching in-kind funds from Lake County, Central Colorado Conservancy, U.S. Forest Service, Colorado Mountain College, and Lake County Open Space Initiative. The main goal for both projects was to provide a scientific data resource for land managers, county planners, and the citizens of Lake County for conducting proactive landscape planning to preserve the natural biodiversity of significant habitats that support rare, imperiled and/or sensitive plants and animals.

Figure 3-5 is a map showing the lodgepole pine forest ecological system that dominates the Mill Property. The entire property consists of open growth to medium density lodgepole pine and an area of no vegetation, which occurs in the Arkansas valley slag area. The percentage totals for each respective are; 1) no vegetation is approximately 10%; medium density is approximately 10% and 3) open density is approximately 80%. No high-density areas are represented on the mill property. Representative stand samples are described in **Table 10-2**:

TABLE 10-2: REPRESENTATIVE STAND SAMPLES

Photo[1]	Density	Diameter Breast Height (dbh)	Height
1	Medium	4-6 inches	15-20 feet
2	Medium	6-10 inches	18-30 feet
3	Open	10-14 inches	45-60 feet

Following are representative photographs of the lodgepole pine forest on the Mill Property. The location of these photographs and the direction of the views are depicted **in Figure 3-5**.

Figure 10-2: Vegetation Photo 1

Facing South along gas pipeline, eastern fence boundary.

Figure 10-3: Vegetation Photo 2

Facing North

Figure 10-4: Vegetation Photo 3

Facing northeast toward southern boundary of FTD.