



Forestry and Fire Section

FORESTRY AND FIRE

2020 ANNUAL REPORT

2020 Staff

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2020 Highlights

- ◆ Before the COVID-19 shut down we were able to finish the Lichen Loop Helicopter Contract (162 acres, photo top left) and get rehabilitation seeding completed on the affected areas.
- ◆ We finished the remaining two acres of the 12.1 acre Williams Merlin Project, which created a patch cut in contiguous lodgepole pine along the peak to peak corridor, with an effort to promote aspen and new age class.
- ◆ We started a project at Reynolds Ranch, creating three small patch cuts, which will total under five acres. Some of the material (photo top right) will be utilized as teepee poles by the Dakota/Sioux.
- ◆ We completed two Conservation and Recovery Plans (for bristlecone pine and limber pine).
- ◆ Our Community Forestry Sort Yard (CFSY) Program diverted 1,600+ tons of biomass from the landfill. Some of this material will be used in our biomass facilities (photo bottom left).
- ◆ We assisted in the suppression efforts for the Cal-Wood fire, which burned 10,106 acres in Boulder County with, 4,377 acres being burned on Heil Valley Ranch (photo bottom right).

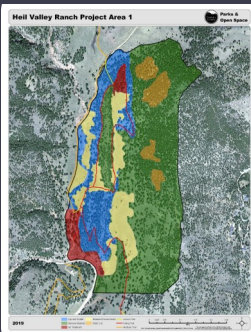


Forestry and Fire Planning



The “Forrest” property site visit to look at bristlecone pine.

“Planning begins in the office; but it succeeds in the forest.” S-Golden



Planning map for Lichen Loop Project.

In 2020 our forestry planning group completed forest inventory of 104 data plots, spanning 1,004.5 acres. With the exception of seven plots on 12.5 acres at Hall Ranch, all data was collected at Heil Valley Ranch months to weeks preceding the Cal-Wood fire. Much of the data was post-treatment inventory with one area of pre-treatment data collected. Despite much of the area burning in the Cal-Wood fire, this data will be valuable for post-fire monitoring.



Data Collection Plot at Heil Valley Ranch.



Post treatment planning at Heil Valley Ranch

We completed a post-treatment report for a 12.5-acre project at Hall Ranch (PA7U5). This project saw a decrease from 60 square feet of basal area to 30 square feet per acre and canopy cover decrease of 40%.

We collected post treatment data on 162 acres at Heil Valley Ranch (PA1). This project saw a decrease from 170 square feet of basal area to about 50 square feet per acre. Canopy cover decreased by 27% on average.

We worked on updating our procedures for forest inventory, fuels inventory, and live fuels moisture sampling to ensure repeatable and accurate data collection. We also worked on literature reviews for the same three sampling procedures to confirm that our data collection is founded in research proven methodologies to ensure that we adhere to the most recent and reliable practices.

We also updated to the new Forest Vegetation Simulator (FVS) program. This change required staff to attend a virtual training hosted by the U.S Forest Service and required creating a new FVS guide to be written for staff use.



Post-fire planning meeting.



Reynolds Ranch forwarding trail used to remove cut material.

“Don’t cut it until you know how to remove it, because every time you touch it, it’s time and money.” S-Golden

Trail corridor clearing on the Toll Conservation Easement.



Forestry Operations

Williams Merlin PA1U1:

We completed all the work at the Williams-Merlin Property. This project created 12.1 acres of patch cuts in order to promote age class and size class diversity on the landscape, while also providing an area for aspen to establish. In 2020:

- ◇ 2.1 acres were felled and processed in the field.
- ◇ 116 tons of product were winched, forwarded, hauled, sorted, delivered, and decked for fence rails and biomass material.
- ◇ 155 fence rails were delivered to various volunteer projects.



Reynolds Ranch PA1U3:



Our In-House Operations crew moved to Reynolds Ranch to complete approximately three acres of patch cuts.

- ◇ Flagging, marking, and mapping of forwarding trails and three one-acre patch-cut boundaries.
- ◇ Felling, processing, and pre-bunching of 1.8 acres of material.
- ◇ Forwarding, hauling, and sorting of approximately 16 tons of material

Toll Trail Corridor Clearing:

In anticipation of creating the Toll Trail, forestry staff lent their tree-felling expertise to assist the trails work group.

- ◇ Approximately six miles of corridor were cleared to a width of 80-120 feet.
- ◇ Area had a lot of dead-standing hazard trees from mountain pine beetle outbreak (2008-2010).
- ◇ Two employees worked eight weeks, and two employees worked three weeks.
- ◇ Project will help decrease cost of trails construction.



Lichen Loop Forestry Operations

- ◇ 162 acres completed utilizing aerial tree yarding (helicopter).
- ◇ Tree boles were processed and chipped at the landing for utilization in our biomass heating facilities. 525 tons were delivered to facilities, with an additional 1,125 tons decked at the landing.
- ◇ Completed by Markit! Forestry Management with R&R Conner Helicopters as the main subcontractor.
- ◇ \$1,080,378 total for the project, at approximately \$6,669 per acre.
- ◇ Work started 2/03/20 and finished 3/26/2020.



Aerial Yarding



Biomass Log Deck



Before Treatment



After Treatment

- ◇ 11 total days (69 hours) of helicopter flight time.

Fire Management



Smoke plume rising from the Cal-Wood Fire.

On Oct. 17, about 12:15 p.m., the Cal-Wood Fire started on the Cal-Wood property. By 3:30 p.m., the fire had already reached Highway 36, which is more than six miles from the point of origin. When all was said and done, 10,106 acres had burned, with 4,377 acres burned on Heil Valley Ranch.

Nine BCPOS staff employees were involved with fire-suppression effort, with close to 80 total days of effort. Resource protection had 13 total staff members assist with evacuations and safety. Three full-time forestry employees were involved with fire-

suppression efforts, serving as Resource Advisors on the fire. One seasonal forestry staff member served as a fire Fighter Type II.

After the fire, the forestry staff was instrumental in addressing safety plans for access and evaluating hazard trees on the property. Hazard tree removal became the focus of staff toward the end of 2020.

2021 will require a lot of work surrounding post-fire rehabilitation and slope stabilization, while also continuing with hazard tree removals.

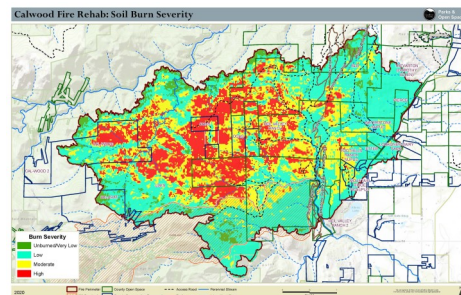


A good portion of Heil Valley Ranch saw extreme fire behavior, resulting in complete tree loss (Photo on Left). Areas which had prior forest treatments fared better, with moderate (top right) and low (bottom right) burn severities.



Post-Fire

- ◇ One of the first steps after a wildfire is to have a BAER (Burned Area Emergency Response) report completed. As part of the BAER report, a soil burn severity map is created for the fire footprint. This map helps identify areas that may be more prone to erosion and future debris flows.
- ◇ Forestry staff worked to identify tree hazards and begin hazard tree felling in high risk areas.
- ◇ Forestry staff worked closely with Plant Ecology staff to identify possible mitigation efforts and assist in an Emergency Watershed Protection grant application.
- ◇ Work with researchers to help understand and learn from past treatments.



Soil Burn Severity Map from the Cal-Wood Fire.

Community Forestry Sort

The CFSY program is now in its 13th year. In 2020 there were 160 operational days. The yards both opened roughly one month later than planned because of COVID-19. The Nederland CFSY was opened from June 3 through Oct. 17, and the Meeker Park CFSY was opened from June 17 through Oct. 10. The Nederland CFSY was re-opened from Oct. 28 until Nov. 21 in order to help landowners who completed more fuels mitigation after the Cal-Wood fire. This period was a full 15 operational days fewer than previous years.

Even with fewer operational days, a total of 9,563 loads were received at the yards, making it the fifth straight year with over 6,000 loads (more than 3,400 loads in than 2019!). 1,612.4 tons of biomass were collected and diverted from the landfill. The table below breaks down the different types of material collected.

Yard	Slash Tons	Wood Tons	Chip Tons	Noxious Weed Tons
Nederland	673.5	160.6	140.3	63.6
Meeker Park	396.4	106.8	32.3	38.8
Totals	1069.9	267.4	172.6	102.4

In addition to woody biomass material, we have been collecting both pine needles and noxious weeds at our sort yards for the past six years. Pine needle removal from the home ignition zone is an important part of maintaining defensible space for mountain properties. Noxious weed removal from the properties helps keep these weeds in check. These collections have increased yearly and are a popular use of the sort yards.

Outreach is an important part of the CFSY program, however, many of our outreach events, such as user appreciation days or wildfire awareness days, were canceled because of COVID-19. We were able to continue providing education and outreach materials at our yards for visitors, including our monthly newsletter, and we also used social media to communicate with the public.



Checking in at the Nederland CFSY.



Woody biomass collected for use in Biomass Heat Facilities.



Grinding woody biomass at the Meeker Park CFSY.



Picture to the left shows slash being unloaded. The right picture shows collected noxious weeds.



Conservation and Recovery Plans

Conservation and Recovery Plans

- ◆ These documents are being prepared for species of special concern as identified by the Environmental Resource Element of the Boulder County Comprehensive Plan. The goal is to make sure we are taking action to conserve these species by mitigating their known threats or completing actions that can help these species recover.
- ◆ Two forestry species were identified--bristlecone pine (*Pinus aristata*) and limber pine (*Pinus flexilis*), and these plans were completed in 2020.

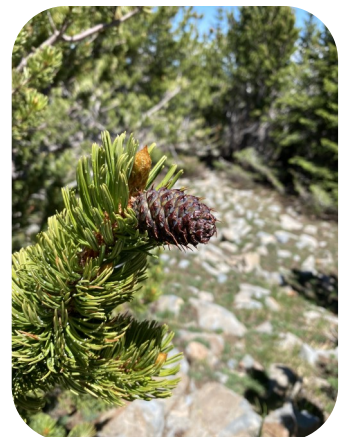
Conservation Actions

- ◆ Mapping of known locations.
- ◆ Work with other land management agencies to identify conservation actions.
- ◆ Set up long-term monitoring plots.
- ◆ Identify possibility of growing out seeds for future progeny.

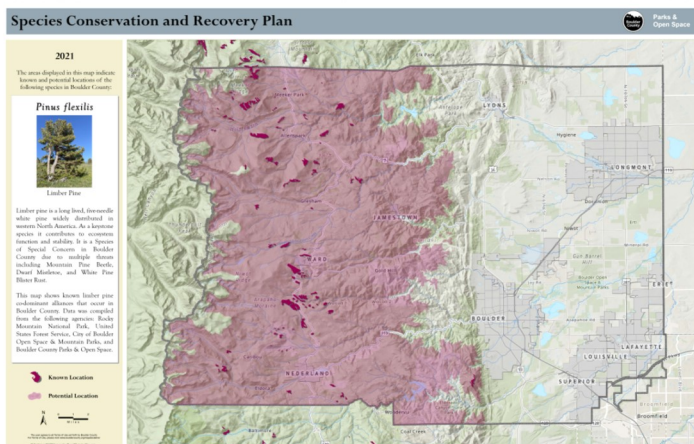
2020 Actions

- ◆ Staff worked with five volunteer resource monitors to establish long-term monitoring plots for limber pine. Volunteers completed 266 hours of work.
- ◆ Nine permanent plots were established on seven different properties, with 628 limber pine trees tagged and assessed.
- ◆ We improved mapping of limber pine and visited our isolated "Forrest" property to map locations of bristlecone pine.
- ◆ We opened up dialogue with the U.S Forest Service and National Park Service about seed collection and white pine blister rust-resistant seed sources.

Each Conservation Plan will have a two-page brochure. In 2021 a website will go live to share these documents with the public.



Bristlecone pine is found in one small location in Boulder County, and is considered the northern most population in Colorado.



Limber pine (map to left) is found throughout a very large range in Boulder County. Areas where it makes up more than 20 percent of the canopy are of most concern.



**Resource Management
Forestry and Fire**

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Field Tour at Heil Valley Ranch.



Reynolds Ranch Post Treatment.