Boulder County Parks & Open Space

2015 Annual Report
Forestry/Fire

Prepared by the Forestry/Fire Section Staff
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INTRODUCTION

This annual report was written to summarize the work completed by the forestry/fire section of the Resource Management Division of Boulder County Parks and Open Space. It is a collection of accomplishments from the various disciplines amongst the staff including: forest planning, forest operations, fire planning/operations, community forestry sort yards, and forestry volunteer programs. It also identifies other miscellaneous projects and accomplishments that we have completed during the year. The report discusses the previous year’s objectives and the success of implementation while also laying out the new objectives for 2016. It should be noted that all numbers represented are approximate; however every effort is made to collect reliable data.

REPORT HIGHLIGHTS

- 552 acres of forest inventoried
- 352 acres of forest treatments planned
- 60.1 acres of forest treatments completed
- 1096 tons of material processed for biomass facilities
- 107 acres ecologically broadcast burned
- 245 slash piles burned
- 1471.9 tons of material processed at sort yards
- 880 different users of the of sort yard
- 30 volunteer projects using 372 volunteers, completing 1546 hours

2015 STAFF

Full Time Employees
- Stefan Reinold, Senior Forestry Resource Specialist
- Scott Golden, Resource Specialist (Forest Health, Contracts, Biomass, Special Projects)
- Zach Price, Resource Specialist (Forest Operations)
- Shane Milne, Program Specialist II (Volunteer Programs/Forest Operations)
- Nick Stremel, Resource Specialist (Forest and Fire Planning)
- Wayne Harrington, Resource Specialist (Sort Yard Manager and Forest Operations)

Full Time Term
- Ashley Garrison, Term Resource Technician (Forest Planning and Fire)
- Nathan McBride, Term Resource Technician (Sort Yards)
- Daniel Kleist, Term Resource Technician (Forest Operations)
- Michelle Jennings, Term Resource Technician (Forest Planning and Fire)

Hourly Employees
- Holly Hughes, Seasonal Resource Technician (Sort Yards)
- Jeremey Arkin, Seasonal Resource Technician (Forest Planning)
- Alex Turner, Building and Historic Preservation Tech II (Forest Operations)
• Adam Yates, Seasonal Resource Technician (Forest Operations)

Other Assistance
• Jay Stalnacker, Fire Management Officer, Boulder County Sheriff’s Office
• SO Fire Crew (Garret Ball, Paul Ostroy, Peter Koretz, Seth McKinney, Nick Shaw, Ben James, and Katie Wakefield)
• Boulder County Youth Corps (2 teams)
• Multiple Volunteers

2015 OBJECTIVES AND RESULTS

1) Finish work at Reynolds Ranch PA1U1 Stands 9 and 10 utilizing in-house crew. Approximately 7 total acres remain. This project was completed in late spring of 2015. All of the material was hauled off site to the Nederland Sort Yard site for processing.

2) Complete work at the Meeker Sort Yard PA1U1. Approximately 17 acres are planned for treatment. This project was completed by November of 2015. We completed 16.5 total acres. The work we completed around the footprint of the yard (7.7 acres) was considered defensible space. The material was whole tree chipped and delivered to both Biomass facilities.

3) Develop contract for the Betasso 1 thinning operation on PA1U7, put contract out for bid, and start contract implementation in fall of 2015 for approximately 90 acres. Continue the support for the HMGP FEMA application for the Betasso 2 project on PA2U1 and 2 for approximately 144 acres. The Betasso 1 contract was put out for bid in the tail end of 2015, however bid prices were higher than expected and the project has been postponed until 2016. The HMGP funding was received and the hiring process for the Project Coordinator was completed by year’s end.

4) Mange the WUI, SFA grant for the Hall property. Hire employee, collect data, and write prescription for Hall Ranch PA6U1. Develop contract for completion of the planned 44 acres. The position was flown and hired, data was collected, and the prescription was written and approved. The 44 acres were not completed with a contract but were started with the in-house crew. This project was 75% complete by year’s end.

5) Manage the WRRG/HMGP grant for the defensible space on POS properties, hire employee, develop contracts for defensible space audits, implement these contracts, and begin developing contracts for each project. The HMGP and WRRG grants were received later (October) than expected but the hiring process for the Project Coordinator was completed by year’s end. This will be one of the main focuses of work for 2016.
6) Continue to implement volunteer programs, with a goal of at least 25 projects. Improve the Resource Monitor Program to increase its usefulness to the Forestry section. Thirty volunteer projects were completed during 2015. A few new natural resource monitor projects were added to monitor slash piles, help with the Sort Yards, and to monitor seedling regeneration.

7) Strive to increase the utilization of the sort yards; this will require outreach to the neighboring communities. Promote additional community grinding events to help county residents remove slash material from their properties. Multiple visits were made with local communities to promote grinding operations and availability. An MOU with the City of Boulder allowed grinding street tree debris including emerald ash borer for biomass facility use.

8) Continue to safely implement prescribed fire on the landscape to include slash pile burning, ditch burning, agricultural broadcast burning, and ecological broadcast burning. Continue the Wapiti Rx burn plan onto State Land Board (SLB) land (129 acres), and complete the Overlook Rx burn (22 acres) on SLB at Heil Valley Ranch. Complete the Nighthawk Rx burn (75 acres) at Hall Ranch. The 85 acre Nighthawk and 22 acre Overlook prescribed burns were successfully implemented, while the remaining Wapiti 2 project was put on hold until 2016.

**2016 OBJECTIVES**

1) Complete 44 acres of thinning work on Hall PA6 U1 and start work at Hall PA6 U2.

2) Complete the Wapiti 2 Rx fire in a safe manner.

3) Work on RFP combining Betasso 1 and 2, and put project out to bid. Complete project over winter of 2016-2017.

4) Develop RFP for the defensible space audits and complete having the audits prepared. Develop initial RFP and Scopes of Work utilizing audit reports and begin completing defensible space treatments. Identify opportunities for youth corps to help implement this project.

5) Complete planning and data collection for Walker Ranch (PA1).

6) Develop a more comprehensive long-term plan that includes past accomplishments, future projects and maintenance for both forest operations and prescribed fire.
7) Continue to provide between 25 to 35 volunteer forestry projects to assist in prescribed fire preparation, skid trial and road restoration, burn pile restoration, and other resource monitoring activity.

**FOREST PLANNING GROUP**

**Staff**

In 2015, the planning staff members were Nick Stremel, Ashley Garrison, Jeremy Arkin (June-December), and Michelle Jennings (September-present). Scott Golden worked on contract planning and administration for the FEMA, PDM–Betasso 1 and the local Nederland parcels associated with the PDM Grant.

**Summary**

**Numeric Totals**
- 552 acres of forest inventories
- 352 acres of forest treatment prescriptions written, 167 acres have gone through Forest ID Team review
- 152 acres of unit preparation (boundary and ITM marking)
- 5.5 acres of additional prescriptions and marking for Boulder Valley School District parcel, and 9.8 acres project layout for Caribou Ridge, and 3.6 acres project layout at Joe Smith and Hilltop (non POS properties)

**Forest Planning**

We hosted quarterly Forest ID Team meetings. We made updates and improvements including the creation of Project Completion Memos to inform other disciplines of the results of our treatments. We held site visits to Hall Ranch, Betasso Preserve, Reynolds Ranch, Mud Lake, Heil Valley Ranch, and Meeker Sort Yard in order to go over prescriptions, discuss potential issues, monitor progress, or identify post treatments needs.

With two dedicated field staff, we completed pre-treatment forest inventories at Walker Ranch, PA1 U1-3 (437 acres) and Heil Valley Ranch PA13 U2 (98 acres). A post-treatment inventory was completed at Meeker Park Community Forestry Sort Yard PA1 U1 (17 acres).

The Hall PA6 U1-2 treatment prescription (167 acres) was written and approved by the Forest ID team. Unit 1 prep was completed in late 2015 (44 acres). This project was funded by the Wildland Urban Interface (WUI) State Fire Assistance (SFA) grant.

Draft treatment prescriptions were completed and submitted to the Forest ID Team for approval for Heil Valley Ranch PA13 U2, aka Pyrite, (98 acres) and Walker Ranch PA1 U2 (87 acres). These prescriptions are expected to be approved for implementation in early 2016.
Unit preparation was completed at Betasso PA1 U7 (FEMA 1) (91 acres) and Meeker PA1U1 (17 acres). This included boundary marking and treatment layout/markign. Non POS lands such as the Nederland High School (5.5 acres), Caribou Ridge (9.6 acres) and the Joe Smith and Hilltop parcels (3.6) also saw unit preparation since they were a part of the FEMA PDM grant.

**Other**

Two Youth Corps teams worked with planning staff in 2015.

Forestry 1 worked with Nick Stremel, Ashley Garrison, and Jeremy Arkin at Hall Ranch PA7. They constructed 45 slash piles and moved 30 cords of wood for future firewood sales. They also removed invasive thistle and mullein from two acres at Hall Ranch.

Forestry 2 worked with Scott Golden in the Nederland area. They completed 3.6 acres of slash and wood removal, as well as post-project rehab, on the two Town of Nederland PDM projects. They also completed post project re-habilitation of the Mud Lake project.

Research Permits were given to Jenny Briggs and Peter Brown. These were issued for ongoing research and monitoring. The results of these research permits can aid in our planning process. Jenny Briggs did some follow up with previously established plots, but there was no new established research. Peter Brown was researching growth dynamics and tree-ring variability in paleoclimatology at Betasso Preserve.

**FOREST OPERATIONS GROUP**

**Staff**

The operations staff was comprised of Zach Price, Dan Kleist, Adam Yates (Jan-March), and Alex Turner (~80 hours). Shane Milne also assisted full-time with the operations
staff during his off season. Scott Golden finished up the Mud Lake project and also worked on projects with the Town of Nederland. Remaining forestry staff assisted as needed during operations.

Summary

**Numeric Totals**
- 33.0 acres lower montane forest restoration/fuels reduction
- 23.5 acres upper montane forest health/fuels reduction, 3.6 additional acres on non POS lands completed by Forestry staff
- 540 tons of biomass produced from 2015 forestry operations
- 1096 tons of biomass processed and hauled for the OSTC and jail heating systems
- 65 cords of fuelwood sold via firewood sales
- 40 cords of new firewood decked, 20 additional cords cut, waiting to be decked
- 1141 fencing poles/ rails for volunteer projects

**POS In-house Projects**

We completed 60.1 acres of forest treatments, created 60 cords of fuelwood for future sale, and produced 540 tons of biomass.

We completed the Reynolds Ranch PA1 U1 Forest Management Treatment (aka Units 9&10). Five hundred and fourteen tons were felled, processed, skidded, forwarded, hauled, and decked on approximately 14 acres (beginning in May 2014). Approximately 7 acres were completed in 2015. The following photos show the units during treatments and the final project afterwards.
We completed the Meeker CFSY PA1 U1 Forest Management Treatment. We marked, felled, skidded, decked, and chipped 283 tons of whole trees on 16.5 acres. 7.7 acres of this treatment had an additional 7.7 acres of defensible space actions completed. The photos below show the treatment area post-treatment.

We completed approximately 75 percent of the Hall Ranch PA6U1 Forest Management Treatment. We felled, processed, skidded, forwarded, and decked 40 cords of firewood from approximately 33 acres. An additional 20 cords were felled and processed on 4 acres, and are ready for removal.
We coordinated the procurement and delivery of 1,141 fence rails for 21 separate volunteer fence building events. Work groups included Wildlife, Education and Outreach, Resource Protection, Plant Ecology, Forestry, Grounds, Trails, and Historic Preservation. Forestry staff often coordinated collection and deliver of these posts.

We completed the Anne U. White Trail Corridor flood debris and realignment special assignment. This project included felling, processing, and removing trees and flood debris along approximately 3 miles of trail. This project required high-skilled saw work to complete.
Contracts and Agreements
Scott Golden dealt with contract administration for the FEMA PDM grant and worked on developing agreements for biomass procurement and sharing. Wayne Harrington dealt with contracts related to biomass grinding and transportation. Stefan Reinold worked on developing a few Memorandums of Understanding (MOU) with local fire departments to allow for cross boundary projects.

Forestry Contracts
We completed the closing paperwork for the Mud Lake. We worked closely with the Town of Nederland, the Boulder Valley School District, and the City of Boulder to ensure that their portions of the PDM grant were being completed/addressed.

We helped the BVSD write their prescription, complete project layout, develop their RFP, choose their contractor, and administer their contract for the 5.5 acres project at Nederland High School.

Scott Golden completed the thinning operations on the Hilltop Water Tank and Joe Smith parcels (3.6 acres) to help move the PDM projects forward. We also administered the completion of the Big Springs project completed by Saw and Slaws for the Town of Nederland.

We prepared and released an RFP, conducted a pre-bid, posted amendments, and received 2 proposals for completing an aerial yarding (helicopter) project at Betasso Preserve. This project was known as Betasso 1. The project was slated for early 2016, but we postponed the project due to budgetary constraints. Both proposals were formally rejected. This project will be re-packaged with the proposed Betasso 2 project slated for 2016/2017
We also assisted the transportation department with the layout and Request for Proposal to complete tree thinning along Brainard Lake Road.

**Forestry Related Agreements**

We successfully implemented an Intergovernmental Agreement (IGA) with the City of Boulder to grind material from their street tree program to utilize in our Biomass Heating facilities. Approximately 200 tons of municipal forestry biomass was turned into biomass fuel. This project was mutually beneficial to both parties. We continued to work with City of Boulder-Municipal Forestry on biomass IGA and fuel specs.

We initiated discussions with the City of Longmont on possible utilization of their municipal forestry biomass for BOCO fuel. Additionally we discussed the future possibility of partnering on a woody biomass storage area.

We also entered an IGA with Gilpin County in order to utilize our surplus of woody biomass. Approximately 200 tons of material was given to Gilpin County in return for its removal. At the time this was beneficial to both parties.

We developed an MOU with Boulder Mountain Fire (BMF) in order to allow them to improve a fuelbreak on POS land above Anne U White trail to defend their constituents. This MOU was signed although the project is on hold due to a Douglas-fir Tussock moth outbreak nearby which was causing Tussockosis on BMF field staff.

We developed an MOU with Rocky Mountain Fire Authority allowing them to complete defensible space on properties adjacent to Walker Ranch, when the proposed defensible space actions extend onto POS property. This allows these neighboring landowners to complete true defensible space if it extends onto POS property.

We began discussions with the Colorado State Forest Service (CSFS) who manages the land for Denver Water Board’s (DWB) Gross Reservoir to complete forestry thinning operations in Walker Ranch. The work would take place primarily in the DWB right of way along Gross Dam Road; however the agreement would allow CSFS to extend the treatment in some key areas to improve the safety of egress from the reservoir area.

**Hauling and Biomass Contracts**

We renewed the biomass hauling contract for 2015; however one of our vendors was no longer in business. In 2015, facilities staff piggy-backed on our contract with Renewable Fiber in order to provide transport of biomass material. We provided oversight of field activities (biomass loading) to verify the work was completed for this contract. We renewed an RFP for Biomass grinding with Hageman to assist with the processing of material when needed.
FIRE PLANNING/OPERATIONS GROUP

Staff

The fire planning staff was comprised of Nick Stremel and Ashley Garrison with data collection assistance from Jeremey Arkin and Michelle Jennings. Stefan Reinold worked on developing and submitting the Significant User agreement for review. Jay Stalnacker and the Boulder County Sheriff’s Office Fire Crew also assisted in fire planning and operations. Other forestry and POS staff trained as wildland firefighters assisted with operations.

Summary

Numeric Totals
- 245 slash piles burned
- 361 acres of fuel loading and pre-fire data collected.
- 107 acres ecological broadcast burned
- 10 ditch locations burned, approximately 3.1 miles of ditch covering 57 acres
- 150 acres of prescribed fire monitoring preparation work
- 6 PRF’s were submitted and approved for implementation

Fire Planning

We hosted quarterly ID Team meetings for the Fire ID team. We updated and improved the PRF process in the Fire ID Team. The Fire ID team went to several sites including Rock Creek Grasslands, South Range, and Lindsay to discuss possible projects.

We worked with Plant Ecology and Wildlife Staff to submit 10 Project Request Forms (PRF) to the Fire ID team. Eight were approved for implementation. Two will be revised and re-submitted in 2016. We visited 5 sites. Nick Stremel completed the Type 3 Burn Plan for AHI (23 acres).

We developed a Significant User Agreement document to demonstrate the detailed processes we use to decide whether or not to put fire on the ground. This document was approved by the Colorado Department of Health and Environment (CDPHE), and will allow Boulder County to increase the potential for burning more acreage. Previously we were limited by the CDPHE to how much particulate matter (smoke) we could release as a result of burning operations. As our prescribed fire program grows, this is an important step to allow for more burns and possibly larger burns.

Fire Operations

In preparation for upcoming prescribed fires, we collected weather data, fuel loading, and pre-fire inventory data at Heil Valley Ranch (286 acres) and Hall Ranch (75 acres).

PRFs for Nighthawk, Overlook, Gaynor Lake Dam, Gaynor Lake Ditch and Burchfield Cattails prescribed fires were approved by the Fire ID Team. The Whittomeyer prescribed fire PRF was approved and will be implemented in 2016. Planning staff
worked with Ag and the Fire ID Team to explore burning options at Rock Creek Grassland, South Range and Lindsey properties for range/grassland improvement. More planning and scoping are needed for these projects and some, i.e. Lindsey are prohibited from the use of prescribed fire per the purchase agreements.

In 2015 forestry planning staff worked with the Fire ID Team to create and implement PIO and Resource Protection guidelines for RX Fire Planning, and worked through an Migratory Bird Treaty Act planning process for RX Fire implementation with wildlife staff.

Prescribed fires were implemented through slash pile, ditch, and broadcast burning. The operations are generally led by the Sheriff’s Office Fire Management staff, assisted by POS. In 2015, POS staff participated in 10 ditch burns, (16,380 ft. /57 acres) with eight shifts completed by 4 POS staff. Six POS staff completed 7 shifts of pile burning at Hall and Heil Valley Ranch resulting in 245 piles of forestry slash burned.

Two large broadcast burns were completed in 2015: The Nighthawk RX Fire at Hall Ranch and the Overlook RX Fire at Heil Valley Ranch. Nick Stremel provided resource objectives and parameters and several other crucial inputs for the burn plans and organized Parks and Open Space participation during operations. He acted as FEMO on both burns. At Nighthawk, 20 POS staff put in 59 shifts (+ Resource Protection Staff) to successfully burn 85 acres. The 22 acre Overlook fire was implemented using 15 POS staff over 22 shifts (+ Resource Protection Staff).

Planning staff also completed post-burn condition monitoring and reports for both fires. These documents are available by request.

Planning staff administered and coordinated POS involvement with wildland and prescribed fire including 40 red carded staff at POS.

COMMUNITY FORESTRY SORT YARDS OPERATION
Staff

The community forestry sort yard (CFSY) staff was comprised of Wayne Harrington, Nathan McBride, and Holly Hughes. Other forestry staff assisted as needed. There were also 3 volunteer hosts who worked 82 total hours.

Summary

A full CFSY report is completed yearly and can be found at: G:\Forestry-Fire\Admin\Reporting\Annual_Reports\2015

Numeric Totals

- 1471.9 tons of material collected and treated for 2015 Season
- 1387.3 tons of slash collected and treated for 2015 season
  - Nederland CFSY collected and treated 783.5 tons of slash
  - Meeker Park CFSY collected and treated 603.8 tons of slash
- 84.6 tons of wood collected and treated for 2015 season
  - Nederland CFSY collected and treated 31.4 tons of wood
  - Meeker Park CFSY collected and treated 53.2 tons of wood

Overall tonnage is down 232.3 tons, slash tonnage is down 89.1 tons while wood tonnage is down 143.2 tons. Wood tonnage may be down due to increased utilization of firewood sized material by landowners. We know that projects for the Town of Nederland and BVSD-Ned High School left firewood material along access roads for constituent use.

Land Use Permit:

On December 3, the Boulder County Commissioners approved a minor modification to Docket LU-14-008 for the Nederland CFSY. The modification allows for continued storage of woody biomass during the winter off-season. This Land Use permit is valid until the end of 2016.

Usage Trends:

The CFSY program operated from May to October, with an operating schedule of Wednesday through Saturday, 9 a.m. to 5 p.m. Both yards operated from May 1 to October 17. This is the first season that both yards opened the same day and concurrently operated from May until October with identical weekly operating schedules. During the operating season, both yards were closed on May 9 due to weather. The Meeker Park yard was also closed on July 9 due to an administration day. The load count for 2015 was 4,688 loads with an average of 25.1 loads a day. There were a total of 494 new user in 2015, 142 new users at Meeker Park, and 352 new users at Nederland. In total there were 880 different users with an average of 5.3 loads per user. In 2014 by comparison, there were 849 different users with an average of 5.6 loads per user.
* Volume is approximate because not all loads are physically measured due to time constraints. Personnel responsible for initial contact received training on recording volume to increase the consistency between contacts. In 2015, there were 9 different staff/volunteers initiating these contacts.

<table>
<thead>
<tr>
<th>Year</th>
<th>Operational Days</th>
<th>Load Count</th>
<th>Daily Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>52</td>
<td>1309</td>
<td>25.1</td>
</tr>
<tr>
<td>2009</td>
<td>130</td>
<td>2991</td>
<td>23.0</td>
</tr>
<tr>
<td>2010</td>
<td>102</td>
<td>2747</td>
<td>26.9</td>
</tr>
<tr>
<td>2011</td>
<td>118</td>
<td>3521</td>
<td>29.8</td>
</tr>
<tr>
<td>2012</td>
<td>119</td>
<td>6585</td>
<td>55.3</td>
</tr>
<tr>
<td>2013</td>
<td>112</td>
<td>3424</td>
<td>30.6</td>
</tr>
<tr>
<td>2014</td>
<td>187</td>
<td>4722</td>
<td>25.3</td>
</tr>
<tr>
<td>2015</td>
<td>187</td>
<td>4688</td>
<td>25.1</td>
</tr>
</tbody>
</table>

The above chart shows how the usage numbers have changed since the sort yards were opened. The load count in 2015 was essentially the same as 2014 with just a slight decrease, however overall tonnage of material collected was down (See 2015 volume number on page 4). The chart below shows a break down between the two sort yards during the 2015 season based on percentage of load count and slash and wood volume/weight. Operational days and percentage of operational days were also added to provide comparisons between the two yards. Percentage of solid wood has been historically higher at the Meeker Park yard than the Nederland yard, due primarily to the large percentage of summertime seasonal residents. These residents typically do not utilize firewood to the extent of year-round residents.

<table>
<thead>
<tr>
<th>CFSY Location</th>
<th>Percent of Yearly Load Count</th>
<th>Percentage of Slash (Tons)</th>
<th>Percentage of Wood (Tons)</th>
<th>Operational Days</th>
<th>Percentage of Operational Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nederland</td>
<td>66.0%</td>
<td>56.5%</td>
<td>37.1%</td>
<td>94</td>
<td>50.3%</td>
</tr>
<tr>
<td>Meeker Park</td>
<td>34.0%</td>
<td>43.5%</td>
<td>62.9%</td>
<td>93</td>
<td>49.7%</td>
</tr>
</tbody>
</table>

**Origin of Material:**

The following chart summarizes material and amounts based on the county of origin. Outside of Boulder County, Larimer County accounted for roughly 10% of the users and close to 17% of woody biomass tonnage. The 2015 map demonstrates geographically where most of the loads originated.
<table>
<thead>
<tr>
<th>County</th>
<th>Users by County</th>
<th>Percentage (Users) by County</th>
<th>Total Tons by County</th>
<th>Percentage (Tons) by County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulder</td>
<td>726</td>
<td>82.5%</td>
<td>1130.0</td>
<td>76.8%</td>
</tr>
<tr>
<td>Larimer</td>
<td>91</td>
<td>10.3%</td>
<td>246.4</td>
<td>16.7%</td>
</tr>
<tr>
<td>Gilpin</td>
<td>22</td>
<td>2.5%</td>
<td>46.3</td>
<td>3.1%</td>
</tr>
<tr>
<td>Jefferson</td>
<td>19</td>
<td>2.2%</td>
<td>18.1</td>
<td>1.2%</td>
</tr>
<tr>
<td>N/A*</td>
<td>22</td>
<td>2.5%</td>
<td>31.1</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

* Incomplete addresses

Reason for Removal:

Reason for removal is tracked to determine why residents are bringing material to the yards. Fire mitigation was the primary reason, resulting in the highest amount of the slash (79.2%) and wood volume (68.8%). 355 tons of woody biomass was removed from the Home Ignition Zone 1 in 2015. Forest Health was the second highest reason for removal, representing 17.4% of the total slash and 20.2% of the total wood volume (20.2%). Bark Beetle removal accounted for 4.4% wood volume percentage.

Insurance Companies are having more of an influence on Boulder County residents completing work within HIZ 1 and 2. The percentage of users (load count) indicating
insurance companies as the primary reason for removal is up 1% from 2014 according to the data. The majority of the users and contractors who come to the yard will say that fire mitigation/D-space is the primary reason for removal. It is hard to know if it is actually the insurance companies requesting these homeowners to complete work in HIZ 1 and 2; therefore Sort Yard hosts will often need to ask follow up questions to determine this reason.

<table>
<thead>
<tr>
<th>Primary Reason for Removal</th>
<th>Load Count Percentage</th>
<th>Slash Volume Percentage</th>
<th>Wood Volume Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Mitigation</td>
<td>79.0%</td>
<td>79.2%</td>
<td>68.8%</td>
</tr>
<tr>
<td>Forest Health</td>
<td>17.3%</td>
<td>17.4%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Insurance Company</td>
<td>2.0%</td>
<td>2.1%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Bark Beetle</td>
<td>0.9%</td>
<td>0.7%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Other</td>
<td>0.5%</td>
<td>0.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Flood Damage</td>
<td>0.3%</td>
<td>0.3%</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

Grinding Operations:

In 2015, there were approximately 150 hours of grinding operations. Grinding operations are broken into three categories; Biomass Fuel, Slash, and Community Grinding.

Biomass Fuel:

This section describes the material that the Forestry/Fire staff processed with a grinder for use in our two Biomass facilities (OSTC, and County Jail). From January through April the grinder produced 8 semi loads of biomass at the Nederland CFSY. The trees were from a project at Reynolds Ranch along Magnolia Road where there was not a large enough area for a grinding operation. From September through December the grinder produced 10 semi loads of biomass at the Meeker CFSY. Nine of the 10 loads were whole trees from a fuels reduction project around the Meeker Park CFSY. The 10th load was from material collected at the yard. Additional biomass fuel for the facilities was processed as a part of the City of Boulder Community Grinding described below.

Slash Grinding:

The grinder was moved between the yards during the summer months. Slash was ground directly into live-floor vans this year. The Meeker Park yard produced 17 loads (~25 tons/load) and the Nederland yard produced 23 loads, for a total of 40 loads of ground slash, $41,513.75 was spent in 2015 on transportation($115/hr.) and tip fees($4 yd$^3$). See Appendix A for breakdown of cost by yard and charges.

Community Grinding:

There were a total of 4 grinding event in 2015: two with the City of Boulder, 1 with the Town of Lyons and 1 with Boulder Valley School District at Nederland High School.
• City of Boulder 1- In April we used the grinder to process chunk wood and logs at the City of Boulder wood yard. We produced one load of biomass for the Boulder County Jail Biomass plant. This was a trial run to see if this material would burn well in our facilities. It was a successful project.

• Town of Lyons- In June we processed a slash pile from the Town of Lyons community clean up event. The ground slash stayed on site, and was used for a parking area for their music festivals.

• Nederland High School – We processed the slash generated from a 5.5 acre fuels reduction project. There was a load and a half of processed slash hauled off site, Boulder Valley School District paid the transportation and tips fees on this project.

• City of Boulder 2- In October, the City of Boulder paid to have A-1 Organics use their Morbark 1300 tub grinder to complete an initial grind of the large diameter street trees. This material included Emerald Ash Borer infested material. The A-1 grinder discharged directly into the Boulder County grinder, which directly discharged into a live-floor van. The first day, 6 semi-trucks of biomass were loaded and delivered to the Boulder County Jail biomass plant which was within one mile of the City of Boulder Wood Yard. The second day, 4 loads were transported to the OSTC biomass plant. Boulder County Facilities paid for the transportation of the 10 loads of biomass fuel. The remaining three loads were ground and left on site due to the poor fuel quality. The photo below shows the operation in progress.

Pine Needle Collection:
The pine needle and noxious weed collection was very successful in 2015. In 2015, a total of 19-30 yd³ roll-offs were filled with pine needles, along with 3 roll-offs containing noxious weeds. The Town of Nederland paid for four of the roll-offs for the Nederland yard and Resource Conservation paid for one roll-off for the town of Nederland clean up in June. The remainder of the roll-offs were paid for with CFSY county funds. This program will continue in 2016 with support from Resource Conservation and the Town of Nederland. There will be a change, as cut grass will be prohibited in 2016. Many
residents are not familiar with appropriate transportation protocol and were delivering cheat grass to the yards in the back of open vehicles. This leads to inadvertent distribution of this noxious weed. Instead, we will encourage and recommend the back yard composting of grasses in 2016.

FORESTRY VOLUNTEER PROGRAM

Staff
Shane Milne is the sole member of the Forestry Volunteer Staff, but he works closely with other members of the forestry group to implement projects. This year we had Jeremy Arkin as a seasonal to help with firewood sales.

Summary

<table>
<thead>
<tr>
<th>Numeric Totals</th>
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</thead>
<tbody>
<tr>
<td>-30 volunteer projects</td>
</tr>
<tr>
<td>-372 volunteers</td>
</tr>
<tr>
<td>-1546 hours</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Natural Resource Monitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>-100 hours towards slash pile monitoring</td>
</tr>
<tr>
<td>-24 hours towards tree-seedling monitoring</td>
</tr>
<tr>
<td>-82 hours towards Community Forestry Sort Yard monitoring</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Firewood Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>-65 cords sold from Hall Ranch</td>
</tr>
</tbody>
</table>

Crew Leaders
In April we added two new crew leaders and lost two that moved out of state. Currently, we have seven solid crew leaders that are very committed to forestry work projects. Crew leaders participated in 8 projects throughout the year for a total of 70 work hours.

Work Projects
Forestry sponsored 30 projects, engaging 372 volunteers for 1,546 hours. Just over 75% of those hours were spent on rehab projects that included the Mud Lake contract, Reynolds units 9 & 10, Wapiti Rx Fire and the Meeker Park Sort Yard. The remaining hours were spent completing worm fencing at Meeker Park and Mud Lake, prescription fire preparation at Hall and Heil and building slash piles at Hall.

Mud Lake-753 total volunteer hours

- Completed seeding and rehab on 4500’ of skid roads in the unit
- Seeded and rehabbed two landings
- Spread landing dreg piles on landings and 600’ of skid roads
- Rebuilt 350’ of worm fencing at the two landings
- Dispersed old cut material from ½ acre near the trail corridor
<table>
<thead>
<tr>
<th>Location</th>
<th>Total Volunteer Hours</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heil Valley Ranch</td>
<td>336</td>
<td>- Seeded and rehatted 50,000 ft² of high burn severity in the Wapiti Rx fire</td>
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<tr>
<td></td>
<td></td>
<td>- Installed 15 temporary check dams on the north fireline of the Wapiti Rx fire</td>
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<tr>
<td></td>
<td></td>
<td>- Weed-whipped 1000’ of fireline in preparation for the Overlook Rx fire</td>
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<tr>
<td></td>
<td></td>
<td>- Removed heavy fuel (100-1000 hr fuels) from the entire perimeter of the Overlook Rx fire</td>
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<tr>
<td>Reynolds Ranch</td>
<td>180</td>
<td>- Seeded and decommissioned 400’ of road at Giggy Lake</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Seeded, raked and slashed 1350’ of forwarding trails in units 9 &amp; 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Raked and slashed 950’ of forwarding trails (not seeded)</td>
</tr>
<tr>
<td>Meeker Park Sort Yard</td>
<td>165</td>
<td>- Constructed 600’ of worm fence on the west edge of the property</td>
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<tr>
<td></td>
<td></td>
<td>- Cleaned up larger flammable material (10hr, 100hr and 1000hr fuels) on ½ acre west of the shed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Raked and seeded skid trails on ½ acre west of the shed</td>
</tr>
<tr>
<td>Hall Ranch</td>
<td>112</td>
<td>- Built 3 slash piles</td>
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<tr>
<td></td>
<td></td>
<td>- Installed ½ acre temporary fence for ICP on the Nighthawk Rx fire</td>
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<tr>
<td></td>
<td></td>
<td>- Weed whipped 3000’ of fireline in preparation for the Nighthawk Rx fire</td>
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<tr>
<td></td>
<td></td>
<td>- Restoration 100 slash piles scars</td>
</tr>
</tbody>
</table>

Natural Resource Monitors

Slash Pile Monitoring Program
Since 2012, resource monitors have been photo documenting a series of slash pile scars at Hall Ranch—most piles have been raked, seeded and mulched while others have had no treatment. The original intention was to take a photo of each pile at different times during the growing season to document the reaction of the scars to our restoration efforts. This year our volunteer (Art Roberts) was able to photograph each pile on 14 different occasions missing only the month of January. He spent over 100 hours in the field as well as post processing photos at home. It’s also worth mentioning that Art spent his own time coming up with a way to take overhead photos of the scars using a camera on a telescopic arm and a wireless screen to preview the image frame before taking the picture. This became very helpful in recreating the same photos each time out. We hope to compile all of the data in 2016 to look at results.

Community Sort Yard Hosts

This program was developed to improve operations at community forestry sort yards in Allenspark and Nederland where volunteer hosts were the main contact for yard users. Volunteers monitor material brought to yards—including volume, where it came from, and why it was removed from the land. Hosts also provide information to the public about beetle infested wood and current forest management and resources available to private landowners. Three volunteers (all at Nederland) contributed 82 hours to this program in 2015.

Tree Seedling Count

In 2008/09 BCPOS implemented 40 acres of patch cuts on the Reynolds Ranch property. Since that time we have seen abundant grasses, forbs, aspen and lodgepole establishing themselves in the openings. Plant ecology and wildlife have plots to look at the grasses, forbs and aspen but nothing as of this year had been set up to look at the lodgepole regeneration. Our question was simple—how many lodgepole pine seedlings per acre were occupying these patch cuts? To answer our question, one volunteer spent just over 20 hours walking transects and counting seedlings in each patch cut. He found numbers ranging from 1000 seedlings per acre in some cuts to upwards of 7000 seedlings per acre in other cuts.

Firewood Sales

In past years, Shane Milne coordinated the sale of firewood from some in-house projects utilizing some volunteer help. The timing of firewood sales often interfered with the development and timing of proposed volunteer projects. In 2015 we utilized our seasonal, Jeremy Arkin, to administer the firewood sales at Hall Ranch. He was able to conduct 14 total sales, with over 65 cords of firewood sold and removed.
MISCELLANEOUS PROJECTS AND ACCOMPLISHMENTS

- Renewal of utility line clearance arborist certification (EHAP) for Zach Price
- Completion of Class A Commercial Driver’s License (CDL) certification for Dan Kleist
- Further assistance with flood debris removal/consultation along the Left Hand Creek (IMEL Property) corridor
- Assistance with grinder maintenance, transport, and operations for biomass grinding and slash processing at various community grinding events, the two CFSY yards, and the City of Boulder yard.
- Removal of hazard trees along Saint Vrain Creek, Left Hand Creek, and Betasso Preserve.
- Purchase of a new forestry operations ATV self-loading log trailer
- Assistance with the possible purchase of various sort yard implements to improve CFSY slash debris waste.
- Cut 36 Holiday trees from McCaslin-Peppers for County Offices including the Commissioner’s Office.

- Participated in a forum discussion regarding the High Park fire.
- Began working with BOCO Transportation Department on the Brainard Lake Road expansion project, providing forestry expertise.
- Big Springs Egress – worked with multiple agencies on looking at the feasibility of proposed emergency egress routes for the Big Springs subdivision, located in Nederland.
- Participated in Front Range Forest Health Task Force (FRFHTF), Northern Front Range Forest Health Working Group (NFRFHWG) meetings.
- Nick Stremel and Ashley Garrison attended the Colorado/Wyoming State SAF Conference in Glenwood Springs.
• Ashley Garrison presented at a Power Up! Conference about wildland firefighting to middle/high school girls and their mentors in the Big Brother/Big Sister program. They had a firefighter relay race using wildland fire gear.
• We hosted field trips from CSU Student Association for Fire Ecology and CU Parks Management class.
• We lead a Commissioners Forestry Tour & POSAC Forestry Tour to the Ned Sort Yard, Mud Lake, and Reynolds Ranch project sites.
• As a part of the Forestry 101 Class and Field Trip, Ashley Garrison and Dan Kleist presented to POS staff in the classroom and in the field about the forestry work group and what we do.