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Carla Hardy West Virginia Project CommuniTree Fall 2017 Planting Report Thursday, December 28, 2017

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we protect rivers and watersheds using science and education.*

Carla Hardy WV Project CommuniTree Fall 2017 Report

Executive Summary

Fall 2017 was the 12th planting season for Carla Hardy WV Project CommuniTree (CTree) since Cacapon Institute initiated the WV Urban Tree Canopy (UTC) Assessment & Enhancement program in 2011. Since spring 2012, CTree Project Leaders have organized 177 CTree planting events, planted 5,450 trees, and engaged over 12,000 volunteers in more than 22,000 hours of volunteerism and tree stewardship activities.

Planting Season	Planting Events	Trees Planted	Acres of Trees ¹ (300/acre ²)	Volunteers Engaged	Volunteer Hours	Volunteer Contribution
2008-2011	9	1,722 ³	5.7	n/a	n/a	n/a
Spring 2012	10	444	1.5	577	1,286	\$ 22,948.55
Fall 2012	11	282	0.9	788	1,116	\$ 21,618.35
Spring 2013	16	710	2.4	1,319	1,877	\$ 46,706.81
Fall 2013	10	204	0.7	429	848	\$ 19,724.48
Spring 2014	19	528	1.8	1,554	3,141	\$ 57,557.87
Fall 2014	10	370	1.2	504	1,233	\$ 22,440.50
Spring 2015	18	596	2.0	1,408	2,687	\$ 53,119.51
Fall 2015	13	292	1.0	959	1,191	\$ 24,837.17
Spring 2016	20	444	1.5	1,060	2,136	\$ 43,771.08
Fall 2016	14	742	2.4	1,531	2,999	\$ 68,468.74
Spring 2017	20	440	1.5	1,178	2,133	\$ 52,232.50
Fall 2017	16	398	1.2	757	1,437	\$ 51,743.63
Totals	177	5,450	18.0	12,064	22,084	\$ 485,169.19

Record accomplishments for each category are in bold. Some data is not available from 2008-2011.

The 16 groups that received CTree Kits this fall generated more than their required contribution through volunteerism and material donations. Three applicants provided more than double the required volunteer contribution. The characteristics that make a good volunteer group include the ability to organize quality tree planting events, engage and educate a broad community of volunteers, and maintain healthy trees.

Fall 2017 was the third planting season that replacement trees were offered to re-plant trees that failed to establish from previous CTree projects. Three organizations applied for a total of 26 replacement trees. In this report, volunteerism and material donations are reported as “Volunteer Contribution” (formerly “in-kind match”) and are given a monetary value based off of Independent Sector’s rates for West Virginia.

¹ Since fall 2016, when the formal Replacement Tree request program started, the total for “Acres of Trees” reflects only new trees planted. “Replants” do not count because they do not provide any net gain in canopy or acres of trees.

² Under the new 2016 Chesapeake Bay Program reporting and verification rules 300 trees is considered equivalent to one acre of land conversion. Reports prior to that change used the outdated 100 trees per acre.

³ In 2008-2011, CTree focused on planting very small tree stock known as “tree whips”. Starting in 2012, Cacapon Institute began moving away from tree whips towards larger tree stock, and in doing so plants fewer, but more substantial, trees each year.

Carla Hardy WV Project CommuniTree Fall 2017 Report

Background

Carla Hardy WV Project CommuniTree (CTree) is a program of Cacapon Institute in partnership with the WV Department of Environmental Protection (DEP) Chesapeake Bay Program that includes WV Division of Forestry (DOF), WV Conservation Agency (WVCA), WV Division of Highways (DOH), and the Eastern Panhandle Regional Development & Planning Council (Region 9). CTree promotes tree planting and education on public land through volunteerism in the Potomac Headwaters of West Virginia (Berkeley, Grant, Hampshire, Hardy, Jefferson, Mineral, Morgan, & Pendleton counties). The program also focuses on enhancing and promoting awareness of watershed and riparian area needs such as storm water management, water quality research, buffer zone planting, and soil erosion prevention. The program is volunteer based and engages stakeholders in the process of making priority decisions within their respective communities and offers a strong educational message along with a physical planting component.



Volunteers from Charles Town Parks & Recreation at Jefferson Memorial Park

CTree's first planting was in 2008 under the direction of Carla Hardy, WV Department of Agriculture Conservation Specialist and Jennifer Hammer, DOF Forester. For several years, CTree held one or two plantings each season. In spring 2012, with support from the USDA Forest Service⁴, CTree expanded the number of annual plantings. Under the Forest Service grant, WV DOF provided ~\$20,000 annually for the purchase of trees and Cacapon Institute dedicated considerable staff time on a year-round basis. Spring 2015 was the final season of USDA Forest Service funding⁵ for CTree. However, in 2014 Governor Tomblin signed the U.S. EPA Chesapeake Bay Program Partners' Agreement and West Virginia was awarded additional "Bay funding"⁶. The WV DEP has committed funds to continue CTree into the future. Provided the US Congress continues to fund the US EPA Chesapeake Bay Program, there will be sufficient funding in place through the five year work plan (2016-2020) to continue CTree at its current capacity.

The WV Urban & Community Forestry Council recognizes CTree as the largest citizen tree steward program in the state. In 2013, CTree was awarded the ISA Mid-Atlantic Chapter's Gold Leaf Award for making significant impacts on increasing tree canopy. In 2014, CTree was awarded the Alliance for the Chesapeake Bay's [Chesapeake Forest Champion](#) award for "Greatest on the Ground Impact".

⁴ USDA Forest Service Grant #11-DG-11420004-118, July 1, 2011 through June 30, 2015

⁵ USDA Forest Service Grant #11-DG-11420004-215, October 2, 2011 through December 31, 2016

⁶ WV DEP grant #NPS1626, July 1, 2017 through June 30, 2018

Carla Hardy WV Project CommuniTree Fall 2017 Report

CTree is unique, compared with reimbursable grant programs, in that it does not require applicants to purchase trees. In place of traditional reimbursable monetary grants, a process was created for groups to apply for “CTree Kits” (Table 1). Providing tree kits up front, instead of monetary reimbursement upon project completion, allows many groups to apply that are unable to spend the money up front. Successful applicants receive technical support from partnering agencies. CTree kits include everything our groups need for organizing and implementing community tree plantings:

- Trees in a variety of species and stock sizes
- Protective materials such as tubes, stakes, cages, arbor strap, and a CTree sign
- Mulch to foster good root growth

Beginning in 2016, since the DOF state match for the tree purchases was no longer available, Cacapon Institute must secure more volunteer labor and in-kind support than previous years. A non-federal match equal to 100% of the WV Chesapeake Bay funds is required (1:1 match). This match must equal the entire cost of Carla Hardy WV Project CommuniTree, including Cacapon Institute staff time, transportation & travel, and the cost of trees and materials. It is important to note that many of the professional CTree liaisons (including but not limited to WDOF, WVCA, DEP, and Region 9 staff) are also working under the WV Chesapeake Bay Program. Their contribution (not reported here) represents additional federal funding and state match.



Three generations of tree planting volunteers at the Mill Creek Ruritan Club

In fall 2016, Cacapon Institute began formally offering Replacement Trees to replant trees that failed to establish from previous CommuniTree plantings.

In fall 2017, Cacapon Institute adopted Independent Sector’s hourly volunteerism rate for the state of West Virginia at \$20.98/hour. More information regarding that decision is in Appendix C of the [CTree Spring 2017 Report](#), which can be found by visiting the Publications tab at www.CacaponInstitute.org.

Carla Hardy WV Project CommuniTree Fall 2017 Report

Carla Hardy WV Project CommuniTree in Fall 2017

Sixteen groups successfully applied for CTree Kits in fall 2017, the largest amount of awardees (16), and most trees planted (372), in a fall planting season. A wide range of volunteers participated, from elementary school students to seasoned adult volunteers, and a total of 372 new trees were planted (not counting 26 replacement trees). A full breakdown of trees per group can be found on Pages 12-13.

All the projects were on public land or privately held land that is open to the public. Planting sites included a WV State Police Barracks, schools (4), subdivisions (3), and eight other sites used or owned by the community such as a church, a cemetery, a Ruritan Club, an animal adoption center, and more. Projects took place in four of the eight counties of the Potomac Headwaters.

Three organizations planted a total of 26 replacement trees to re-plant trees that failed to establish from previous CTree plantings. More about this project can be found on page 8.

In total, Cacapon Institute empowered 23 CommuniTree groups to plant 398 trees this fall 2017.

Volunteer groups that received CTree Kits were required to provide no less than \$1,500 worth of volunteer contribution in the form of volunteerism and material donations to help Cacapon Institute match the federal contribution of trees and materials for the CTree Kits. All of the applicants this fall, except WV Division of Natural Resources, exceeded their volunteer contribution requirement. No group may apply for future CTree grants until they have met their match goal from prior plantings. Volunteers can meet their requirement through post-planting maintenance and stewardship activities.

Overall, the groups that received CTree Kits produced \$36,483 worth of volunteer contribution, primarily in the form of volunteer labor, but some groups also provided their own donations of materials. The total Volunteer Contribution in fall 2017, including \$15,261 in additional support, was \$51,744.

The total expenses, i.e., "Federal Contribution", for CTree this fall 2017 was \$61,472 (figure 4). Through hard work and dedication, Project Leaders and their volunteers were close to providing more Volunteer Contribution than Federal Contribution. Additional support will need to be secured in future seasons to ensure that Volunteer Contribution exceeds Federal Contribution.



Teamwork prevails with this duo at Spruce Hill Estates HOA

Carla Hardy WV Project CommuniTree Fall 2017 Report

School Projects

Four K-12 schools participated in Carla Hardy WV Project CommuniTree this season – James Rumsey Technical Institute (Hedgesville), Mountain Ridge Middle School (Gerrardstown), Potomac Center (Romney), and Potomack Intermediate School (Spring Mills)

An additional project, St. James Knight of Columbus’ planting at St. James Catholic Church in Charles Town, had youth participate in environmental education as part of their CommuniTree planting in fall 2017.

In total, Cacapon Institute engaged 390 students in 321 hours of hands-on volunteerism. These students planted a total of 72 trees at the four schools. Additionally, roughly 240 students received 188 hours of in-class environmental education (full table below).

Group	Trees Planted	Grade Level	In-Class Education ⁷			Hands-on Conservation		Total	
			# Students	Class Length (min)	Education Hours	# Students	Volunteer Hours	# Students	Contact Hours
James Rumsey Technical Institute	24	9th-12th	0	0	0	102	126	102	126
Mountain Ridge Middle School	16	6th	210	45	158	192	144	210	302
Potomac Center	16	3rd-12th	0	0	0	5	5	5	5
Potomack Intermediate School	16	3rd-5th	30	1.0	30	91	46	91	76
Totals	72	---	240	---	188	390	321	408 ⁸	509

James Rumsey Technical Institute planted a mix of 16 trees all around the school building on November 17th. Students were highly involved with this project, from flagging the locations for each tree, digging the holes, and planting the trees. They also take an active role in maintaining all 48 of the trees that they’ve planted on campus through CommuniTree. This was their third CommuniTree planting, following successful projects in [spring 2017](#) and [fall 2016](#).

⁷ It is important to note, these are not the only youth, or school-based, activities taking place at Cacapon Institute. We are highlighting school projects to demonstrate CTree’s commitment to environmental education. The WV DEP Chesapeake Bay Program and NOAA Bay Watershed and Training support Cacapon Institute’s [Potomac Headwaters Leaders of Watersheds](#), a hands-on, watershed conservation & education program that reaches an additional 3,000 to 4,000 students each school year. More about this program can be found by visiting the Education tab at www.CacaponInstitute.org.

⁸ For the purposes of this report, Cacapon Institute has made the assumption that the students who received the in-class education are the same students who participated in the hands-on conservation. Therefore, the total number of student volunteers for each project is simply the largest amount of youth volunteers on a given day (i.e., either the in-class education day or the hands-on conservation day). We have chosen this method so as not to “double-count” the same youth volunteers.

Carla Hardy WV Project CommuniTree Fall 2017 Report

Mountain Ridge Middle School participated in their first CommuniTree planting this season with the school's "Green Thumb Club". On September 29th, Connor Roessler, Cacapon Institute's Watershed Education Specialist provided in-classroom education to 210 students using our "[Parts of a Tree](#)" worksheet. On October 6th, the same students came out to plant the trees over the course of a day.

Potomac Center had fewer students participate than the other schools, but it may perhaps have been the most meaningful project this season. The youth that volunteered to plant trees on October 26th were very excited about helping out with the project. This planting is a great example of the ability of the CommuniTree program to adapt to all groups and find innovative pathways for engaging youth in tree education and planting. Potomac Center planted trees with Cacapon Institute through CommuniTree in our first planting season in [spring 2012](#).



Talking tool safety on tree planting day at Mountain Ridge Middle School

Potomack Intermediate School has an active "Garden Club", as well as great partnerships with the Berkeley County Master Gardeners and Shepherd University's SNAP-ED program. Together, these groups came together to host a wonderful tree planting with lots of adult and student volunteers on October 2nd. Before the tree planting, on September 25th, Connor Roessler from Cacapon Institute and several representatives from the Mountain State Apple Harvest Court provided in-class environmental education for the students. This project was unique in that the Garden Club chose to plant a mix of 16 fruit trees on their campus. The Garden Club teacher, Emma McAllister, has plans for maintaining the fruit trees to maximize their fruit production and prevent conflicts with nearby overhead utilities.

St. James Knight of Columbus invited Cacapon Institute's Connor Roessler to provide environmental education to their American Heritage Girls and Trail Life clubs before the planting. The youth learned about trees, talked about creation care and stewarding the planet, and then painted rocks to label each tree species. St. James Knights of Columbus have coordinated [multiple CommuniTree plantings](#) in previous years, but this is the first planting where they have actively participated in an education day with their youth.



Painted rocks with species name at St. James Catholic Church in Charles Town

Carla Hardy WV Project CommuniTree Fall 2017 Report

Replacement Trees

Fall 2017 was the third planting season that replacement trees were offered to re-plant trees that failed to establish from previous CTree projects. A breakdown of species per group is provided in the table below.

In total, these three groups engaged 15 volunteers in 42 hours of volunteerism, equaling \$881.16 worth of Volunteer Contribution. This is reflected in the table on page 18.

Replacement Trees, Fall 2017					
Species	Size	Shepherdstown Community Club	Tuscowilla Hills HOA	Breckenridge HOA	Total
Eastern Redbud (<i>Cercis canadensis</i>)	7-gal., 5-8', 3/4-1.25"cal.	3	0	0	3
Serviceberry (<i>Amelanchier canadensis</i>)	7-gal., 6-9', 3/4-1.25"cal.	0	1	0	1
Sycamore (<i>Platanus occidentalis</i>)	5 gal., 5-7', 1/2-1"cal.	0	0	6	6
Black Willow (<i>Salix nigra</i>)	5-gal., 7-9', 3/4-1"cal.	0	0	6	6
Swamp White Oak (<i>Quercus bicolor</i>)	5 gal., 4-7', 1/2-1"cal.	0	0	5	5
River Birch (<i>Betula nigra</i>)	5 gal., 6-8', 3/4-1"cal.	0	0	5	5
Total		3	1	22	26

Shepherdstown Community Club volunteers have planted 64 trees with Cacapon Institute through CommuniTree, starting with 24 trees in [fall 2013](#), followed by another 24 trees in [spring 2014](#) and 16 trees in [fall 2014](#). Several years ago, some of the flowering trees that were planted under the distribution lines had to be re-planted in new locations based on FirstEnergy's vegetation management policies.

Of the half a dozen trees moved, three established in their new locations. This season, the club replaced the failed transplants with three new eastern redbuds. They will continue to follow the maintenance recommendations in the "Tree Owner's Manual" from the USDA Forest Service.

Tuscowilla Hills HOA was the first HOA to plant trees with CommuniTree in [fall 2013](#) with a flowering-24 kit. In the past four years, they've only lost one tree due to impact from a riding mower. This season, the HOA president and Tanner Haid re-planted a serviceberry tree. They have plans to continue maintaining their trees following their existing protocols, including mulching annually. They are also developing plans for pruning their trees using USDA Forest Service protocols for proper pruning.

Breckenridge HOA planted 100 riparian trees in [spring 2015](#) along a drainage swale that runs throughout the shared community area in their development. In Cacapon Institute's annual inventory of projects in August 2017, approximately 22 trees were determined to be dead or dying. The HOA president and Clagett Management worked together to engage 13 volunteers to re-plant these trees this fall 2017.

Carla Hardy WV Project CommuniTree Fall 2017 Report

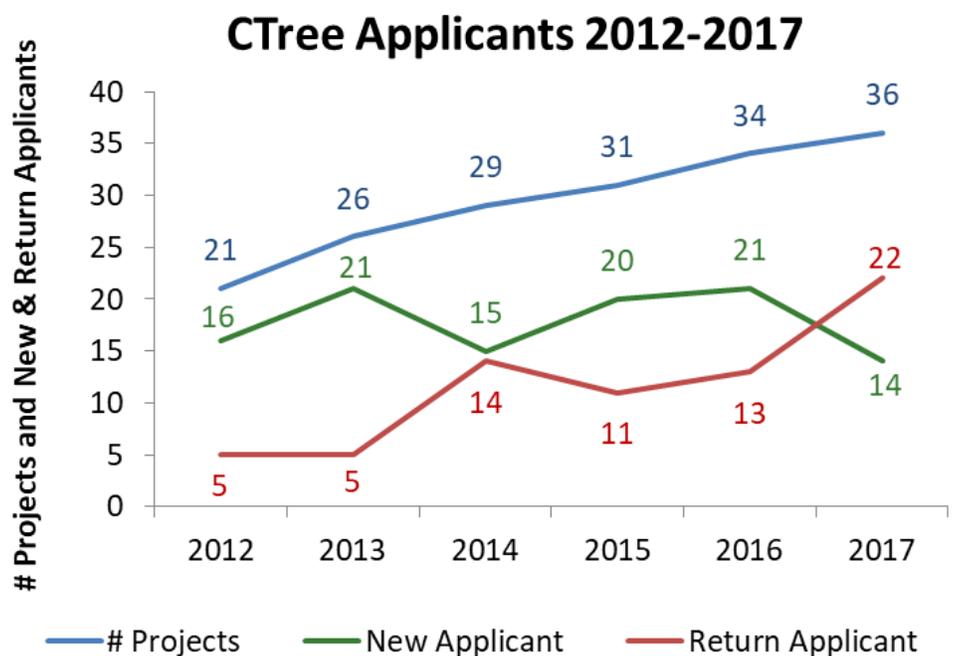
Conclusions

The CTree fall 2017 planting season was remarkable with more CTree Kits awarded, and more trees planted, than any previous fall planting season. Six of the groups were new to the CTree program and ten have successfully completed CTree projects in the past. Thanks to them, WV's Potomac Headwaters have 372 new urban trees. Lessons learned this fall 2017 planting season include:

- **CTree must continue to engage new groups.** Since 2012, Cacapon Institute has coordinated 177 CommuniTree plantings with 107 community organizations. Of those 177 projects, 60 were coordinated by groups that had previously hosted a CommuniTree planting. CTree's 2:1 ratio of new to returning applicants,

we feel, is a good balance. This ratio ensures that we are reaching new audiences while at the same time assisting previous applicants with planting more trees and addressing long-term tree maintenance issues. In 2014 we saw a dip in new applicants, resulting in approximately a 1:1

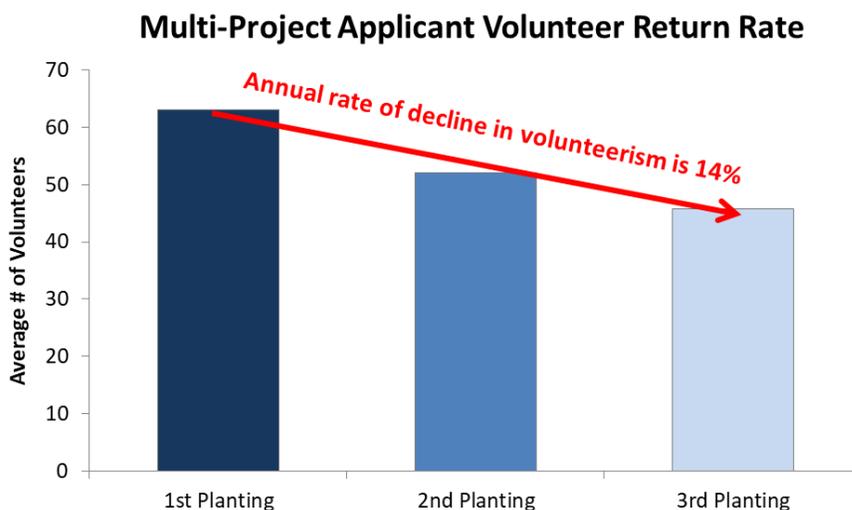
ratio of new to returning applicants. In 2017 that trend deepened to nearly 1:1.5 with significantly less new groups compared to returning applicants. For example, of the 16 applicants this fall 2017, only six were new groups. This is an anomaly. It is reasonable to assume that as the pool of previous applicants grows (currently 107) the number of repeat applicants would also grow. What we may be witnessing is the initial stages of a decline in new applicants due to the fact that the Potomac Headwaters is only so big, there are only so many community groups interested in urban forestry, and there are only so many eligible spaces for them to plant trees through CTree. To sustain current levels of growth in new participants, CTree must work to continue engaging new groups and new volunteers in new communities. Cacapon Institute is reviewing new Chesapeake Bay Program landcover data, EPA Environmental Justice indicators, and evaluating our outreach to find and target new and potentially underserved audiences.



Carla Hardy WV Project CommuniTree Fall 2017 Report

- **For returning applicants, priority should be given to groups that can demonstrate sustained levels of volunteerism throughout multiple projects.** CommuniTree’s motto is “Building Communities from the Roots Up!” In the field of urban forestry, a critical measurement of “building communities” is the ability to continually engage volunteers and empower them to become long-term tree stewards.

Returning applicants should be able to engage an equal, if not greater, amount of volunteers. When a group applies for their second project, if they are building communities, they should increase the number of volunteers from their first planting. Cacapon Institute analyzed the average number of volunteers at each group’s first planting, and where applicable, their 2nd and 3rd



plantings. We found a decline in the average number of volunteers, and the hours they spent volunteering to plant trees, between the 1st and 2nd, and subsequently 2nd and 3rd, CTree planting. This means that fewer returning applicants are not sustaining their initial levels of volunteers and are, in fact, engaging fewer volunteers each season. We need to make the program fun, engaging, and accessible for volunteers. When awarding CTree Kits, priority should be given to groups, especially returning groups, that demonstrate the ability to fully engage and sustain volunteers.

- **Additional volunteer contribution needs to be generated.** Fall 2017 was the third season in a row that Cacapon Institute failed to generate enough Volunteer Contribution (\$51,744) to match Federal Contribution (\$61,472). A shortfall of \$9,729 has been documented for this season. Cacapon Institute should re-evaluate the CTree program to ensure that we are utilizing all forms of volunteer contribution. In fall 2017, CI monetized the WVDA contribution of storage space and use of water for temporary holding nurseries to find \$2,421 of Volunteer Contribution (Appendix C, page 28). There may be additional sources of volunteerism and donations which we are not currently calculating as part of our Volunteer Contribution. For example, if we were to include the 188 hours of in-classroom education as volunteerism, that would generate nearly \$4,000 of additional Volunteer Contribution. We should also be actively seeking new, diverse partners to contribute to CommuniTree and increase our “Additional Support”. As a partnership, CommuniTree should continue to encourage our Project Leaders to engage as many volunteers as possible in their tree planting projects.

Carla Hardy WV Project CommuniTree Fall 2017 Report

Table of Contents

Table 1	CTree Kits.....	Pages 12-13
Table 2	Trees Planted by Group.....	Page 14
Figure 1	CTree Groups and Planting Sites.....	Page 14
Figure 2	Planting Map and Number of Trees by County.....	Page 15
Table 3	Volunteers & Hours Volunteered.....	Page 16
Figure 3	Volunteer Contribution pie chart.....	Page 16
Table 4	Volunteer Contribution & Additional Support.....	Page 17
Table 5	Trees & Supplies Costs.....	Page 18
Figure 4	Project Investment by Volunteer and Federal Contribution.....	Page 19
Figure 5	Volunteers, Hours Worked, and Total Volunteer Contribution by group.....	Page 20
APPENDIX A:	Tree Purchases Fall 2017.....	Pages 21-25
APPENDIX B:	i-Tree Streets Analysis.....	Pages 26-27
APPENDIX C:	Parking Lot and Water Usage for WVDA.....	Page 28

Photos and stories of past projects and the CTree application are available by clicking the Forestry tab at CacaponInstitute.org.
For more info, please contact Tanner Haid, Cacapon Institute's Urban Watershed Forester, at ctree@cacaponinstitute.org.



Clock-wise from top-left picture: Moving trees at St. James Catholic Church, group picture at Hammonds Mill HOA, digging holes at Morning Dove Estates HOA, posing for a picture at James Rumsey Technical Institute, fruit trees at Potomack Intermediate School, and thumbs-up at QuadGraphics

Carla Hardy WV Project CommuniTree Fall 2017 Report

CTree Kits Fall 2017			
<u>Projects</u>	<u>Kit – # Trees</u>	<u>Stock Size</u>	<u>Species</u>
Charles Town Parks and Recreation	Shade-16	(16) 1" caliper, 6-10' height	(2) black birch, (2) black oak, (2) chestnut oak, (3) scarlet oak, (4) swamp white oak, (3) white oak
Hammonds Mill HOA	Mixed-16	(16) 1" caliper, 6-10' height	(3) 'Kwanzan' flowering cherry, (3) 'Royal Raindrops' crabapple, (1) 'Kousa' dogwood, (6) 'Emerald Green' arborvitae, (3) eastern white pine
James Rumsey Technical Institute	Mixed-24	(12) 1" caliper, 6-10' height, (12) 4-6' height*	(5) black oak, (3) chestnut oak, (4) scarlet oak, (6) 'Edith Bogue' southern magnolia*, (6) eastern white pine*
Martinsburg Shade Tree Commission	Mixed-16	(16) 1" caliper, 6-10' height	(4) American hornbeam, (4) eastern hophornbeam, (3) 'Kwanzan' flowering cherry, (2) 'Royal Raindrops' crabapple, (3) eastern redbud
Mill Creek Ruritan Club	Shade-24	(12) 1" caliper, 6-10' height, (12) 4-6' height	(4) River Birch, (2) black gum*, (2) sweet gum*, (2) hackberry*, (2) katsuratree*, (2) American linden*, (2) littleleaf linden*, (2) red maple, (2) swamp white oak, (2) tulip poplar, (2) sycamore
Morning Dove Estates HOA	Shade-16	(16) 1" caliper, 6-10' height	(3) black birch, (2) black oak, (2) chestnut oak, (2) scarlet oak, (2) swamp white oak, (5) white oak
Mountain Ridge Middle School	Mixed-16	(16) 1" caliper, 6-10' height	(2) American linden, (8) red maple, (2) sweet bay magnolia, (3) eastern redbud, (1) Norway Spruce
National Humane Education Society	Mixed-16	(16) 1" caliper, 6-10' height	(3) chestnut oak, (4) scarlet oak, (3) white oak, (4) 'Winter King' green hawthorn, (2) eastern redbud
Olivet Cemetery Association	Flowering-24	(12) 1" caliper, 6-10' height, (12) 4-6' height	(3) 'Kwanzan' flowering cherry, (3) 'Royal Raindrops' crabapple, (3) white fringetree, (3) Japanese tree lilac, (3) eastern redbud*, (3) serviceberry*, (3) Allegheny serviceberry*, (3) sourwood*
Potomac Center	Shade-16	(16) 1" caliper, 6-10' height	(2) black birch, (3) chestnut oak, (9) pin oak, (2) white oak
Potomack Intermediate School	Mixed-16	(16) 1" caliper, 6-10' height	(2) 'Cortland' apple, (2) 'Golden Delicious' apple, (5) peach, (4) European pear, (3) American plum
QuadGraphics	Mixed-24	(12) 1" caliper, 6-10' height, (12) 4-6' height	(2) black birch, (2) black oak, (2) chestnut oak, (2) scarlet oak, (2) swamp white oak, (2) white oak, (2) crepe myrtle*, (2) serviceberry*, (8) eastern white pine*

Carla Hardy WV Project CommuniTree Fall 2017 Report

<u>Projects</u>	<u>Kit – # Trees</u>	<u>Stock Size</u>	<u>Species</u>
Spruce Hill Estates HOA	Riparian-100	(100) 4-6' height*	(5) black birch, (5) river birch, (5) boxelder, (5) black gum, (5) sweet gum, (5) hackberry, (5) katsuratree, (10) American linden, (5) red maple, (5) silver maple, (5) sugar maple, (5) red oak, (10) swamp white oak, (5) tulip poplar, (10) sycamore, (5) black walnut, (5) black willow
St James Knights of Columbus	Shade-16	(16) 1" caliper, 6-10' height	(3) river birch, (1) American hornbeam, (2) American linden, (10) 'Village Green' Japanese zelkova
WV Division of Natural Resources	Mixed-16	(16) 1" caliper, 6-10' height	(6) black birch, (5) swamp white oak, (5) 'Winter King' green hawthorn
WV State Police	Mixed-16	(16) 1" caliper, 6-10' height	(4) black oak, (6) pin oak, (6) 'Royal Raindrops' crabapple
TOTALS			372 trees = (224) 1" caliper, 6-10' height and (148) 4-6' height

Table 1: Description of Carla Hardy WV Project CommuniTree Kits that were awarded in fall 2017. The * symbol indicates that certain species were 4-6' height. All of the trees at Spruce Hill Estates HOA were 4-6' height. For a full list of CTree kits, visit the Forestry tab at www.cacaponinstitute.org. Tree sizes this fall 2017 varied in container size, caliper, and height. For simplicity, they have been combined into two categories – "1" caliper, 6-10' height" and "4-6' height". A complete breakdown of trees purchased for CTree Kits in fall 2017, as well as their container, caliper, and height, is provided in Appendix A on pages 21-25.

Carla Hardy WV Project CommuniTree Fall 2017 Report

Trees Planted by Group and Location

Group	Planting Location	Community	County	# Trees
Charles Town Parks and Recreation	Jefferson Memorial Park	Charles Town	Jefferson	16
Hammonds Mill HOA	Hammonds Mill HOA	Spring Mills	Berkeley	16
James Rumsey Technical Institute	James Rumsey Technical Institute	Hedgesville	Berkeley	24
Martinsburg Shade Tree Commission	Tennessee Avenue	Martinsburg	Berkeley	16
Mill Creek Ruritan Club	Mill Creek Ruritan Club	Purgittsville	Hampshire	24
Morning Dove Estates HOA	Morning Dove Estates Subdivision	Bunker Hill	Berkeley	16
Mountain Ridge Middle School	Mountain Ridge Middle School	Gerrardstown	Berkeley	16
National Humane Education Society	Briggs Animal Adoption Society	Charles Town	Jefferson	16
Olivet Cemetery Association	Olivet Cemetery	Moorefield	Hardy	24
Potomac Center	Potomac Center	Romney	Hampshire	16
Potomack Intermediate School	Potomack Intermediate School	Spring Mills	Berkeley	16
QuadGraphics	Caperton Boulevard Business Park	Martinsburg	Berkeley	24
Spruce Hill Estates HOA	Spruce Hill Estates HOA	Charles Town	Jefferson	100
St James Knights of Columbus	St. James Catholic Church	Charles Town	Jefferson	16
WV Division of Natural Resources	Warden Lake WMA	Romney	Hampshire	16
WV State Police	Moorefield Barracks	Moorefield	Hardy	16

Table 2: fall 2017 groups, planting location, community, county, and number of trees planted.

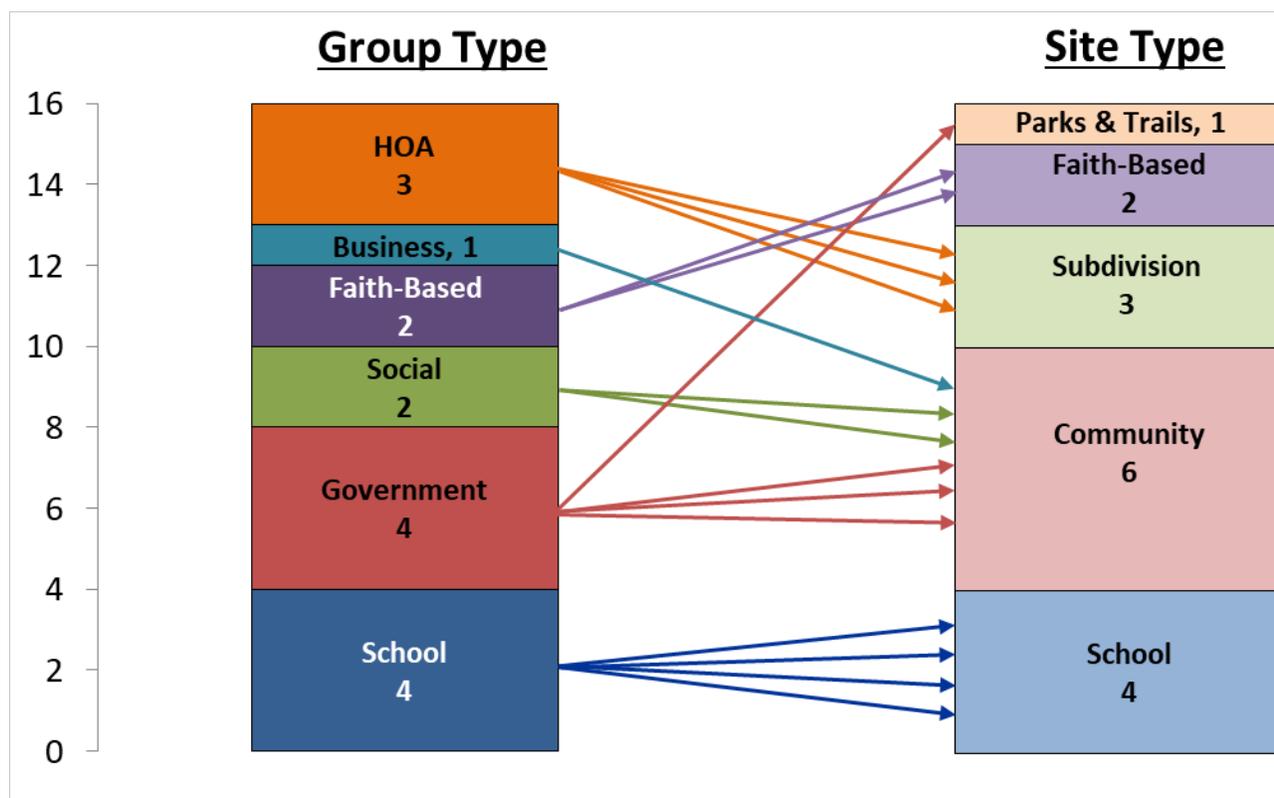
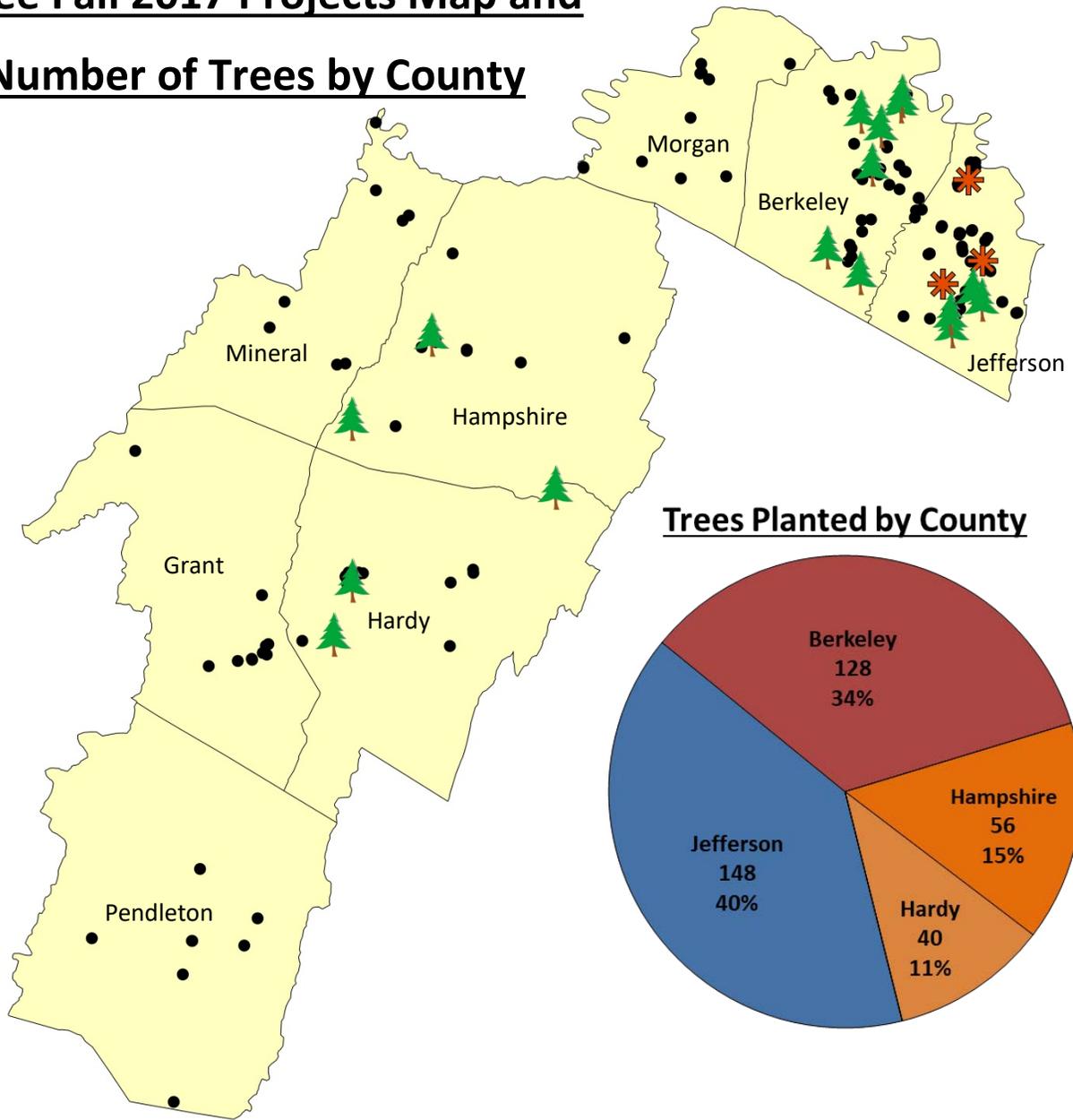


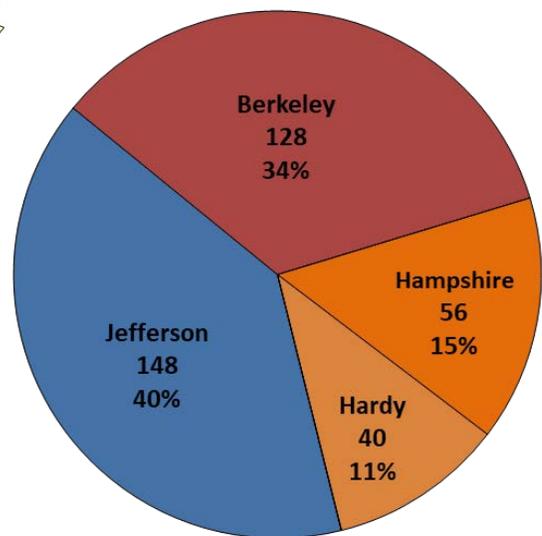
Figure 1: CTree Group Types (left) and Planting Site Types (right) in fall 2017. The connections show the Site Type for where each group planted their CTree Kit.

CTree Fall 2017 Projects Map and

Number of Trees by County



Trees Planted by County



-  Fall 2017 Projects (16)
-  Replacement Trees
-  Past Projects (161)



Carla Hardy WV Project CommuniTree Fall 2017 Report

Volunteerism & Hours Volunteered

Group	# Volunteers				Volunteer Hours			
	PL	SL	AV	YV	PL	SL	AV	YV
Charles Town Parks and Recreation	2	0	12	4	29	0	41	12
Hammonds Mill HOA	4	0	8	3	26	0	16	6
James Rumsey Technical Institute	2	2	0	102	16	9	0	126
Martinsburg Shade Tree Commission	2	5	37	9	31	35	65	18
Mill Creek Ruritan Club	3	2	11	6	12	6	32	21
Morning Dove Estates HOA	2	4	15	10	10	8	30	19
Mountain Ridge Middle School	1	0	4	192	6	0	14	144
National Humane Education Society	4	3	7	0	15	38	11	0
Olivet Cemetery Association	3	10	0	17	22	32	0	17
Potomac Center	7	7	7	5	53	47	7	5
Potomack Intermediate School	3	0	17	91	11	0	38	46
QuadGraphics	4	4	14	0	40	14	35	0
Spruce Hill Estates HOA	2	1	19	24	14	4	37	48
St James Knights of Columbus	2	2	9	14	8	12	16	24
WV Division of Natural Resources	2	2	7	4	8	8	23	12
WV State Police	2	0	18	4	12	0	43	8
Total – CTree Volunteers & Hours	45	42	185	485	312	213	407	505
Sub-total – CTree	757				1,437			
Sub-total – Replacement Trees	---				---			
Total Volunteer Contribution	757				1,437			

Table 3: YV = Youth Volunteer, AV = Adult Volunteer, SL = Skilled Labor, and PL = Project Leader. A complete breakdown of Volunteer Contribution can be found on Page 17.

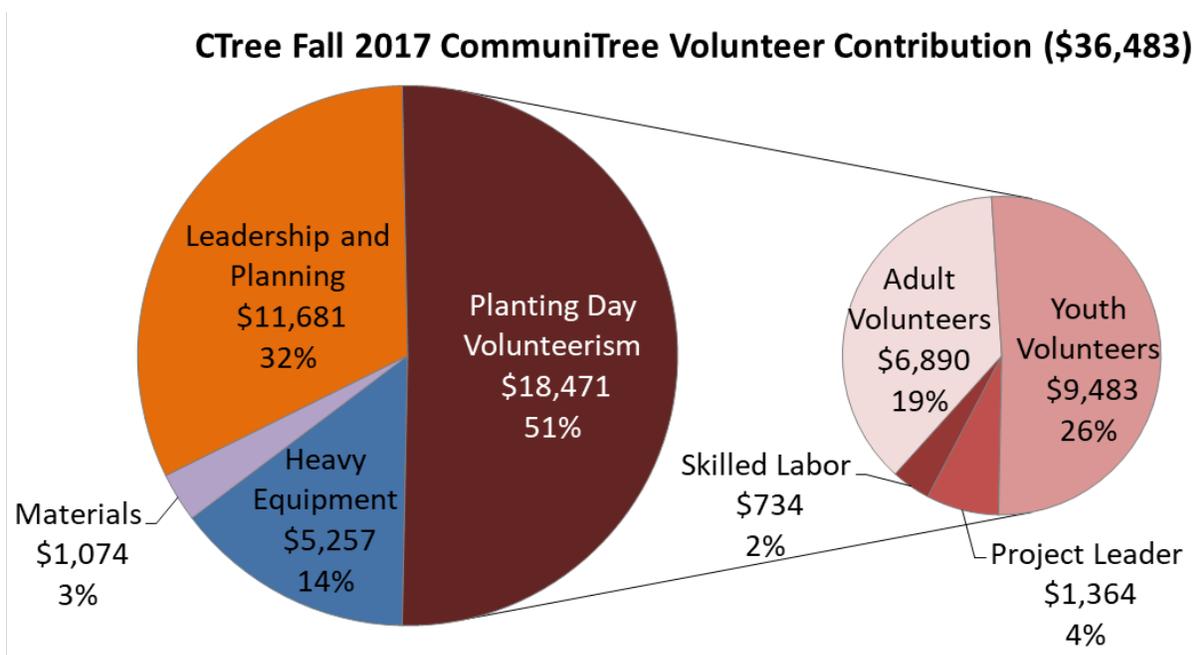


Figure 3: Total volunteer contribution and material donations from CTree groups in fall 2017. At right, volunteer contribution on planting day is shown as a subset of the total volunteer contribution.

Carla Hardy WV Project CommuniTree Fall 2017 Report

Volunteer Contribution and Material Donations						
Organization	Leadership & Planning	Planting Day Volunteers	Heavy equipment	Materials	Volunteer Contribution	Above Required
Charles Town Parks & Rec	\$ 944	\$ 776	\$ 216	\$ -	\$ 1,937	\$ 437
Hammonds Mill HOA	\$ 420	\$ 587	\$ 661	\$ -	\$ 1,668	\$ 168
James Rumsey Tech. Inst.	\$ 1,416	\$ 1,741	\$ 330	\$ -	\$ 3,488	\$ 1,988
M'burg Shade Tree Comm.	\$ 1,437	\$ 1,678	\$ 850	\$ 174	\$ 4,139	\$ 2,639
Mill Creek Ruritan Club	\$ 315	\$ 1,175	\$ 172	\$ 3	\$ 1,664	\$ 164
Morning Dove Estates HOA	\$ 525	\$ 881	\$ 136	\$ 10	\$ 1,551	\$ 51
Mountain Ridge MS	\$ 168	\$ 3,271	\$ 50	\$ 50	\$ 3,539	\$ 2,039
National Humane Edu. Soc.	\$ 776	\$ 556	\$ 17	\$ 190	\$ 1,540	\$ 40
Olivet Cemetery Assn.	\$ 713	\$ 776	\$ 400	\$ -	\$ 1,890	\$ 390
Potomac Center	\$ 2,035	\$ 315	\$ 554	\$ 45	\$ 2,949	\$ 1,449
Potomack Interm. School	\$ 273	\$ 1,710	\$ 116	\$ 30	\$ 2,129	\$ 629
QuadGraphics	\$ 965	\$ 902	\$ 216	\$ 223	\$ 2,306	\$ 806
Spruce Hill Estates HOA	\$ 262	\$ 1,888	\$ 102	\$ 50	\$ 2,303	\$ 803
St James Knights of Col.	\$ 509	\$ 745	\$ 1,141	\$ 200	\$ 2,595	\$ 1,095
WV Division of Natural Res.	\$ 441	\$ 629	\$ 41	\$ 50	\$ 1,160	\$ (340)
WV State Police	\$ 483	\$ 839	\$ 255	\$ 50	\$ 1,627	\$ 127
Sub-total – CommuniTree	\$ 11,681	\$ 18,471	\$ 5,257	\$ 1,074	\$ 36,483	\$ 12,483
Volunteer Contribution	\$ 11,681	\$ 18,471	\$ 5,257	\$ 1,074	\$ 36,483	\$ 12,483
Alliance for Community Trees	ACTrees Tree Giveaway 2017 grant in partnership with CSX Transportation				\$ 5,000	
Cacapon Institute	Foregone, unrecovered, federally allowed indirect expenses (phone, facilities, insurance, etc.)				\$ 3,207	
WV Dept. of Agriculture	Inwood Branch – Parking Lot and Water Usage*				\$ 1,401	
WV Dept. of Agriculture	Moorefield Branch – Parking Lot and Water Usage*				\$ 1,021	
Potomac Valley Conservation District	Funding for projects in the PVCD service area in fall 2017				\$ 1,000	
Replacement Tree Volunteers	3 groups engaged 15 volunteers in 42 hours of volunteerism, valued at \$20.98/hour				\$ 881	
Clear Ridge Nursery	Donations of 26 replacement trees				\$ 866	
WV State University	Funding for 16 fruit trees at Potomack Intermediate School				\$ 791	
CTree Review Committee	Five non-CBP partners serving on CTree Review Committee				\$ 629	
James Rumsey Tech. Inst.	Tree Delivery to Moorefield and Inwood				\$ 400	
Jeff. Co. Solid Waste Auth.	Mulch delivery to Spruce Hill Estates HOA				\$ 65	
Additional Support					\$ 15,261	
Total Volunteer Contribution, including Additional Support					\$ 51,744	

Table 4: Complete breakdown of volunteer contribution and material donations, as well as additional support, in fall 2017.

*Parking Lot Usage was not calculated as part of the Volunteer Contribution in spring 2017, so they've been included in this report for fall 2017. More information on how these numbers were calculated can be found on Page 28 in the Appendix C.

Carla Hardy WV Project CommuniTree Fall 2017 Report

Trees & Supplies Costs

<u>Item</u>	<u>Supplier</u>	<u>CommuniTree</u>		<u>Replacement Trees</u>		<u>Total</u>
		<u>#</u>	<u>Cost</u>	<u>#</u>	<u>Cost</u>	
Trees	Clear Ridge Nursery	372	\$ 17,093	0	\$ -	\$ 17,093
Mulch Bags	Grant Co. & Potomac Farms	290	\$ 837	0	\$ -	\$ 837
Stakes	Burch Wood Products	500	\$ 678	0	\$ -	\$ 678
Tubes	Plantra & Conserv. Services	255	\$ 600	0	\$ -	\$ 600
Cages	Home Depot, 100' rolls	2	\$ 110	0	\$ -	\$ 110
Arbor Strap	Forestry Suppliers, 250' rolls	10	\$ 435	0	\$ -	\$ 435
Signs & Hardware	WV Correctional Industries	n/a	\$ 1,624	n/a	\$ -	\$ 1,624
Miscellaneous	miscellaneous expenses	n/a	\$ 984	n/a	\$ -	\$ 984
Tools	Home Depot, Amazon	n/a	\$ 128	n/a	\$ -	\$ 128
Total Costs		-----	\$ 22,488	-----	\$ -	\$ 22,488

Table 5: Trees & supplies costs in fall 2017. The sum of these costs (\$22,488) is reflected in the “Trees”, “Tree Supplies”, and “Postage & Printing” slices in the federal contribution pie chart (Figure 4, Page 19) on the right side of the figure. Together, they make up about 37% of the total Federal Contribution.

Trees were purchased by Cacapon Institute from Clear Ridge Nursery. In total, 372 trees were purchased. In June, 105 trees were purchased from Clear Ridge Nursery as part of a sale they were running on 15-gallon oaks. The remaining trees were purchased as part of the annual bidding process for CommuniTree. Additional trees were donated by Clear Ridge Nursery to be used as Replacement Trees.

Mulch was purchased from two separate vendors. For the trees in Inwood, three pallets (200 bags) of mulch were purchased from Potomac Farms Nursery. A minimal fee was paid to have the mulch delivered to the Inwood tree pick-up site. For the trees in Moorefield, two pallets (90 bags) of mulch were purchased from Grant County Mulch’s Baker plant. These pallets were loaded onto a WVCA vehicle and offloaded at the Moorefield tree pick-up site.

Stakes were purchased from Burch Wood Products in Summit Point, WV and delivered to the Inwood tree pick-up site. A fork-lift from Taylor’s Farmers Market was used to offload the pallets of stakes. Cacapon Institute and WV Division of Forestry personnel loaded their work trucks with stakes to deliver to the tree pick-up site in Moorefield for projects in that region.

Tubes, Cages, Arbor Tie, etc. were also purchased prior to the planting season from multiple different vendors. All of these materials were sorted at the Inwood tree pick-up facility. Materials for projects in the Moorefield area were delivered with the stakes by Cacapon Institute and WV Division of Forestry personnel.

Miscellaneous expenses fall outside of these major categories and include toll roads, lodging, and per diem for conferences and trainings, materials for CI’s tree grow-out station, etc.

Carla Hardy WV Project CommuniTree Fall 2017 Report

Project Investment by Volunteer & Federal Contribution

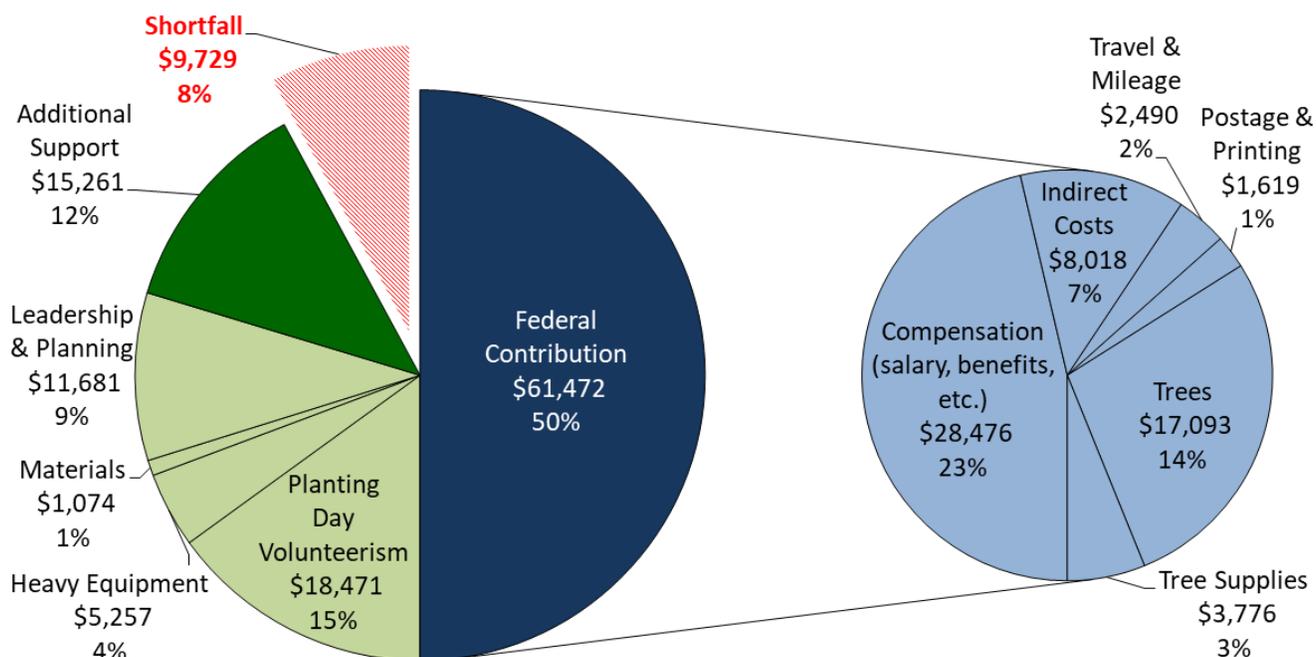


Figure 4: The pie on the left shows project investment, both in terms of volunteer (orange) and federal contribution (blue), as well as additional support for the program (green). The total volunteer contribution for fall 2017 was \$51,744, including \$15,261 in additional support. On the right is a breakdown of the federal contribution (\$61,472), which includes all expenses for the fall 2017 season (June 1st, 2017 – Nov. 30th, 2017).

Volunteer Contribution – \$51,744

The majority of the volunteer contribution came in the form of Planting Day Volunteers (\$18,471), as has been the case in previous planting seasons. Leadership & Planning by CTree Project Leaders was a large source of volunteer contribution (\$11,681), with many hours being spent organizing projects.

Additional Support this season (\$15,261) included \$5,000 from Alliance for Community Tree and \$3,207 from Cacapon Institute through foregone, unrecovered, federally allowed indirect expenses, such as phone, facilities, insurance, etc. The Potomac Valley Conservation District provided \$1,000 and Clear Ridge Nursery donated \$866 worth of replacement trees. Replacement tree applicants generated \$881 through volunteerism. WV State University provided \$791 to purchase fruit trees. Additional Support was also provided through the non-CBP volunteers on the CTree Review Committee (\$629), James Rumsey Technical Institute (\$400), and Jefferson County Solid Waste Authority (\$65). Appendix C on Page 28 has full details on how the WVDA contribution of Parking Lot and Water Usage was calculated.

Federal Contribution – \$61,472

The majority of the Federal Contribution (i.e., WV Chesapeake Bay Program funding) was spent on salaries, benefits, etc. (\$28,476) and trees (\$17,093) & tree supplies (\$3,776). Cacapon Institute's recovered, federally allowed indirect costs totaled \$8,018. Costs related to travel and mileage accounted for \$2,490 of the federal contribution. Cacapon Institute fell \$9,729 short of matching Federal Contribution with Volunteer Contribution this season.

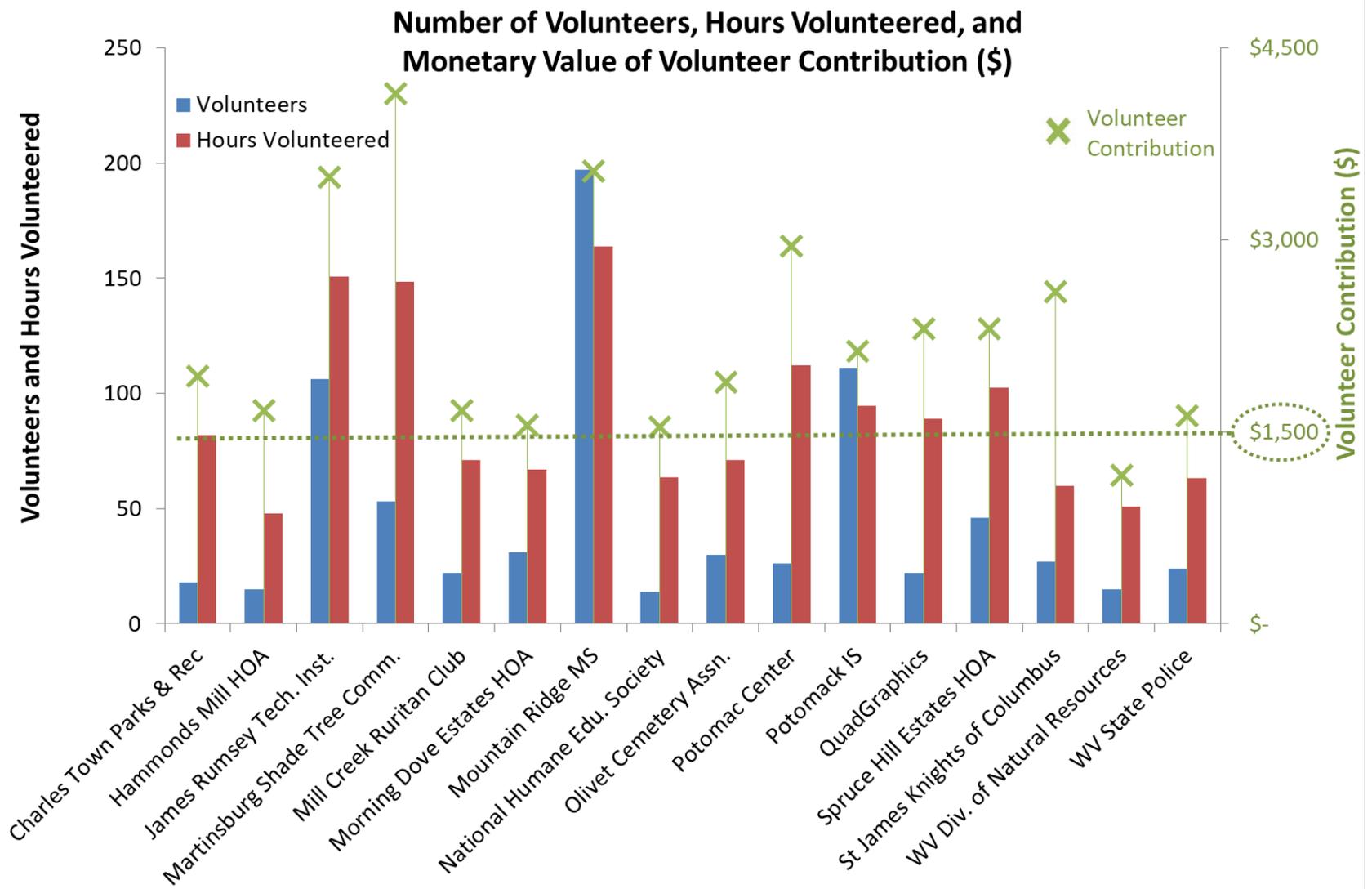


Figure 5: Total number of volunteers and hours volunteered on the project are displayed on the primary vertical axis (left). The cash value of the volunteer contribution and material donations provided per group is displayed on the secondary vertical axis (right). The green dotted line connected to the circle represents the \$1,500 volunteer contribution requirement. All of the groups except for one exceeded the \$1,500 volunteer contribution requirement. The total volunteer contribution for CTree Kits in spring 2017 was \$36,483. Combined with \$15,261 in additional support, the total Volunteer Contribution was \$51,744. The total amount of Federal Contribution (i.e. WV Chesapeake Bay Program Funding) was \$61,472.



Appendix A: Tree Purchases

Cacapon Institute planted a total of 398 trees in spring 2017 through the Carla Hardy WV Project CommuniTree. The majority of the trees (372) were planted in CTree Kits (16), while the remaining 26 trees were used as replacements for trees that failed to establish at three separate CTree planting sites.

CTree Kit Statistics¹

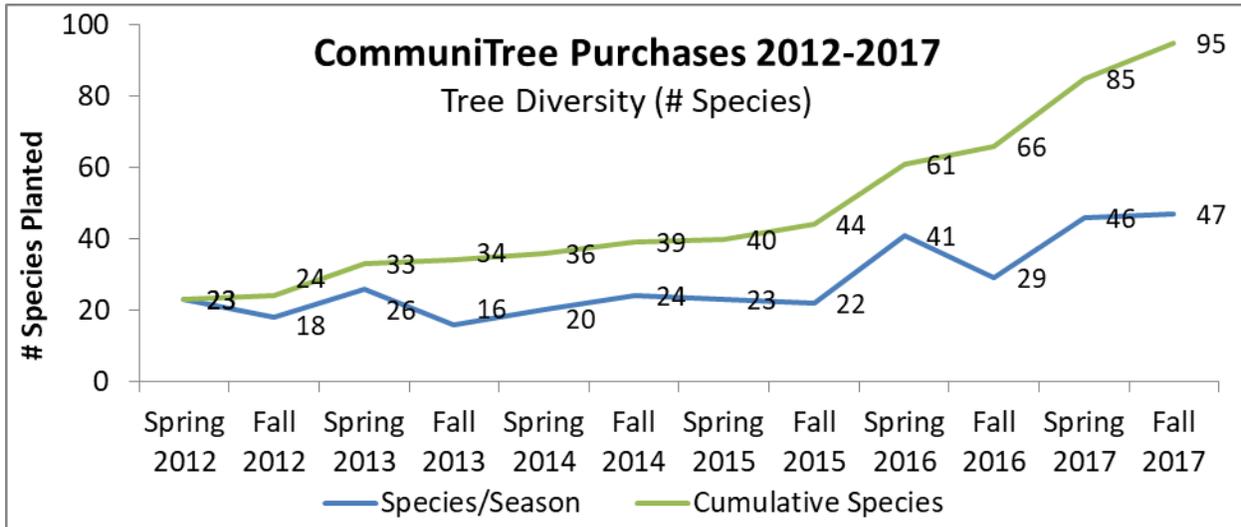
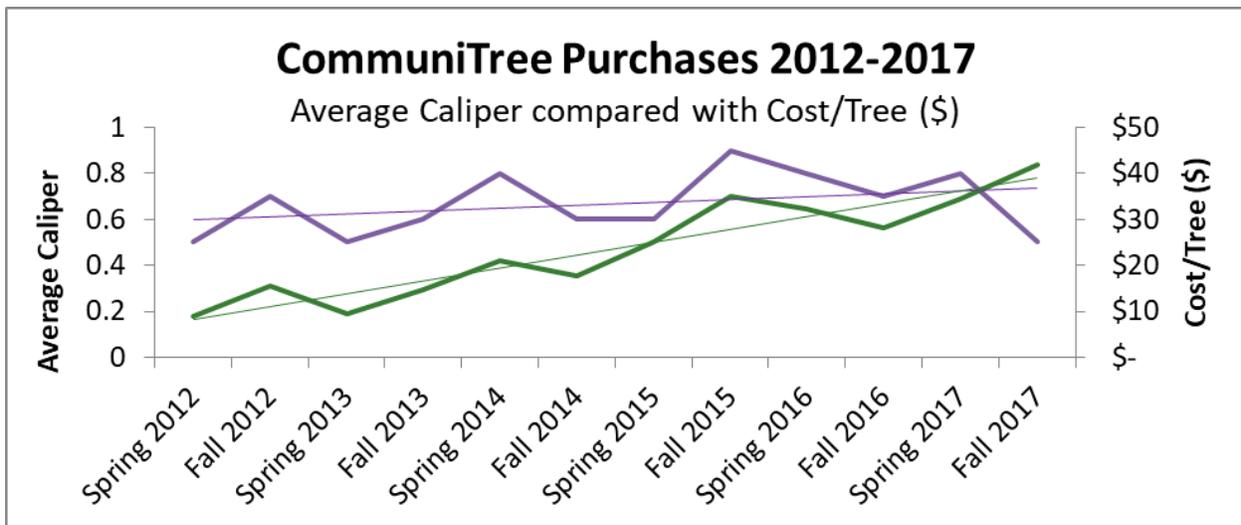
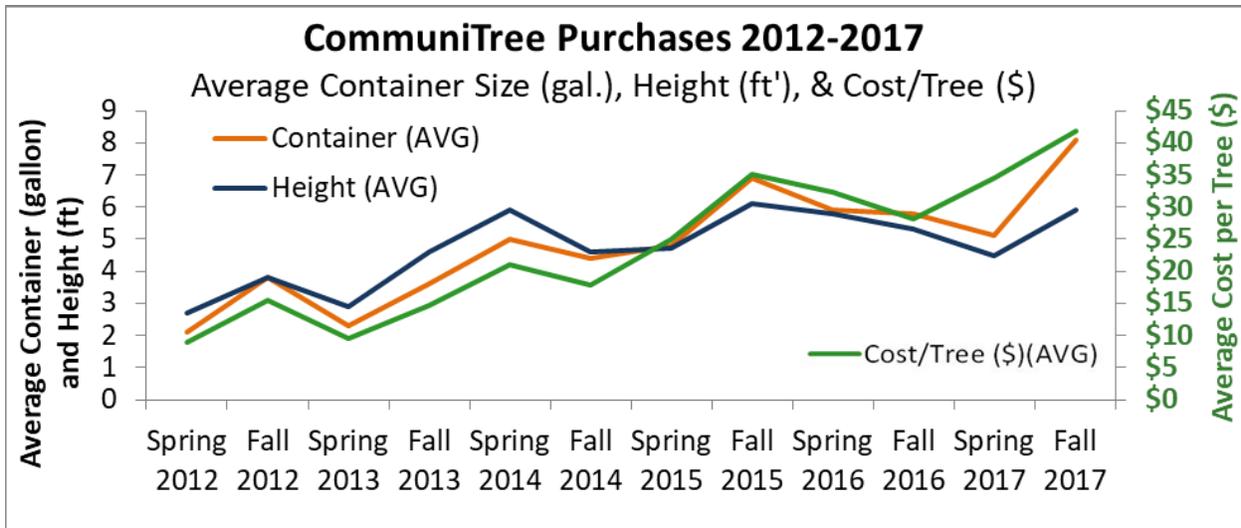
All of the 372 trees planted in fall 2017 in CTree Kits were purchased from Clear Ridge Nursery. In previous planting seasons, a small percentage of trees were donated from sources including the WV Division of Forestry. Full details on tree purchases and donations are in the table below.

	Purchased	Donated	Total
CTree Kit Trees	372	0	372
%	100%	0%	100%
Cost	\$ 15,556.00	\$ -	\$ 15,556.00
%	100%	0%	100%
Nursery Tree Tags	\$ 37.20	\$ -	\$ 37.20
Inwood Delivery	\$ 825.00	\$ -	\$ 825.00
Moorefield Delivery	\$ 675.00	\$ -	\$ 675.00
Total Costs	\$ 17,093.20	\$ -	\$ 17,093.20

Some quick facts about the costs & sizes of trees purchased for CTree Kits in fall 2017 include:

- **Costs:** The majority of the trees (54%, 145 trees) cost more than \$50. This is almost double the percentage of \$50+ trees compared to spring 2017 (28%). The average cost per tree this season was \$41.82, up approximately \$7.00 since spring 2017 and \$13.00 since fall 2016.
- **Container Size:** Most of the trees (64%, 237 trees) were in 5-7 gallon pots. A larger percentage than usual were in 15-gallon pots (26%, 97), due to a purchase of 15-gallon trees that were on sale in summer 2017 that were purchased for the CTree fall 2017 planting season. The average container size in fall 2017 (8.1-gallon) was up a full 3-gallons compared to spring 2017.
- **Height:** The majority of the trees (62%, 230 trees) were 6-8' tall at the time of planting. Another large portion of the trees (17%, 64 trees) were greater than 8' tall. The average tree height in fall 2017 (5.9') increased 1.4' since spring 2017.
- **Caliper:** Most of the trees (77%, 288 trees) were 0.75-1" caliper. A small percentage of trees (19%, 69 trees) were approximately 0.5" caliper. Only 4% of the trees (15 trees) were 1.25" caliper or greater. The average caliper size was 0.8%, identical to spring 2017. What this means is that although the average cost per tree, container size, and the height of the trees are all increasing, the caliper of the trees is not increasing at the same rate.
- **Diversity:** There were 47 species planted in fall 2017, including 10 species that have not been planted in previous planting seasons, bringing the cumulative total of species planted to 95.

¹ More detailed information on the tree purchases for Replacement Trees from this season can be found in the CTree fall 2017 Report on Page 8.



CTree Kit Trees, Fall 2017, 372 Trees

Species (<i>scientific name</i>)	Quantity	Container	Height	Caliper	Cost/Tree	Total Cost
Apple, 'Cortland' (<i>Malus domestica</i> 'Cortland')	2	7 gal.	5-6'	1"cal.	\$41.00	\$82.00
Apple, 'Golden Delicious' (<i>Malus domestica</i> 'Golden Delicious')	2	7 gal.	4-6'	1/2-1"cal.	\$60.00	\$120.00
Arborvitae, 'Emerald Green' (<i>Thuja occidentalis</i> 'Emerald Green')	6	15-gal.	5'	3/4" cal.	\$41.00	\$246.00
Birch, Black (<i>Betula lenta</i>)	5	5-gal.	6-8'	1/2-1"cal.	\$18.00	\$90.00
Birch, Black (<i>Betula lenta</i>)	15	7-gal.	6-9'	3/4-1.25"cal.	\$30.00	\$450.00
Birch, River (<i>Betula nigra</i>)	5	5 gal.	6-8'	3/4-1"cal.	\$30.00	\$150.00
Birch, River (<i>Betula nigra</i>)	7	7-gal.	8-10'	3/4-1.25"cal.	\$41.00	\$287.00
Boxelder (<i>Acer negundo</i>)	5	5-gal.	5-8'	1/2-1"cal.	\$30.00	\$150.00
Cherry, Japanese Flowering 'Kwanzan' (<i>Prunus serrulata</i> 'Kwanzan')	9	7-gal.	8-9'	1-1.25"cal.	\$60.00	\$540.00
Crabapple, 'Royal Raindrops' (<i>Malus</i> 'Royal Raindrops')	14	7 gal.	7-8'	1"cal.	\$60.00	\$840.00
Crapemyrtle, 'Dynamite' (<i>Lagerstroemia</i> 'Dynamite')	2	3 gal.	2-4'	1/2" cal.	\$18.50	\$37.00
Dogwood, Kousa 'Green Sleeves' (<i>Cornus kousa</i> 'Green Sleeves')	1	15-gal.	6'	1"cal.	\$65.00	\$65.00
Fringetree, White (<i>Chionanthus virginicus</i>)	3	7-gal.	5'	3/4-1"cal.	\$50.00	\$150.00
Gum, Black (<i>Nyssa sylvatica</i>)	7	5 gal.	3-6'	1/2-1"cal.	\$30.00	\$210.00
Sweet Gum (<i>Liquidambar styraciflua</i>)	7	5-gal.	4.5-6.5'	3/4-1"cal.	\$30.00	\$210.00
Hackberry (<i>Celtis occidentalis</i>)	7	5-gal.	4-7'	1/2-1"cal.	\$30.00	\$210.00
Hawthorn, 'Winter King' (<i>Crataegus viridis</i> 'Winter King')	9	7-gal.	6-7'	3/4"cal.	\$60.00	\$540.00
Hornbeam, American (<i>Carpinus caroliniana</i>)	5	7-gal.	5-8'	1/2-1"cal.	\$41.00	\$205.00
Hornbeam, Eastern Hop (<i>Ostrya virginiana</i>)	4	7-gal.	5-8'	3/4-1"cal.	\$41.00	\$164.00
Katsuratree (<i>Cercidiphyllum japonicum</i>)	7	5-gal.	6-8'	3/4-1"cal.	\$30.00	\$210.00
Lilac, Japanese Tree (<i>Syringa reticulata</i> 'Ivory Silk')	3	7 gal.	8-9'	1"cal.	\$60.00	\$180.00

Species (scientific name)	Quantity	Container	Height	Caliper	Cost/Tree	Total Cost
Linden, American (<i>Tilia americana</i>)	12	5 gal.	3-6'	3/4-1"cal.	\$30.00	\$360.00
Linden, American (<i>Tilia americana</i>)	4	7-gal.	5-8'	3/4-1"cal.	\$41.00	\$164.00
Linden, Little Leaf (<i>Tilia cordata</i>)	2	5-gal.	3.5-5.5'	1/2-1"cal.	\$30.00	\$60.00
Magnolia, Southern 'Edith Bogue' (<i>Magnolia grandiflora</i> 'Edith Bogue')	6	3-gal.	3'	1/2" cal.	\$39.00	\$234.00
Magnolia, Sweet Bay (<i>Magnolia virginiana</i>)	2	7-gal.	3-5'	3/4" cal.	\$41.00	\$82.00
Maple, Red (<i>Acer rubrum</i>)	5	3-gal.	3-5'	1/2" cal.	\$16.00	\$80.00
Maple, Red (<i>Acer rubrum</i>)	10	7-gal.	6-9'	3/4-1.25"cal.	\$41.00	\$410.00
Maple, Silver (<i>Acer saccharinum</i>)	5	5 gal.	5-7'	1/2-1"cal.	\$30.00	\$150.00
Maple, Sugar (<i>Acer saccharum</i>)	5	3-gal.	3-6'	1/2" cal.	\$16.00	\$80.00
Oak, Black (<i>Quercus velutina</i>)	15	15-gal.	6-9'	3/4-1.25"cal.	\$58.00	\$870.00
Oak, Chestnut (<i>Quercus prinus</i>)	15	15-gal.	7-10'	1-1.25"cal.	\$58.00	\$870.00
Oak, Northern Red (<i>Quercus rubra</i>)	5	5-gal.	4-7'	1/2-1"cal.	\$30.00	\$150.00
Oak, Pin (<i>Quercus palustris</i>)	15	15-gal.	7-10'	1-1.5"cal.	\$58.00	\$870.00
Oak, Scarlet (<i>Quercus coccinea</i>)	15	15-gal.	5-8'	3/4-1.25"cal.	\$58.00	\$870.00
Oak, Swamp White (<i>Quercus bicolor</i>)	10	5 gal.	4-7'	1/2-1"cal.	\$30.00	\$300.00
Oak, Swamp White (<i>Quercus bicolor</i>)	15	15-gal.	7-10'	3/4-1.25"c...	\$58.00	\$870.00
Oak, White (<i>Quercus alba</i>)	15	15-gal.	6-9'	3/4-1.25"cal.	\$58.00	\$870.00
Peach (<i>Prunus persica</i>)	5	7 gal	4-6'	1/2-1"cal.	\$60.00	\$300.00
Pear, European (<i>Pyrus communis</i> 'Bosc')	4	7 gal.	6'	1" cal.	\$41.00	\$164.00
Pine, Eastern White (<i>Pinus strobus</i>)	14	5 gal.	18-36"	1/2" cal.	\$30.00	\$420.00
Pine, Eastern White (<i>Pinus strobus</i>)	3	5 gal.	4'	1/2" cal.	\$30.00	\$90.00
Plum, American (<i>Prunus americana</i>)	3	7 gal.	5-7'	3/4-1"cal.	\$41.00	\$123.00

Species (scientific name)	Quantity	Container	Height	Caliper	Cost/Tree	Total Cost
Tulip Poplar (<i>Liriodendron tulipifera</i>)	5	5-gal.	4-7'	1/2-1" cal.	\$30.00	\$150.00
Tulip Poplar (<i>Liriodendron tulipifera</i>)	2	7-gal.	5-7'	3/4-1.25" cal	\$41.00	\$82.00
Redbud, Eastern (<i>Cercis canadensis</i>)	3	3-gal.	4-5'	1/2" cal.	\$21.00	\$63.00
Redbud, Eastern (<i>Cercis canadensis</i>)	8	7-gal.	5-8'	3/4-1.25" cal.	\$55.00	\$440.00
Serviceberry (<i>Amelanchier canadensis</i>)	5	5-gal.	5-8'	3/4-1" cal.	\$30.00	\$150.00
Serviceberry, Allegheny (<i>Amelanchier laevis</i>)	3	3-gal.	4-5.5'	1/2" cal.	\$21.00	\$63.00
Sourwood (<i>Oxydendrum arboreum</i>)	3	3 gal.	1-2'	1/2" cal.	\$21.00	\$63.00
Spruce, Norway (<i>Picea abies</i>)	1	B&B	4-5'	1" cal.	\$70.00	\$70.00
Sycamore (<i>Platanus occidentalis</i>)	10	3-gal.	3-5'	1/2" cal.	\$16.00	\$160.00
Sycamore (<i>Platanus occidentalis</i>)	2	7-gal.	6-9'	3/4-1.25" cal.	\$41.00	\$82.00
Walnut, Black (<i>Juglans nigra</i>)	5	5-gal.	4-5.5'	1/2-3/4" cal.	\$30.00	\$150.00
Willow, Black (<i>Salix nigra</i>)	5	5-gal.	6-8'	1/2-1" cal.	\$30.00	\$150.00
Zelkova, Japanese 'Village Green' (<i>Zelkova serrata</i> 'Village Green')	10	7-gal.	6-7'	1/2-3/4" cal.	\$41.00	\$410.00

Appendix B: Current and 20-year Grow-out Tree Benefits

Cacapon Institute utilized software from the US Forest Service to assess the annual monetary value of benefits provided by trees planted through Carla Hardy WV Project CommuniTree in fall 2017. This software, called i-Tree Streets, “uses growth and benefit models for predominant urban tree species” to calculate benefits of trees.

Tree benefits were modeled in two scenarios. The first model calculated the benefits of trees at their “Current” size, with DBH classified as being between 0-3”. Then, we estimated tree sizes after a twenty year period of growth and applied a DBH classification of 3-6”.

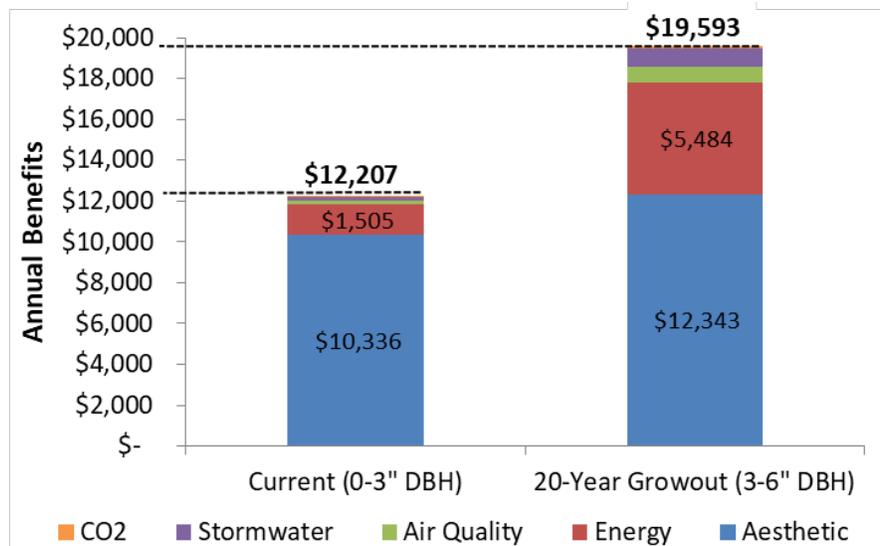
It is important to note that the calculations used by i-Tree Streets are based on case studies in cities across the country, and therefore the annual benefits and associated values are best-estimates. Additionally, this software was developed for specifically looking at street trees, whereas the majority of trees planted through CommuniTree are not “street trees”. Still, i-Tree is the best scientific model for assessing the annual benefits of trees planted through CommuniTree at parks, schools, churches, and other community planting sites.

Annual Benefits

At their current size (0-3” DBH), the 372 trees planted in CTree Kits (16) this fall 2017 will provide just over \$12,000 in annual benefits. Due to their limited canopy at the time of planting, they won’t provide as much energy savings, but their intrinsic, aesthetic value in beautifying communities will provide the majority of the annual benefits (\$10,336).

After a 20-year grow-out period, when the trees are approximately 3-6” DBH, they will provide nearly \$20,000 in annual benefits.

As the canopy grows, it will begin to provide more energy savings, air quality improvements, and stormwater runoff reduction¹.



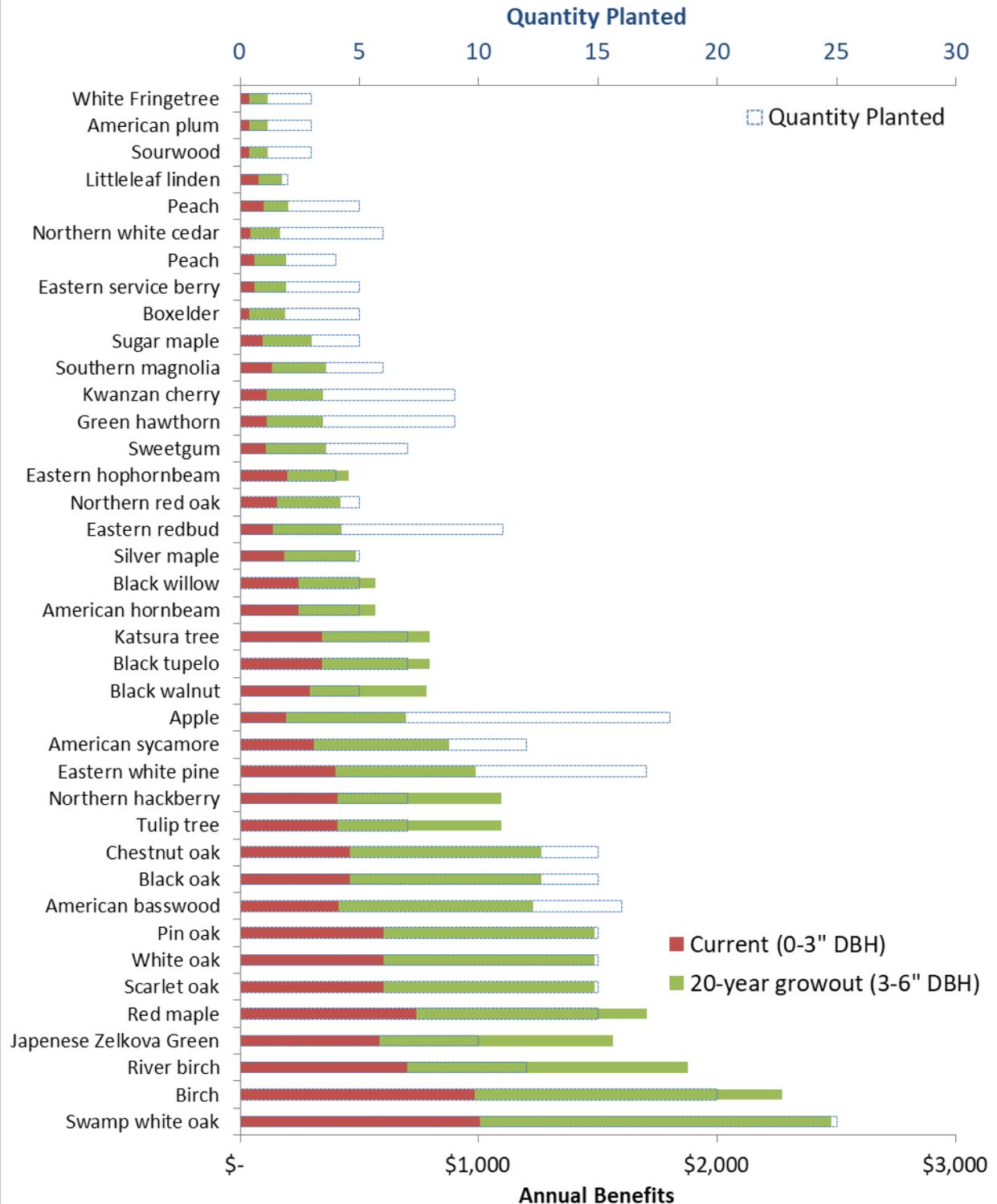
A breakdown of annual benefits per species is provided on the following pages.

¹ More details on how i-Tree Streets calculates these benefits can be found on the Resources section at www.iTreetools.org.

Annual Tree Benefits

CTree Fall 2017

Current (0-3" DBH) and 20-year Grow-out (3-6" DBH)



Appendix C: Parking Lot and Water Usage Calculations for WVDA

Cacapon Institute has partnered with the WV Department of Agriculture (WVDA) since 2012 to create temporary tree nurseries to store and water CTree Kits at the Moorefield and Inwood branches.

Every spring and fall, Cacapon Institute utilizes WVDA parking lots in Inwood and Moorefield to store hundreds of trees, as well as all of their stakes, tubes, mulch, and other planting materials, during the months of April-May and October-November, respectively. Before now, the use of this space, as well as the cost of watering the trees, has never been monetized as part of the Additional Support for CTree.

This fall, as part of our annual CTree Fall 2017 Report, Cacapon Institute has monetized the amount of Additional Support provided through WVDA for parking lot and water usage (see table below).

Location	Parking Lot "Rental"		Water Usage	Total
	Spring 2017	Fall 2017		
Inwood	\$850.00	\$520.00	\$30.69	\$1,400.69
Moorefield	\$510.00	\$510.00	\$0.65	\$1,020.65
Total	\$1,360.00	\$1,030.00	\$31.34	\$2,421.34

After consulting with FirstEnergy foresters, Cacapon Institute determined a rate of \$10/day for storing CTree Kits at WVDA locations. This fall 2017, CTree Kits were stored in Inwood for approximately 52 days between when the trees were delivered and when the final CTree Kit was picked up. In Moorefield, the trees were on site for 51 days.

Cacapon Institute retroactively included the parking lot usage rates for the spring 2017 planting season, where the CTree Kits were stored at Inwood for 85 days and Moorefield for 51 days.

Additionally, Cacapon Institute kept track of all water usage this fall 2017 using digital water meters. The rates for water usage at the WVDA locations are:

- Inwood – \$11.45/1,000 gallons¹
- Moorefield - \$1.71/1,000 gallons²

Over the course of the season, Cacapon Institute used the following amounts of water:

Location	Gallons of Water Used	\$/Gallon	Total
Inwood	2,681.6	\$.011	\$30.69
Moorefield	381.8	\$.002	0.65
Total	3,061.4	---	\$31.34

In total, the WVDA contributed \$2,421.34 towards the Additional Support for CTree fall 2017.

¹ More information on water rates in Inwood can be found at the Berkeley County Public Service Water District's website at <http://berkeleywater.org/site-page/water-rates>

² More information on water rates in Moorefield can be found on this Town of Moorefield municipal utility document for Nov. 26, 2012 - <http://www.psc.state.wv.us/scripts/Utilities/ViewDocument.cfm?TariffID=5795>