

Audubon Park Tree Committee Total Costs (Fall 2011 – Fall 2012):

Item	Cost	Donation Offset	Net Costs	Average Cost/Tree (exclusive of donations)
Structural Pruning	\$2427		2427	
Site Preparation	\$1424		1424	\$15/site
Plant Materials: Parks	\$3965	1955	2010	\$50/tree
Plant Materials: Easement	\$1400	2400	(1000)	\$36/tree
Materials:	\$2080 (plus add \$750)		2830	\$23/tree
		Total net:	\$7691	Overall \$74-88 per tree

Comments and Notes:

Materials/Site costs: ~\$38 per planting, with \$50 per park trees on average, and \$36 per street tree average.

Cost range is \$74-88 per tree planted. Note that materials (like cages) have a 3-5 year life span, and about 30% can be re-used. Ooze tubes have been re-used since 2007, and some will need replacement in the next year. The costs are higher in the parks, where all trees need sturdy cages, and where ornamental tree replacements cost more.

The current Easement program requests donations for street trees at \$75-100, and about 50% of those sites do not need cages because the tree is within the front yard. We usually place cages on all trees within easement with sidewalks (tree is planted between road and sidewalk, and trees where a lawn service does the mowing.) Donations for the easement trees have been adequate to cover most costs of that program, but about 50% of owners actually make a donation to the program. The fact that some people give more helps maintain the program.

Funds for tree restoration have been substantially used up in the current Parks replanting.

Current vacancy rate (available sites) in the Parks is probably <10% (if most of the trees planted survive). Only five ornamental trees (all dogwoods) are currently marked for removal (1 in Curlew, 2 in Oriole, 2 in Henderson). The vacancy rate on street easements may be 33-40% and will increase with loss of ashes (approximately 160 are on easements and more in front and side yards.)

Future Costs & Budgeting Considerations:

1. Structural pruning needs are still backlogged, and a cycle needs to be created and continued in each park.
2. Treatment of 12-14 ashes in Parks (out of 28) remains a priority, and will be on a 2-3 year basis, costing \$10 per inch diameter, approximately \$3500 - 4000 in 2013.
3. The number of hazard trees in Parks will rise and peak as the ashes die off and need removal. Falling ashes (and other hazard trees) may well damage some existing replacement plantings.
4. Dogwood replacement will continue to be an ongoing issue. Both Oriole Park and Robin Park have many dogwood trees with major health problems and poor condition. Triangle has been identified as a park where dogwoods have not done well over many years, and alternative ornamental plantings or highly resistant trees need to be placed in that site, with more aggressive and larger site preparation.

Potential Projects and Grants:

1. Programs focusing on planting on the streets going North off of Audubon Park would be useful – Chickadee, Teal, Sora, Widgeon, Meadowlark, and Eagle Pass between Hess and Audubon Parkway have significant ash and damaged Maples. Almost no replacement canopy trees have been planted in that area.
2. The narrow easement strip on the stretch of Audubon Parkway from Eagle Pass to Chickadee has lost almost all existing trees, and careful choices with proper site preparation may make it possible to re-establish a canopy in this area.
3. An outreach program developing a tree planting program for the vacant area at the junction of Falcon and Valley would be useful. A number of problems would need to be solved, including determining the control over the land, securing consensus from abutters, and creating a strategy for maintenance. A grant through our Council Member (Mr. King) would cover costs for initial shade tree.

Summary of Species Planted for Fall 2011 through Fall 2012							
	Column Labels		Parks Num		Total Street Num	Total Parks Num	TOTAL SPECIES
	Street Num						
Species	Canopy	Flowering Small	Canopy	Flowering Small			
American Beech	1		3		1	3	4
American Chestnut			7			7	7
American Elm	8		6		8	6	14
Bald Cypress	2				2		2
Basswood	1		4		1	4	5
Cherry Bark Oak	2		1		2	1	3
Chestnut Oak	1		1		1	1	2
Copper Beech			1			1	1
Dogwood				10		10	10
Fringe Trees				3		3	3
Ironwood (Blue Beech)		2		6	2	6	8
London Plane	7		3		7	3	10
Serviceberry		3		6	3	6	9
Shagbark Hickory			3			3	3
Shellbark Hickory			1			1	1
Sugarberry			3			3	3
Swamp Chestnut Oak	1		2		1	2	3
Sweetbay Magnolia				3		3	3
Tulip Poplar	4		2		4	2	6
Tupelo	2		1		2	1	3
White Oak	1		2		1	2	3
Willow Oak	4				4		4
Witchhazel				3		3	3
Catalpa			2			2	2
Sassafras			1			1	1
Sourwood				2		2	2
Yellowwood				2		2	2
Grand Total	34	5	43	39	39	82	121

In the past year (Fall 2011 to Fall 2012), 121 trees were planted and survive.

Total Shade Trees: 77

Total Ornamentals or Small Trees (Underwire): 44

Note: Site preparation is \$15 per site; Cage materials are \$20 per tree (\$2340 anticipated). Planting materials (mulch, compost and fertilizer) are \$5-6 per tree. Irrigation cost for Ooze tubes would cost \$15-20 per tree, but reuse and donation of ooze tubes and hoses has limited costs.

Labor:

The major labor has been irrigation; approximately 60-65 sites were irrigated by Ooze tubes in 2012. That number will fall to approximately 50 next year, with ~35 in parks. Dependable assistance with watering through placement of spigots into parks, and City personnel filling ooze tubes is the most needed support for tree restoration.

Project Costs:
Structural Pruning:

Structural Pruning

Date	Site	Items	Total Costs
Fall 2011	Henderson Park	Structural Pruning	\$1033
Spring 2012	Robin Park	Structural Pruning	\$1244
	Easement Maples (4)	Structural Pruning	
	Curlw Park	Structural Pruning	
Late Spring 2012	Easement	Root pruning	\$ 150
		Total	\$2427

Plantings:

Costs include Site Preparation (Airknifing); Plants (Canopy, Ornamentals); Materials (compost, mulch, fertilizer); Irrigation (ooze tubes); Protection and Weeding, Maintenance (cages, deer protection, glyphosate).

Site Preparation (Limbwalker Airknifing)

Date	Site	Number	Costs
Fall 2011	Henderson	21	\$495
	<i>Total: 25</i> Robin	4	
Spring 2012 (1)	Easements	13	\$495
	<i>Total: 46</i> Parks (Henderson (11), Curlw (8), Oriole (9), Triangle (5)	33	
Spring 2012 (2)	Easements (5); Triangle (2), includes root pruning	7	\$142
Fall 2012	Easement	11	\$292
	Parks (Robin)	7	
		Total (~\$15 per site):	\$1424

Park Plant Materials:

Date	Costs	Specific Donations	Net Cost	Other
Fall 2011	\$ 675	325		Memorial Dogwood
Spring 2012	\$1685	1100		Ethelyn Maxwell Fund
Fall 2012	\$1605	530		Anon
	\$3965	1955	\$2010	

Street and Easement Plant Materials

Date	Costs	Specific Donations	Net	
Fall 2011				
Spring 2012	\$1000	1400		
Fall 2012	\$ 400	1000		Additional pending
	\$1400	2400	+\$1000 Credit	

Materials Costs (to date):

Date	Mulch & Compost	Cage Materials & Stakes	Fertilizer	Deer Scram	Irrigation: Ooze tubes, hoses, etc.	Chemicals: Herbicide, Insecticide
Fall 2011	59					
Spring 2012	325	304	205	158	Donated	\$120
Fall 2012	50	409				
		**250				
		**200				
Subtotal	\$434	\$1163	\$205	\$158		\$ 120
					Total	\$2080
*Pending	~150	~600			<i>Anticipated</i>	\$ 750

*Purchased or anticipated.

Approximately 26 more cages at \$20 each (10 for hardware cloth and 10 for 4 stakes) are needed in the park, and caging is also need for some street trees. The less expensive green cages in the parks with bamboo stakes have simply not been sturdy enough to protect trees from the mower, partially because of low visibility. The minimum will be to add four sturdy fence stakes, and full protection requires 1/2" hardware cloth.

**Expense incurred but not reimbursed yet

There are several elements to maintaining the tree canopy in Audubon Park:

Structural Pruning

Structural Pruning focuses on keeping existing and new trees healthy. Structural pruning concentrates on pruning to create a proper form for the tree – generally with a strong central leader and a proper branching scaffold. This form helps trees resist damage. For new trees (in parks and on easements), the Forest Board provides initial pruning. For existing trees, a pruning cycle (about every 3-5 years) is needed. The parks have now started to create a pruning cycle for maintenance, since most of prior tree work was focused on crisis management for dead and mature hazard trees and around weather events with damage to compromised trees.

Planting Canopy Trees

Canopy trees are the shade trees, the essential element to reduce urban heat stress. Both streets and parks have vacancies for canopy tree replacement, because of severe weather events and because of cumulative aging and damage to our established trees. Many of our street trees are single-aged, meaning they were established all at once, and have aged together. Replanting is a different process and requires different choices to match our current environment (pests and pollution stresses.) The conflict between shade trees and overhead wires is a particular issue, and utilities have created standards to reduce problems (the “Right Tree, Right Place” guidelines.)

Planting Ornamental trees

Ornamental trees are an important feature in our parks and streets, and are short-lived compared to well-maintained canopy trees. They are an essential element to the beauty of our parks, but not a substitute for the canopy tree. Our signature tree, the Dogwood, has been significantly impacted by anthracnose, borer damage, powdery mildew, age, and now drought.

Management of Tree Pests, Diseases, and Environmental Stress

There are increasing challenges in keeping trees healthy. Site problems are now recognized as a major component to improving how trees manage and contain disease challenges, particularly drought and compaction. Invasive diseases and insects continue to decimate certain species. Our major immediate problem is the imminent loss of ashes in the park, due to Emerald Ash Borer. This involves planning for treatment (when possible), for removals, and for replanting.

Strategic Planning:

Each year, the forest board has reviewed the Park, and noted trees in several categories: hazard trees that need Arborist removal; trees in major decline; work that can be done by City Maintenance (mainly removal of dying ornamental trees) and pruning and maintenance to be done by members of the Forest Board. Sites for memorial trees have also been noted in each park.

In Fall of 2011, the Forest Board reviewed Henderson Park as a whole and developed a replanting plan, focused on replacement of dogwoods and canopy trees. The Forest Board also reviewed the other parks, particularly Robin, Oriole and Triangle with replanting needs in mind. Curlew planning had already started in 2010, with the Pope Rain Garden. A full inventory of the Parks was completed in the Spring of 2012. The Easement Tree Inventory was also revisited and updated in Spring 2012, partially to identify which streets would be particularly hard hit by loss of ashes.

With this fresh information, the tree committee has made a start on major renovations in a number of areas, and was fortunate to locate new sources for more diverse plantings at affordable prices. A list of species was developed to offset the large concentration of red maple, pin oak and green ash. The goal was to increase species diversity, and to better match tree choices to the habitat and site.

In the meantime, in late summer of 2012, a local weather event on Robin and Wren created major tree damage, and Robin Park lost four major trees along Robin Road. The Fall 2012 Clark County tree order helped us to begin immediate replanting of the Robin Park Easement.