VILLAGE OF IRVINGTON

STREET TREE INVENTORY

MARCH 2009

PREPARED BY
HUDSON VALLEY SPECIALIZED WEEKDAY ARBORIST TEAM (SWAT)

Cornell University
Cooperative Extension

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INTRODUCTION

Trees provide important contributions to a community. They offer environmental, economic, social, and aesthetic benefits. It is estimated that the value of a property with trees is 5-7% higher than one without trees. As an invaluable resource, the community forest needs to be properly managed and conserved. A street tree inventory is an essential component of a Community Forestry Management Plan. Only after a community knows the current state of its public trees can it develop a plan for their management. An inventory provides information on species, location, condition, and recommended management of existing trees as well as potential planting sites. It is a benchmark from which the community can begin the planning process.

The Hudson Valley Specialized Weekday Arborist Team (SWAT) of Cornell Cooperative Extension of Dutchess County conducted an inventory of street trees in the Village of Irvington in October 2008. Data was collected using Hewlett Packard iPAQ Pocket PC's equipped with the i-Tree MCTI/STRATUM PDA utility, a tree inventory tool from the USDA Forest Service. GPS coordinates of trees and planting sites were collected using Magellan Meridien Gold GPS receivers with an accuracy of 3 to 7 meters.

The area of the village located west of Broadway was inventoried, including both sides of Broadway. Only those trees that were considered to be in the public right of way were examined.

The Village of Irvington defined *public trees* as:

- trees located in the tree lawn between the sidewalk and the road, or
- trees located within approximately 10 feet of the edge of the road (where there are no sidewalks), or
- trees planted in tree pits in the sidewalk.

Following is a summary of the findings from the inventory.

- 792 trees and 60 planting sites were inventoried.
- About 55 tree species comprise the community forest.
- There are 178 Norway Maples which is 22.5% of the total tree population.
- 646 trees are in good condition.
- 29 dead trees were found.
- 38 trees were ranked as High Priority Prune.
- 84 trees should be examined by a professional.
- The replacement value of the street trees is over $6 million

DEFINITIONS

Following are the definitions of the data field columns in the inventory.

ID - A unique number was assigned to each tree and planting site.

STREET NUMBER and STREET NAME – This is the property address of the tree or planting site.

SITE - Site numbers were assigned to trees and planting spaces from left to right facing the property beginning with 1. For corner properties, numbering begins again with 1 for the side street. However, in this case the "SIDE" field indicates "YES".

SIDE - For corner properties, it was noted whether the tree or planting site was located on the side street.

SPECIES - Trees were identified and assigned their respective common names.

DBH - Trunk diameter at breast height (approximately 4.5 feet above the ground) was measured to the nearest inch. DBH is the most commonly used measure of tree size and age. It is not an absolute measure, however, as relationships between DBH and canopy spread or DBH and tree age vary by species.

LOC - Location of trees and planting sites were assessed by one of four ratings.
SIDEWALK - tree pit in sidewalk
<4 FT - tree lawn planting strip less than four feet wide
>4 FT - tree lawn planting strip greater than four feet wide
LAWN – lawn area (where no sidewalks exist)

MTNC REC - Tree maintenance recommendations were assessed by one of four ratings.
NONE – no maintenance necessary
TRAIN – routine maintenance for a young tree
ROUTINE – routine maintenance of a mature tree
HI PRI – immediate maintenance required, a high priority

CONSULT - Based on the condition of the tree, further consultation by a certified arborist is recommended when this field is YES.

SIDEWALK DAMG - The presence or absence of damage associated with tree roots where the sidewalk was heaved at least ¾ inch was noted.

WIRE CONFLICT - The presence or absence of single or triple phase overhead utility wires was noted.

DEFINITIONS (cont)

COND WOOD - The condition of a tree's wood (its structural health) was assessed by one of four ratings.
DEAD – extreme problems
POOR – major problems
FAIR – minor problems
GOOD – no apparent problems

COND LVS - The condition of a tree's leaves (its functional health) was assessed by one of four ratings.
DEAD – extreme problems
POOR – major problems
FAIR – minor problems
GOOD – no apparent problems

% DEAD WOOD - "Deadwood" refers to branches over two inches in diameter that are dead, dying, or diseased. The percentage of deadwood in the tree canopy was assessed by one of five ratings.
<10% 10%-25% 25%-50% 50%-75% >75%

WEAK FORK - The presence or absence of a "weak" fork, a V-shaped branch union created when two branches come together at a narrow angle, was noted. This union, which may contain included bark, is structurally weak and can fail if not addressed.

GPS LAT and GPS LONG - Latitude (Y) and Longitude (X) of tree sites and planting sites were collected.

INVENTORY SAMPLE

TREE ID	STREET NUMBER	STREET	SITE	SIDE	SPECIES	DBH	LOCATION	MTNC REC	CON SULT	SIDE WALK DAMG	WIRE CONF	COND WOOD	COND LVS	% DEAD WOOD	WEAK FORK	GPS LAT 41° m.mmm	GPS LONG -73° mm.mmm
1	1	AQUEDUCT	1	YES	ASH	10	<4 FT	ROUTINE PRUNE	NO	NO	YES	FAIR	GOOD	10-25	NO	2.000	52.179
2	1	AQUEDUCT	2	YES	SPRUCE	18	<4 FT	ROUTINE PRUNE	YES	NO	YES	POOR	POOR	50-75	NO	2.010	52.182
3	1	AQUEDUCT	3	YES	SPRUCE	14	<4 FT	ROUTINE PRUNE	YES	NO	YES	POOR	POOR	50-75	NO	2.009	52.181
4	1	AQUEDUCT	4	YES	ASH	6	<4 FT	ROUTINE PRUNE	NO	NO	YES	GOOD	GOOD	<10	NO	2.012	52.182
5	1	AQUEDUCT	5	YES	NORTHERN RED OAK	39	LAWN	ROUTINE PRUNE	YES	NO	NO	GOOD	GOOD	<10	NO	2.015	52.183
6	1	AQUEDUCT	6	YES	NORWAY MAPLE	25	LAWN	ROUTINE PRUNE	NO	NO	NO	GOOD	GOOD	10-25	NO	2.021	52.180
7	1	AQUEDUCT	7	YES	NORWAY MAPLE	20	LAWN	ROUTINE PRUNE	NO	NO	NO	GOOD	GOOD	<10	NO	2.029	52.178
8	31	ARDSLEY AVE	2	NO	JAPANESE MAPLE	21	LAWN	NONE	NO	NO	NO	GOOD	GOOD	<10	NO	1.537	52.147
9	31	ARDSLEY AVE	1	NO	ASH	32	LAWN	HI PRI PRUNE	YES	NO	NO	DEAD	DEAD	>75	NO	1.548	52.122
10	33	ARDSLEY AVE	1	YES	NORWAY MAPLE	17	>4 FT	NONE	NO	NO	NO	GOOD	GOOD	<10	NO	1.530	52.189
11	33	ARDSLEY AVE	2	YES	MAPLE	24	<4 FT	ROUTINE PRUNE	NO	NO	NO	GOOD	GOOD	<10	NO	1.521	52.189
12	33	ARDSLEY AVE	3	YES	MAPLE	23	<4 FT	ROUTINE PRUNE	YES	NO	NO	POOR	FAIR	10-25	YES	1.499	52.189
13	33	ARDSLEY AVE	2	NO	CALLERY PEAR	5	LAWN	NONE	NO	NO	NO	GOOD	GOOD	<10	NO	1.539	52.177
14	33	ARDSLEY AVE	1	NO	CALLERY PEAR	5	LAWN	NONE	NO	NO	NO	GOOD	GOOD	<10	NO	1.538	52.152
15	36	ARDSLEY AVE	1	NO	SUGAR MAPLE	29	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	FAIR	>75	NO	1.544	52.221
16	36	ARDSLEY AVE	2	NO	SUGAR MAPLE	28	LAWN	HI PRI PRUNE	YES	NO	YES	POOR	GOOD	10-25	NO	1.544	52.244
17	36	ARDSLEY AVE	3	NO	WHITE PINE	10	LAWN	ROUTINE PRUNE	YES	NO	YES	POOR	FAIR	10-25	NO	1.544	52.222
18	36	ARDSLEY AVE	4	NO	CALLERY PEAR	8	LAWN	ROUTINE PRUNE	YES	NO	YES	FAIR	FAIR	<10	NO	1.541	52.220
19	36	ARDSLEY AVE	5	NO	WHITE PINE	9	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	DEAD	>75	NO	1.543	52.217
20	36	ARDSLEY AVE	6	NO	CATALPA	8	LAWN	ROUTINE PRUNE	NO	NO	YES	GOOD	GOOD	<10	NO	1.542	52.212
21	36	ARDSLEY AVE	7	NO	WHITE PINE	11	LAWN	HI PRI PRUNE	YES	NO	YES	POOR	POOR	25-50	NO	1.542	52.202
22	36	ARDSLEY AVE	8	NO	WHITE PINE	14	LAWN	ROUTINE PRUNE	NO	NO	YES	GOOD	GOOD	10-25	NO	1.539	52.203
23	36	ARDSLEY AVE	9	NO	WHITE PINE	11	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	DEAD	>75	NO	1.543	52.204
24	36	ARDSLEY AVE	10	NO	WHITE PINE	12	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	DEAD	>75	NO	1.542	52.198
25	36	ARDSLEY AVE	11	NO	WHITE PINE	7	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	DEAD	>75	NO	1.541	52.194
26	36	ARDSLEY AVE	12	NO	WHITE PINE	13	LAWN	HI PRI PRUNE	YES	NO	YES	POOR	POOR	50-75	NO	1.540	52.186
27	36	ARDSLEY AVE	13	NO	WHITE PINE	12	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	DEAD	>75	NO	1.541	52.181
28	36	ARDSLEY AVE	14	NO	PLANTING SITE	0	LAWN	0	0	0	YES	0	0	0	0	1.544	52.176
29	36	ARDSLEY AVE	15	NO	WHITE PINE	12	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	DEAD	>75	NO	1.544	52.170
30	36	ARDSLEY AVE	16	NO	WHITE PINE	10	LAWN	ROUTINE PRUNE	NO	NO	YES	GOOD	GOOD	<10	NO	1.544	52.162
31	36	ARDSLEY AVE	17	NO	WHITE PINE	6	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	DEAD	>75	NO	1.543	52.158
32	36	ARDSLEY AVE	18	NO	RED MAPLE	20	LAWN	ROUTINE PRUNE	NO	NO	YES	FAIR	FAIR	<10	NO	1.540	52.144
33	36	ARDSLEY AVE	19	NO	WHITE PINE	7	LAWN	ROUTINE PRUNE	NO	NO	YES	FAIR	FAIR	<10	NO	1.541	52.141
34	36	ARDSLEY AVE	20	NO	WHITE PINE	0	LAWN	ROUTINE PRUNE	NO	NO	YES	FAIR	FAIR	<10	NO	1.540	52.138
35	36	ARDSLEY AVE	21	NO	WHITE PINE	8	LAWN	ROUTINE PRUNE	NO	NO	YES	GOOD	FAIR	<10	NO	1.542	52.140
36	36	ARDSLEY AVE	22	NO	SUGAR MAPLE	18	LAWN	HI PRI PRUNE	YES	NO	YES	POOR	FAIR	10-25	NO	1.516	52.075
37	36	ARDSLEY AVE	23	NO	WHITE PINE	9	LAWN	ROUTINE PRUNE	NO	NO	YES	FAIR	FAIR	<10	NO	1.538	52.128
38	36	ARDSLEY AVE	24	NO	WHITE PINE	8	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	DEAD	>75	NO	1.540	52.142
39	36	ARDSLEY AVE	25	NO	WHITE PINE	10	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	DEAD	>75	NO	1.541	52.136
40	36	ARDSLEY AVE	26	NO	WHITE PINE	8	LAWN	HI PRI PRUNE	YES	NO	YES	DEAD	DEAD	>75	NO	1.541	52.127
41	36	ARDSLEY AVE	27	NO	PLANTING SITE	0	LAWN	0	0	0	YES	0	0	0	0	1.540	52.130
42	36	ARDSLEY AVE	28	NO	WHITE PINE	10	LAWN	ROUTINE PRUNE	NO	NO	YES	FAIR	FAIR	<10	YES	1.540	52.122
43	40	ARDSLEY AVE	1	NO	RED MAPLE	21	LAWN	ROUTINE PRUNE	NO	NO	NO	GOOD	GOOD	<10	NO	1.534	52.387
44	40	ARDSLEY AVE	2	NO	PLANTING SITE	0	LAWN	0	0	0	YES	0	0	0	0	1.533	52.400
45	48	ARDSLEY AVE	1	YES	TULIP TREE	34	LAWN	ROUTINE PRUNE	NO	NO	YES	GOOD	FAIR	<10	NO	1.518	52.196
46	48	ARDSLEY AVE	2	YES	TULIP TREE	34	LAWN	ROUTINE PRUNE	NO	NO	YES	GOOD	POOR	10-25	NO	1.519	52.194
47	49	ARDSLEY AVE	1	NO	NORTHERN RED OAK	19	LAWN	ROUTINE PRUNE	NO	NO	YES	GOOD	GOOD	<10	NO	1.540	52.275
48	49	ARDSLEY AVE	2	NO	NORWAY MAPLE	20	LAWN	ROUTINE PRUNE	NO	NO	YES	GOOD	GOOD	<10	NO	1.541	52.271
49	49	ARDSLEY AVE	3	NO	PIN OAK	21	LAWN	ROUTINE PRUNE	NO	NO	YES	GOOD	GOOD	<10	NO	1.545	52.260
50	49	ARDSLEY AVE	4	NO	NORWAY MAPLE	13	LAWN	ROUTINE PRUNE	NO	NO	YES	GOOD	GOOD	<10	NO	1.546	52.254

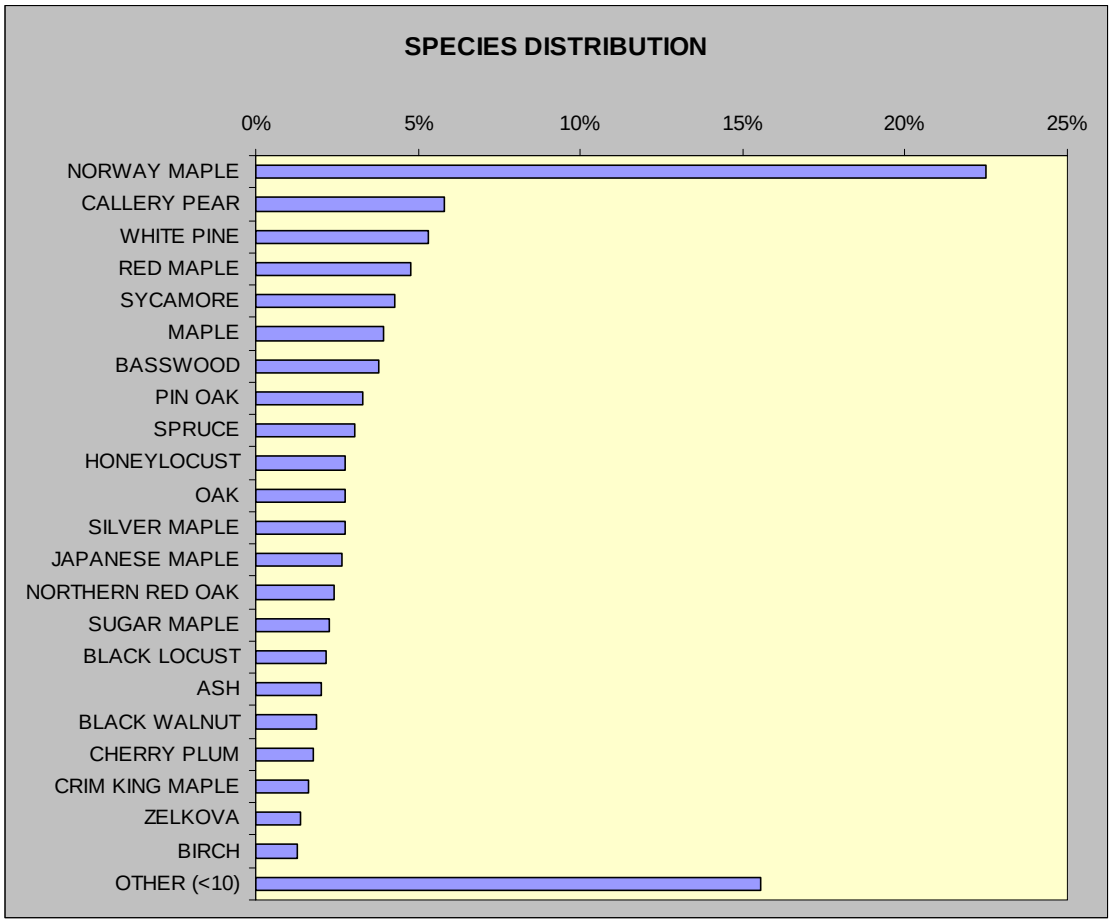
SPECIES

The following table lists all street tree species in order of frequency of occurrence.

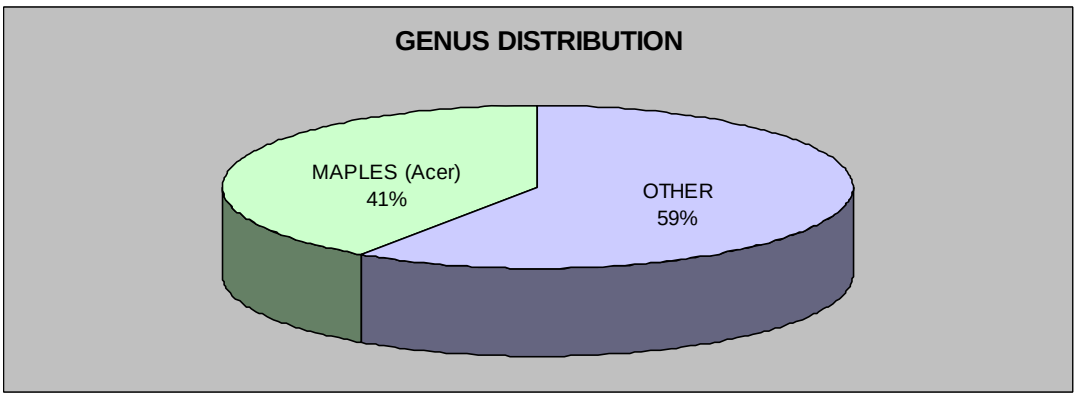
SPECIES	#	%		SPECIES	#	%
NORWAY MAPLE	178	22.47%		LITTLELEAF LINDEN	5	0.63%
CALLERY PEAR	46	5.81%		LINDEN	5	0.63%
WHITE PINE	42	5.30%		EASTERN RED CEDAR	4	0.51%
RED MAPLE	38	4.80%		CRABAPPLE	4	0.51%
SYCAMORE	34	4.29%		CEDAR	4	0.51%
MAPLE	31	3.91%		UNKNOWN	4	0.51%
BASSWOOD	30	3.79%		SERVICEBERRY	4	0.51%
PIN OAK	26	3.28%		PLUM	4	0.51%
SPRUCE	24	3.03%		HORSECHESTNUT	4	0.51%
SILVER MAPLE	22	2.78%		NORWAY SPRUCE	4	0.51%
OAK	22	2.78%		TULIP TREE	3	0.38%
HONEYLOCUST	22	2.78%		BLUE SPRUCE	3	0.38%
JAPANESE MAPLE	21	2.65%		CATALPA	3	0.38%
NORTHERN RED OAK	19	2.40%		KATSURA	2	0.25%
SUGAR MAPLE	18	2.27%		WHITE ASH	2	0.25%
BLACK LOCUST	17	2.15%		PEAR	2	0.25%
ASH	16	2.02%		HAWTHORN	2	0.25%
BLACK WALNUT	15	1.89%		HICKORY	1	0.13%
CHERRY PLUM	14	1.77%		SASSAFRAS	1	0.13%
CRIM KING MAPLE	13	1.64%		CHERRY	1	0.13%
ZELKOVA	11	1.39%		BOXELDER	1	0.13%
BIRCH	10	1.26%		HIGAN CHERRY	1	0.13%
EASTERN HEMLOCK	9	1.14%		FIR	1	0.13%
ELM	8	1.01%		RIVER BIRCH	1	0.13%
GINKGO	8	1.01%		REDBUD	1	0.13%
BEECH	8	1.01%		BLACK CHERRY	1	0.13%
DOGWOOD	8	1.01%		EASTERN HOPHORNBEAM	1	0.13%
RED MULBERRY	6	0.76%		MAGNOLIA	1	0.13%
AUSTRIAN PINE	6	0.76%		**TOTAL**	**792**	**100.00%**

SPECIES DISTRIBUTION

It is recommended that not more than 5%-10% of any one species should comprise the street tree population. (For example, *Acer* or Maple is the genus; platanoides or Norway Maple is the species.) It is easy to see from the distribution chart that Norway Maples, Callery Pears, and White Pines each comprise more than 5% of Irvington's street trees with Norway Maples representing 22%.



It is also recommended that any one genus should not exceed 20%. Grouping all Maples (genus *Acer*) together – Norway Maple, Sugar Maple, Silver Maple, Japanese Maple, Red Maple, Boxelder - the Distribution chart below shows that more than 40% of the community forest is made up of this genus. No other genus comprises more than 20% of the total number.



PLANTING SITES AND STOCKING LEVEL

TOTAL TREES	792	93%
TOTAL PLANTING SITES	60	7%
GRAND TOTAL	852	100%

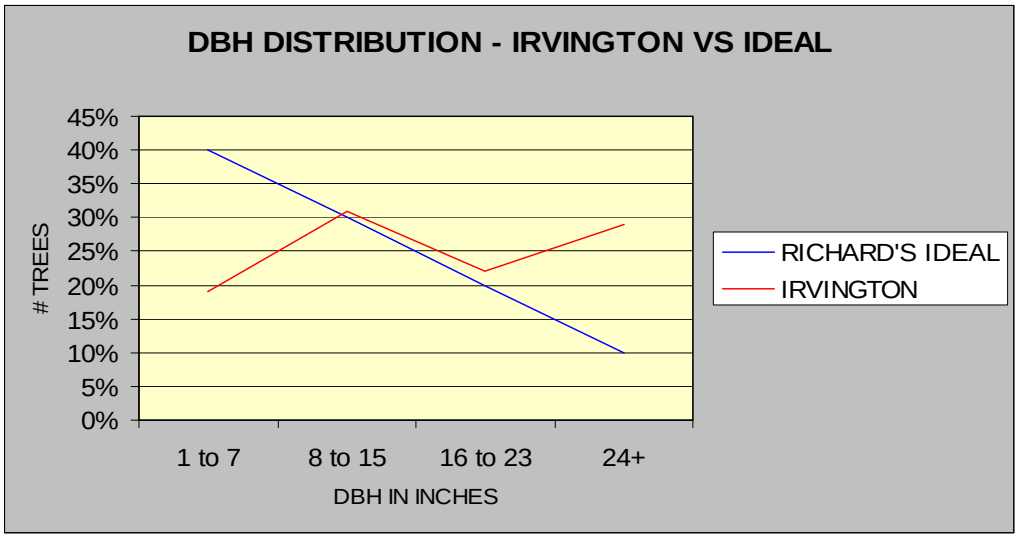
Stocking level is the percentage of potential street tree sites that are currently planted to trees. With 792 trees and 60 planting sites, Irvington has a stocking level of about 93% (792/852 x 100). The national average is 60%. Two trees every 50 feet is considered full stocking. Yellow dots represent planting sites on the following map.

TREE SITES AND STOCKING LEVEL

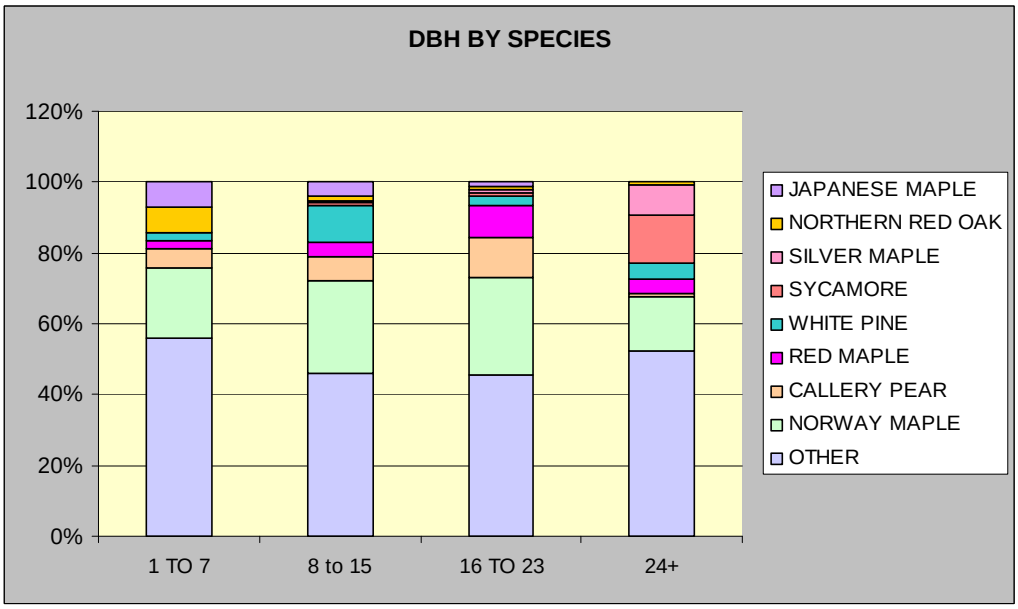
Green dots represent trees.

DBH DISTRIBUTION

In a diameter distribution, trees are grouped according to diameter at breast height (dbh). In the chart below, street trees were divided into four dbh classes. Communities can get clues about the age of trees, planting patterns, planting needs, and future forest health from a diameter distribution. The graph also shows Richard's ideal diameter distribution - as the diameter increases, the percentage of total trees in the class should decrease.[1] The "ideal" community forest has 40% young trees, 30% maturing trees, 20% mature trees and 10% old trees. Irvington has fewer young trees and more old trees than the ideal.



Looking at the diameter distribution by species shows Norway maples dominant in all dbh classes. Sycamores are also dominant in the largest diameter class. Callery pears represent a large percentage in three of the classes.



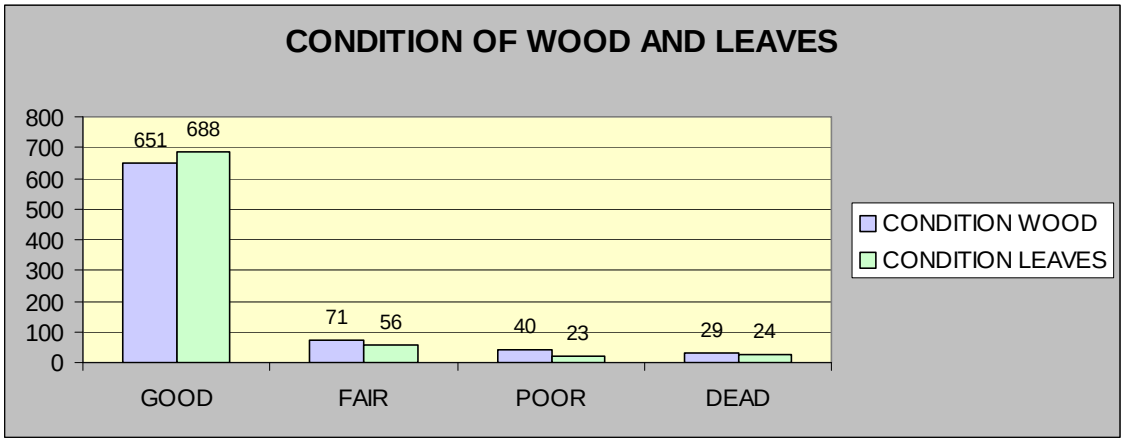
[1] Richards, N.A. (1983) Diversity and stability in a street tree population. *Urban Ecology, 7:159-171.*

CONDITION

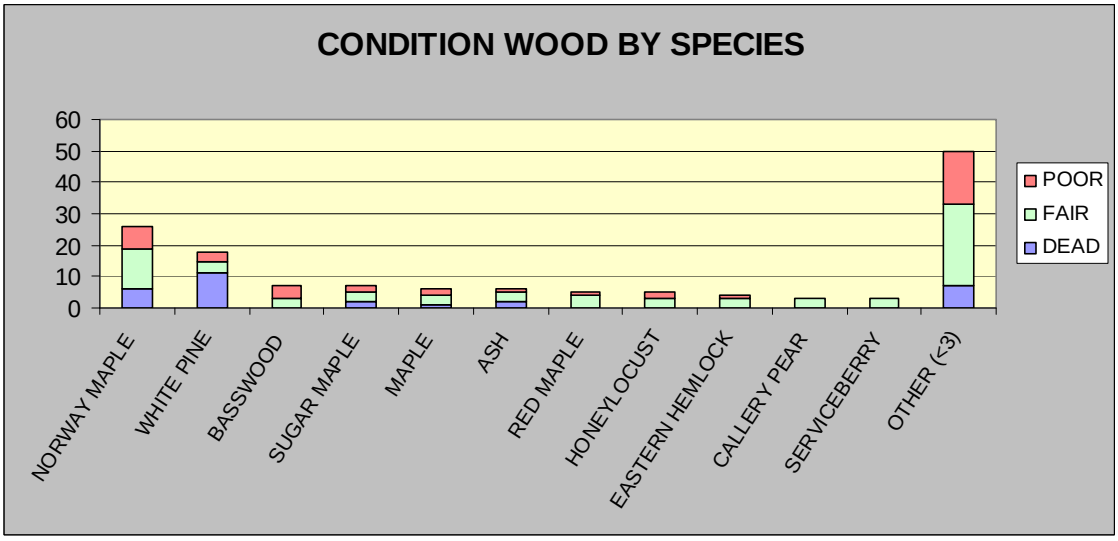
The condition of 84 trees should be examined by a certified arborist. These are indicated in the CONSULT data field by a YES. Our teams may have detected a large cavity, presence of fungi, a large crack, or other evidence that the tree needs further assessment by a professional.

CONSULT	
NO	YES
708	84

Most trees have leaves and wood in GOOD condition. There are 29 dead trees, however, and 40 trees whose wood is in POOR condition.

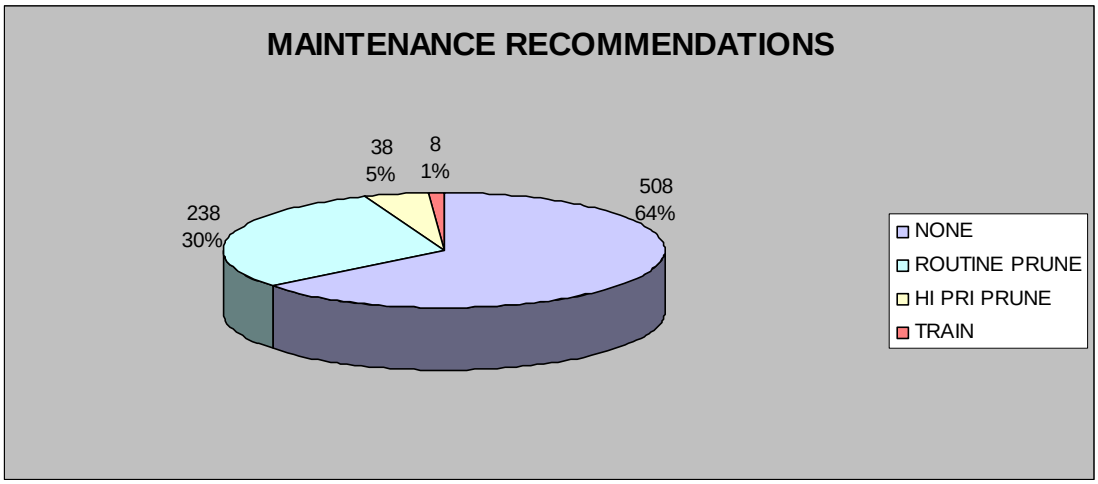


The following chart looks at the number of trees in the most populous species with a wood condition of POOR, FAIR, and DEAD. Of the 29 dead trees, there are 11 dead White Pines and 6 dead Norway Maples. All of the White Pines are located on Ardsley Avenue. Norway Maples also represent the species having the most POOR wood condition.

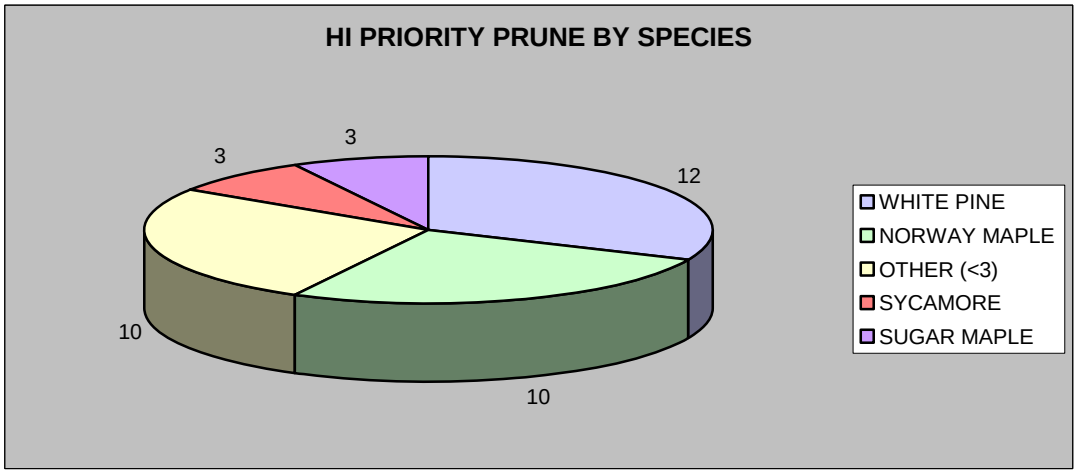


MAINTENANCE

Less than 5% of the community forest, 38 trees, are categorized as HIGH PRIORITY PRUNE and need immediate attention. However, 64% are in good condition.



Similar to the DEAD and POOR categories in wood condition, it is the White Pines and Norway Maples whose species are most represented as HIGH PRIORITY PRUNE. The OTHER category includes those species represented by only 1 or 2 trees.



STRATUM REPORTS

STRATUM (Street Tree Resource Analysis Tool for Urban Forest Managers), was used to quantify the value of annual environmental and aesthetic benefits of the community trees as well as the replacement value. It is a component of the iTree software suite from the USDA Forest Service. Since there are many variables in site conditions, these benefits are a general accounting. For more information on methods used for benefits calculations, see The Northeast Community Tree Guide. (See resource page.)

Five ANNUAL BENEFITS are assessed in STRATUM. Each benefit is quantified in terms of resource units and a dollar value is assigned to the units.

- **Energy** – the sum of energy savings due to reduced natural gas use in winter and reduced electricity use for air conditioning in summer.
- **Stormwater** – a measure of reduced annual stormwater runoff due to trees.
- **Air quality** – the sum of air pollutants (O_3, NO_2, SO_2, PM_{10}) deposited on tree surfaces and reduced emissions from power plants (NO_2, $PM_{10,}$ VOCs, SO_2) due to reduced electricity use.
- **Carbon dioxide** – the sum of decreased atmospheric CO_2 due to sequestration by trees and reduced emissions from power plants due to reduced energy use.
- **Aesthetic/other** – a measure of the tangible and intangible benefits of trees reflected in increases in property values due to trees.

REPLACEMENT VALUES are estimates of the costs of replacing trees in their current condition. Species and size are also considered.

ANNUAL ENERGY BENEFITS

Species	Total Electricity (MWh)	Electricity ($)	Total Natural Gas (Therms)	Natural Gas ($)	Total ($)	% of Total Tree Numbers	% of Total $	Avg. $/tree
Norway maple	16.09	2,253.96	5,995.20	8,441.24	10,695.20	22.47	20.42	60.09
Callery pear	4.82	674.59	1,509.65	2,125.59	2,800.18	6.06	5.35	58.34
Eastern white pine	2.81	393.12	981.86	1,382.45	1,775.57	5.30	3.39	42.28
Red maple	4.16	582.29	1,521.12	2,141.74	2,724.03	4.80	5.20	71.68
Basswood	4.41	617.55	1,549.62	2,181.87	2,799.42	4.42	5.35	79.98
London planetree	7.57	1,060.45	2,378.50	3,348.93	4,409.39	4.29	8.42	129.69
Maple	3.42	478.92	1,217.31	1,713.98	2,192.90	3.91	4.19	70.74
Pin oak	3.65	511.83	1,186.97	1,671.26	2,183.09	3.28	4.17	83.96
Spruce	1.73	242.56	607.08	854.77	1,097.33	3.03	2.10	45.72
Silver maple	4.11	575.24	1,377.72	1,939.83	2,515.07	2.78	4.80	114.32
Honeylocust	2.95	412.62	1,039.65	1,463.82	1,876.44	2.78	3.58	85.29
Oak	3.34	468.17	1,037.16	1,460.31	1,928.49	2.78	3.68	87.66
Japanese maple	0.98	137.99	391.27	550.91	688.89	2.65	1.32	32.80
Northern red oak	1.60	224.51	593.41	835.52	1,060.04	2.40	2.02	55.79
Sugar maple	2.19	307.02	821.57	1,156.77	1,463.79	2.27	2.80	81.32
Black locust	2.42	338.81	858.21	1,208.36	1,547.18	2.15	2.95	91.01
Ash	2.14	300.14	763.10	1,074.44	1,374.58	2.02	2.62	85.91
Black walnut	2.05	286.51	719.00	1,012.35	1,298.86	1.89	2.48	86.59
Cherry plum	0.53	74.54	236.60	333.13	407.67	1.77	0.78	29.12
Crimson king maple	0.57	79.18	237.71	334.69	413.87	1.64	0.79	31.84
Japanese zelkova	0.40	55.66	179.85	253.23	308.89	1.39	0.59	28.08
Birch	0.90	125.96	341.39	480.68	606.64	1.26	1.16	60.66
Eastern hemlock	0.51	71.95	162.57	228.89	300.85	1.14	0.57	33.43
Dogwood	0.31	43.65	134.10	188.81	232.46	1.01	0.44	29.06
Beech	1.39	194.94	465.43	655.32	850.26	1.01	1.62	106.28
Ginkgo	0.50	69.50	187.06	263.37	332.88	1.01	0.64	41.61
Elm	1.22	170.98	397.43	559.58	730.56	1.01	1.40	91.32
Other street trees	5.79	811.68	2,089.43	2,941.92	3,753.60	9.47	7.17	50.05
Citywide total	82.54	11,564.32	28,979.98	40,803.80	52,368.12	100.00	100.00	66.12

ANNUAL STORMWATER BENEFITS

Species	Total Rainfall Interception (Gal)	Total ($)	% of Total Tree Numbers	% of Total $	Avg. $/tree
Norway maple	295,824.19	2,366.76	22.47	16.71	13.30
Callery pear	98,163.77	785.36	6.06	5.55	16.36
Eastern white pine	65,036.18	520.33	5.30	3.67	12.39
Red maple	86,520.93	692.22	4.80	4.89	18.22
Basswood	104,800.30	838.46	4.42	5.92	23.96
London planetree	188,303.69	1,506.53	4.29	10.64	44.31
Maple	73,339.09	586.75	3.91	4.14	18.93
Pin oak	81,331.04	650.69	3.28	4.59	25.03
Spruce	40,284.88	322.30	3.03	2.28	13.43
Silver maple	111,061.84	888.56	2.78	6.27	40.39
Honeylocust	54,539.63	436.35	2.78	3.08	19.83
Oak	77,433.59	619.51	2.78	4.37	28.16
Japanese maple	14,932.57	119.47	2.65	0.84	5.69
Northern red oak	33,502.44	268.04	2.40	1.89	14.11
Sugar maple	58,537.34	468.33	2.27	3.31	26.02
Black locust	52,159.37	417.30	2.15	2.95	24.55
Ash	45,268.09	362.17	2.02	2.56	22.64
Black walnut	46,856.11	374.88	1.89	2.65	24.99
Cherry plum	7,643.48	61.15	1.77	0.43	4.37
Crimson king maple	8,061.87	64.50	1.64	0.46	4.96
Japanese zelkova	3,592.99	28.75	1.39	0.20	2.61
Birch	18,913.66	151.32	1.26	1.07	15.13
Eastern hemlock	7,807.44	62.46	1.14	0.44	6.94
Dogwood	4,179.23	33.44	1.01	0.24	4.18
Beech	35,477.23	283.84	1.01	2.00	35.48
Ginkgo	10,210.82	81.69	1.01	0.58	10.21
Elm	24,135.75	193.10	1.01	1.36	24.14
Other street trees	122,086.68	976.76	9.47	6.90	13.02
Citywide total	1,770,004.13	14,161.02	100.00	100.00	17.88

ANNUAL AIR QUALITY BENEFITS

Species	Deposition O3 (lb)	Deposition NO2 (lb)	Deposition PM10 (lb)	Deposition SO2 (lb)	Avoided NO2 (lb)	Avoided PM10 (lb)	Avoided VOC (lb)	Avoided SO2 (lb)	BVOC Emissions (lb)	Total (lb)	Total ($)
Norway maple	92.29	39.90	45.31	15.14	138.78	9.00	5.34	70.62	- 15.00	401.37	1,971.12
Callery pear	30.75	13.42	15.00	5.24	38.63	2.48	1.45	21.12	0.00	128.08	620.35
Eastern white pine	20.87	9.98	13.23	5.65	23.55	1.52	0.90	12.31	- 42.34	45.68	339.08
Red maple	22.67	9.79	11.31	3.78	35.57	2.30	1.37	18.24	- 5.72	99.30	491.91
Basswood	25.39	10.67	12.23	3.90	37.07	2.40	1.41	19.34	- 10.73	101.68	516.59
London planetree	49.84	20.95	24.02	7.65	60.78	3.90	2.28	33.20	- 67.64	134.98	827.11
Maple	20.86	9.02	10.24	3.42	28.91	1.87	1.10	15.00	- 4.01	86.43	427.94
Pin oak	23.17	10.00	11.56	3.87	29.73	1.91	1.12	16.03	- 20.52	76.86	425.07
Spruce	12.98	6.21	8.23	3.51	14.55	0.94	0.55	7.60	- 26.15	28.42	210.55
Silver maple	26.78	11.58	13.15	4.39	33.86	2.18	1.28	18.01	- 10.17	101.06	516.31
Honeylocust	17.06	6.91	8.10	2.62	24.82	1.60	0.95	12.92	- 8.20	66.78	341.91
Oak	21.87	9.45	10.91	3.65	26.70	1.71	1.00	14.66	- 19.66	70.29	391.84
Japanese maple	5.21	2.25	2.56	0.85	8.74	0.57	0.34	4.32	- 0.68	24.17	117.60
Northern red oak	9.46	4.08	4.72	1.58	13.78	0.89	0.53	7.03	- 9.07	33.01	182.31
Sugar maple	13.12	5.67	6.44	2.15	18.95	1.23	0.73	9.62	- 8.78	49.13	259.31
Black locust	14.11	5.93	6.80	2.17	20.42	1.32	0.78	10.61	0.00	62.15	299.50
Ash	13.00	5.46	6.26	2.00	18.12	1.17	0.69	9.40	0.00	56.11	270.99
Black walnut	12.31	5.18	5.93	1.89	17.20	1.11	0.66	8.97	0.00	53.26	257.10
Cherry plum	2.77	1.20	1.36	0.45	4.98	0.33	0.20	2.34	- 0.02	13.60	65.21
Crimson king maple	2.96	1.28	1.45	0.49	5.15	0.34	0.20	2.48	- 0.35	14.00	67.93
Japanese zelkova	1.04	0.44	0.50	0.16	3.75	0.25	0.15	1.75	0.00	8.04	37.23
Birch	4.88	2.11	2.44	0.82	7.82	0.51	0.30	3.95	- 1.27	21.55	106.79
Eastern hemlock	3.46	1.65	2.19	0.93	4.14	0.27	0.16	2.25	- 0.52	14.53	73.10
Dogwood	1.56	0.67	0.76	0.26	2.87	0.19	0.11	1.37	- 0.01	7.78	37.21
Beech	8.78	3.69	4.23	1.35	11.46	0.74	0.43	6.10	0.00	36.80	178.13
Ginkgo	2.91	1.22	1.40	0.45	4.30	0.28	0.17	2.18	- 1.34	11.57	59.11
Elm	6.79	2.75	3.22	1.04	9.94	0.64	0.37	5.35	0.00	30.11	144.64
Other street trees	36.49	16.28	19.80	7.34	49.27	3.19	1.89	25.43	- 21.10	138.57	728.98
Citywide total	503.37	217.75	253.36	86.75	693.87	44.83	26.46	362.20	- 273.29	1,915.30	9,964.92

STORED CO2 BENEFITS

Species	Total stored CO2 (lbs)	Total ($)	% of Total Tree Numbers	% of Total $	Avg. $/tree
Norway maple	1,152,802.38	3,850.36	22.47	20.41	21.63
Callery pear	161,976.14	541.00	6.06	2.87	11.27
Eastern white pine	63,888.36	213.39	5.30	1.13	5.08
Red maple	180,022.05	601.27	4.80	3.19	15.82
Basswood	331,374.25	1,106.79	4.42	5.87	31.62
London planetree	699,668.69	2,336.89	4.29	12.39	68.73
Maple	350,503.31	1,170.68	3.91	6.21	37.76
Pin oak	309,316.47	1,033.12	3.28	5.48	39.74
Spruce	41,360.58	138.14	3.03	0.73	5.76
Silver maple	609,184.50	2,034.68	2.78	10.79	92.49
Honeylocust	112,669.16	376.32	2.78	1.99	17.11
Oak	341,010.66	1,138.98	2.78	6.04	51.77
Japanese maple	39,234.13	131.04	2.65	0.69	6.24
Northern red oak	119,533.93	399.24	2.40	2.12	21.01
Sugar maple	241,032.89	805.05	2.27	4.27	44.72
Black locust	94,088.95	314.26	2.15	1.67	18.49
Ash	125,106.83	417.86	2.02	2.22	26.12
Black walnut	95,061.11	317.50	1.89	1.68	21.17
Cherry plum	41,735.55	139.40	1.77	0.74	9.96
Crimson king maple	16,708.80	55.81	1.64	0.30	4.29
Japanese zelkova	1,453.67	4.86	1.39	0.03	0.44
Birch	35,880.35	119.84	1.26	0.64	11.98
Eastern hemlock	18,000.33	60.12	1.14	0.32	6.68
Dogwood	18,817.91	62.85	1.01	0.33	7.86
Beech	88,482.00	295.53	1.01	1.57	36.94
Ginkgo	30,245.22	101.02	1.01	0.54	12.63
Elm	66,612.75	222.49	1.01	1.18	27.81
Other street trees	118,771.02	874.56	9.47	4.64	11.66
Citywide total	5,647,616.50	18,863.03	100.00	100.00	23.82

ANNUAL CO2 BENEFITS

Species	Sequestered (lb)	Sequestered ($)	Decomposition Release (lb)	Maintenance Release (lb)	Total Release ($)	Avoided (lb)	Avioded ($)	Net Total (lb)	Total ($)	% of Total Tree Numbers	% of Total $	Avg $/Tree
Norway maple	68,634.25	229.24	- 8,686.52	- 2,222.84	- 36.44	48,457.40	161.85	106,182.29	354.65	22.47	25.32	1.99
Callery pear	14,221.82	47.50	- 738.61	- 54.83	- 2.65	14,502.88	48.44	27,931.27	93.29	6.06	6.66	1.94
Eastern white pine	1,725.77	5.76	- 639.49	- 524.30	- 3.89	8,451.63	28.23	9,013.61	30.11	5.30	2.15	0.72
Red maple	5,840.04	19.51	- 2,291.38	- 540.29	- 9.46	12,518.46	41.81	15,526.83	51.86	4.80	3.70	1.36
Basswood	7,031.93	23.49	- 2,595.32	- 627.10	- 10.76	13,276.54	44.34	17,086.04	57.07	4.42	4.07	1.63
London planetree	18,777.95	62.72	- 3,258.93	- 918.38	- 13.95	22,798.51	76.15	37,399.15	124.91	4.29	8.92	3.67
Maple	18,279.65	61.05	- 1,948.05	- 477.46	- 8.10	10,296.16	34.39	26,150.29	87.34	3.91	6.24	2.82
Pin oak	14,124.50	47.18	- 2,363.20	- 430.63	- 9.33	11,003.67	36.75	22,334.33	74.60	3.28	5.33	2.87
Spruce	1,230.59	4.11	- 378.44	- 292.42	- 2.24	5,214.73	17.42	5,774.45	19.29	3.03	1.38	0.80
Silver maple	7,872.41	26.29	- 2,842.84	- 560.85	- 11.37	12,366.92	41.31	16,835.64	56.23	2.78	4.01	2.56
Honeylocust	3,043.09	10.16	- 1,650.00	- 308.41	- 6.54	8,870.84	29.63	9,955.52	33.25	2.78	2.37	1.51
Oak	13,380.41	44.69	- 2,613.51	- 388.37	- 10.03	10,065.12	33.62	20,443.66	68.28	2.78	4.87	3.10
Japanese maple	3,114.29	10.40	- 595.36	- 146.21	- 2.48	2,966.58	9.91	5,339.30	17.83	2.65	1.27	0.85
Northern red oak	3,963.74	13.24	- 759.46	- 185.05	- 3.15	4,826.76	16.12	7,846.00	26.21	2.40	1.87	1.38
Sugar maple	6,542.89	21.85	- 1,175.46	- 323.26	- 5.01	6,600.49	22.05	11,644.66	38.89	2.27	2.78	2.16
Black locust	4,117.17	13.75	- 1,805.38	- 252.44	- 6.87	7,284.09	24.33	9,343.44	31.21	2.15	2.23	1.84
Ash	4,355.82	14.55	- 657.42	- 251.30	- 3.04	6,452.68	21.55	9,899.79	33.07	2.02	2.36	2.07
Black walnut	3,605.25	12.04	- 1,524.94	- 219.31	- 5.83	6,159.57	20.57	8,020.57	26.79	1.89	1.91	1.79
Cherry plum	2,428.84	8.11	- 583.57	- 119.94	- 2.35	1,602.60	5.35	3,327.93	11.12	1.77	0.79	0.79
Crimson king maple	1,598.12	5.34	- 374.28	- 87.95	- 1.54	1,702.21	5.69	2,838.10	9.48	1.64	0.68	0.73
Japanese zelkova	368.77	1.23	- 32.56	- 33.13	- 0.22	1,196.69	4.00	1,499.77	5.01	1.39	0.36	0.46
Birch	1,377.84	4.60	- 562.56	- 119.94	- 2.28	2,708.00	9.04	3,403.34	11.37	1.26	0.81	1.14
Eastern hemlock	1,591.30	5.31	- 403.21	- 93.67	- 1.66	1,546.88	5.17	2,641.31	8.82	1.14	0.63	0.98
Dogwood	1,270.96	4.24	- 421.52	- 66.25	- 1.63	938.50	3.13	1,721.68	5.75	1.01	0.41	0.72
Beech	1,171.51	3.91	- 773.15	- 151.92	- 3.09	4,190.97	14.00	4,437.41	14.82	1.01	1.06	1.85
Ginkgo	1,097.35	3.67	- 176.01	- 84.53	- 0.87	1,494.23	4.99	2,331.05	7.79	1.01	0.56	0.97
Elm	3,330.07	11.12	- 977.26	- 122.22	- 3.67	3,675.88	12.28	5,906.46	19.73	1.01	1.41	2.47
Other street trees	10,604.75	35.42	- 2,608.81	- 886.39	- 11.67	17,450.12	58.28	24,559.66	82.03	9.47	5.86	1.09
Citywide total	224,701.08	750.50	- 43,437.23	- 10,489.38	- 180.11	248,619.13	830.39	419,393.59	1,400.78	100.00	100.00	1.77

ANNUAL AESTHETIC/OTHER BENEFITS

Species	Total ($)	% of Total Tree Numbers	% of Total $	Avg. $/tree
Norway maple	10,815.62	22.47	23.96	60.76
Callery pear	5,394.52	6.06	11.95	112.39
Eastern white pine	766.60	5.30	1.70	18.25
Red maple	1,589.58	4.80	3.52	41.83
Basswood	1,993.09	4.42	4.42	56.95
London planetree	3,069.71	4.29	6.80	90.29
Maple	2,551.34	3.91	5.65	82.30
Pin oak	2,069.32	3.28	4.58	79.59
Spruce	463.24	3.03	1.03	19.30
Silver maple	957.30	2.78	2.12	43.51
Honeylocust	1,189.22	2.78	2.63	54.06
Oak	1,823.73	2.78	4.04	82.90
Japanese maple	638.27	2.65	1.41	30.39
Northern red oak	845.27	2.40	1.87	44.49
Sugar maple	1,290.87	2.27	2.86	71.72
Black locust	1,580.90	2.15	3.50	92.99
Ash	932.35	2.02	2.07	58.27
Black walnut	1,349.60	1.89	2.99	89.97
Cherry plum	193.93	1.77	0.43	13.85
Crimson king maple	364.47	1.64	0.81	28.04
Japanese zelkova	610.37	1.39	1.35	55.49
Birch	438.38	1.26	0.97	43.84
Eastern hemlock	216.64	1.14	0.48	24.07
Dogwood	109.22	1.01	0.24	13.65
Beech	428.49	1.01	0.95	53.56
Ginkgo	315.79	1.01	0.70	39.47
Elm	794.13	1.01	1.76	99.27
Other street trees	2,345.35	9.47	5.20	31.27
Citywide total	45,137.30	100.00	100.00	56.99

AVERAGE ANNUAL BENEFITS BY SPECIES ($/TREE)

Species	Energy	CO2	Air Quality	Stormwater	Aesthetic/ Other	Total
Norway maple	60.09	1.99	11.07	13.30	60.76	147.21
Callery pear	58.34	1.94	12.92	16.36	112.39	201.95
Eastern white pine	42.28	0.72	8.07	12.39	18.25	81.71
Red maple	71.68	1.36	12.95	18.22	41.83	146.04
Basswood	79.98	1.63	14.76	23.96	56.95	177.27
London planetree	129.69	3.67	24.33	44.31	90.29	292.28
Maple	70.74	2.82	13.80	18.93	82.30	188.59
Pin oak	83.96	2.87	16.35	25.03	79.59	207.80
Spruce	45.72	0.80	8.77	13.43	19.30	88.03
Silver maple	114.32	2.56	23.47	40.39	43.51	224.25
Honeylocust	85.29	1.51	15.54	19.83	54.06	176.24
Oak	87.66	3.10	17.81	28.16	82.90	219.63
Japanese maple	32.80	0.85	5.60	5.69	30.39	75.34
Northern red oak	55.79	1.38	9.60	14.11	44.49	125.36
Sugar maple	81.32	2.16	14.41	26.02	71.72	195.62
Black locust	91.01	1.84	17.62	24.55	92.99	228.01
Ash	85.91	2.07	16.94	22.64	58.27	185.82
Black walnut	86.59	1.79	17.14	24.99	89.97	220.48
Cherry plum	29.12	0.79	4.66	4.37	13.85	52.79
Crimson king maple	31.84	0.73	5.23	4.96	28.04	70.79
Japanese zelkova	28.08	0.46	3.38	2.61	55.49	90.02
Birch	60.66	1.14	10.68	15.13	43.84	131.45
Eastern hemlock	33.43	0.98	8.12	6.94	24.07	73.54
Dogwood	29.06	0.72	4.65	4.18	13.65	52.26
Beech	106.28	1.85	22.27	35.48	53.56	219.44
Ginkgo	41.61	0.97	7.39	10.21	39.47	99.66
Elm	91.32	2.47	18.08	24.14	99.27	235.27
Other street trees	50.05	1.09	9.72	13.02	31.27	105.16

ANNUAL TOTAL BENEFITS

Benefits	Total ($)	$/tree
Energy	52,368	66.12
CO2	1,401	1.77
Air Quality	9,965	12.58
Stormwater	14,161	17.88
Aesthetic/Other	45,137	56.99
Total Benefits	123,032	155.34

REPLACEMENT VALUE

	dbh class (in)										
Species	0-3	3-6	6-12	12-18	18-24	24-30	30-36	36-42	>42	Total	% of Total
Norway maple	594	6,583	80,009	159,489	295,390	266,557	153,702	131,062	0	1,093,386	17.16
Callery pear	464	3,178	9,271	44,682	78,991	9,194	13,633	0	0	159,414	2.50
Eastern white pine	120	0	18,558	28,804	28,912	47,556	140,092	30,529	0	294,572	4.62
Red maple	128	1,255	9,252	75,697	108,827	101,456	89,439	39,161	0	425,215	6.67
Basswood	149	0	6,002	30,667	76,784	116,297	184,299	34,845	77,896	526,938	8.27
London planetree	0	0	0	11,284	21,938	90,358	211,249	174,223	467,374	976,428	15.32
Maple	572	1,108	6,588	17,242	11,921	95,428	94,556	78,637	0	306,053	4.80
Pin oak	0	454	6,016	5,958	26,552	82,742	39,966	17,580	0	179,267	2.81
Spruce	0	0	20,910	25,025	48,651	54,215	26,950	0	0	175,751	2.76
Silver maple	232	0	0	2,979	5,642	41,858	40,587	35,160	151,279	277,737	4.36
Honeylocust	0	1,116	13,083	4,976	71,657	15,852	10,282	0	58,203	175,170	2.75
Oak	0	0	8,364	22,569	54,846	66,971	53,278	0	116,844	322,872	5.07
Japanese maple	447	2,964	14,637	22,569	21,938	0	0	0	0	62,555	0.98
Northern red oak	0	2,649	27,138	0	19,567	0	0	43,477	48,606	141,437	2.22
Sugar maple	0	1,362	0	2,979	13,741	51,267	27,265	35,160	0	131,774	2.07
Black locust	83	0	2,364	6,187	66,446	40,898	0	26,212	0	142,190	2.23
Ash	0	0	7,219	2,979	17,591	9,194	15,200	17,580	13,858	83,619	1.31
Black walnut	381	0	2,325	8,621	24,917	46,832	40,116	0	0	123,193	1.93
Cherry plum	274	769	3,573	6,588	5,958	0	0	0	0	17,162	0.27
Crimson king maple	0	1,570	13,177	8,621	0	0	0	0	0	23,368	0.37
Japanese zelkova	640	2,510	4,626	0	0	0	0	0	0	7,776	0.12
Birch	0	454	3,609	5,958	8,762	0	9,404	0	0	28,187	0.44
Eastern hemlock	0	0	5,619	14,808	0	13,633	0	0	0	34,060	0.53
Dogwood	0	1,255	4,626	25,232	0	0	0	0	0	31,113	0.49
Beech	0	558	1,869	0	0	31,704	23,621	61,057	34,119	152,928	2.40
Ginkgo	0	1,255	9,252	0	0	20,291	0	39,161	0	69,959	1.10
Elm	191	0	0	6,694	8,306	19,567	0	26,212	0	60,969	0.96
Eastern red cedar	0	0	2,325	15,974	0	13,633	0	0	0	31,932	0.50
Red mulberry	0	385	759	1,647	0	4,754	0	8,948	9,973	26,467	0.42
Austrian pine	0	0	0	1,163	9,287	4,754	0	0	0	15,204	0.24
Crabapple	0	558	3,738	7,143	0	0	0	0	0	11,439	0.18
Littleleaf linden	0	258	8,364	0	0	0	0	0	0	8,622	0.14
Horsechestnut	0	0	1,203	5,081	5,642	0	0	0	0	11,927	0.19
Serviceberry	0	0	6,273	0	7,743	0	0	0	0	14,016	0.22
Unknown medium	128	627	0	3,488	0	0	0	0	0	4,244	0.07
Norway spruce	0	0	6,273	5,642	0	0	0	0	0	11,915	0.19
Plum	0	0	3,609	2,979	0	0	0	0	0	6,588	0.10
Northern catalpa	0	0	1,203	0	0	18,387	0	0	0	19,590	0.31
Tulip tree	0	0	0	0	0	0	39,366	30,529	0	69,895	1.10
Blue spruce	0	0	2,364	4,311	0	0	0	0	0	6,675	0.10
Katsura tree	107	0	0	6,974	0	0	0	0	0	7,081	0.11
Hawthorn	0	523	1,163	0	0	0	0	0	0	1,686	0.03
White ash	0	0	0	0	0	18,387	0	0	0	18,387	0.29
Higan cherry	0	0	0	2,979	0	9,194	0	0	0	12,172	0.19
Fir	0	0	0	0	0	18,072	0	0	0	18,072	0.28
Boxelder	0	0	1,203	0	0	0	0	0	0	1,203	0.02
River birch	0	0	0	0	8,306	0	0	0	0	8,306	0.13
Hickory	0	0	0	0	0	13,633	0	0	0	13,633	0.21
Eastern redbud	0	0	1,203	0	0	0	0	0	0	1,203	0.02
Magnolia	0	0	0	0	0	0	23,077	0	0	23,077	0.36
Eastern hophornbeam	149	0	0	0	0	0	0	0	0	149	0.00
Black cherry	0	0	0	2,103	0	0	0	0	0	2,103	0.03
Sassafras	0	0	0	4,311	0	0	0	0	0	4,311	0.07
Citywide total	4,658	31,393	317,770	604,403	1,048,313	1,322,683	1,236,081	829,532	978,151	6,372,984	100.00

RECOMMENDATIONS and CONCLUSIONS

- It is important to maintain an up-to-date inventory in order to direct future maintenance and planting. Record any pruning, removal, or planting activities. Try to designate this responsibility to someone early in the tree management process. Some communities decide to re-inventory 20% of their street trees every year so that every five years a total reassessment has been performed.

- A community forestry management plan is an essential component to a public tree management program. Irvington can use this inventory to set maintenance and planting priorities. The Northeast Center for Urban and Community Forestry and the Arbor Day Foundation have information on the development and importance of creating a management plan. (See resource page.)

- The stocking level is 93%, indicating there has been a major tree planting effort in the Village. The national average is about 60%.

- In Irvington, Maples make up about 41% and Norway Maples make up more than 22% of total tree population, so greater diversity is a recommended goal of a management plan. A diverse tree population helps prevent the loss of large numbers of trees when pest or disease outbreaks occur.

- When selecting tree species for new plantings, using the “right tree in the right place” promotes a healthier, more sustainable forest. Choose species that are disease and pest resistant and suitable for street plantings. Consider available planting space. Many tree failures occur because of restricted or compacted soil. Choosing the proper size tree for the site also helps prevent damage by roots to impervious surfaces. According to the National Arbor Day Foundation, tree lawns less than 4-feet wide are generally too narrow for tree planting. The Urban Horticulture Institute at Cornell University offers information on many aspects of street tree planning. (See resource page.)

- Looking at the condition of the trees and the maintenance recommendations, a community can set priorities for maintenance needs. Public safety should be a top priority. There are 84 trees that should be examined by a certified arborist. Pruning priorities should be established which take into consideration the 38 HIGH PRIORITY PRUNE trees.

- Mitigation of sidewalk heaving can be done in several ways. The University of Florida Horticulture website discusses mitigation options and the National Arbor Day Foundation produces a bulletin on this subject called “Resolving Tree-Sidewalk Conflicts.” (See resource page.) Always consult a certified arborist when considering techniques that can affect tree health, such as root cutting. It is often better to remove a poorly sited tree and plant one that is appropriate for the site.

RECOMMENDATIONS and CONCLUSIONS (cont)

- The Village of Irvington's street trees provide significant benefits to village residents. With a public tree replacement value of over $6 million and a total annual environmental benefits value of over $123,000, the importance of proper management of this valuable resource is clear. The Northeast Community Tree Guide gives placement guidelines to maximize the benefits provided by public trees. (See resource page.) According to the Tree Guide, larger public trees produce greater average annual net benefits: Taken over a 40-year period, the average annual benefits are:

  $9 for a small tree
  $52 for a medium tree
  $113 for a large tree

- Becoming a Tree City USA can provide many benefits to a community – the Tree City designation increases public awareness about the value of trees, provides leverage when applying for grants, and indicates local commitment to a healthy community forest. The four requirements are: a tree ordinance, a tree board, a forestry program with an expenditure of at least $2 per capita, and an Arbor Day observance and proclamation. (See resource page.)

- Be aware of current threats to the trees in your area. For example, the emerald ash borer has destroyed millions of ash trees in Michigan and has also been found in Ontario and Ohio and in nurseries in Maryland and Virginia. Because the threat to New York is imminent, ash trees are not currently being recommended for street tree planting. The NY Department of Environmental Conservation, U.S. Forest Service, USDA APHIS, and Cornell Cooperative Extension are sources of information on invasive species.

WEBSITE RESOURCES

- ARBOR DAY FOUNDATION
  http://www.arborday.org/
- CORNELL COOPERATIVE EXTENSION
  http://www.cce.cornell.edu/dutchess/
- CORNELL ENTOMOLOGY – pest updates
  http://www.entomology.cornell.edu/Extension/Woodys/
- INTERNATIONAL SOCIETY OF ARBORICULTURE
  http://www.isa-arbor.com/
- INVASIVE PLANT COUNCIL OF NEW YORK STATE
  http://www.ipcnys.org/
- i-TREE – software suite for assessing and managing community forests
  http://www.itreetools.org/
- NEW YORK DEC URBAN AND COMMUNITY FORESTRY
  http://www.dec.ny.gov/lands/4957.html
- NEW YORK RELEAF
  http://www.dec.ny.gov/lands/5307.html
- NEW YORK STATE ARBORISTS – locate certified arborists
  http://www.newyorkstatearborists.com/
- NEW YORK STATE URBAN AND COMMUNITY FORESTRY COUNCIL
  http://www.nysurbanforestrycouncil.com/
- NORTHEAST CENTER FOR URBAN & COMMUNITY FORESTRY – management plan guide
  http://www.umass.edu/urbantree/mgtplanguide.pdf
- SOCIETY OF MUNICIPAL ARBORISTS
  http://www.urban-forestry.com/
- TREE CITY – learn how to become a Tree City USA
  http://www.arborday.org/programs/treeCityUSA.cfm
- TREELINK
  http://www.treelink.org/
- UNIVERSITY OF FLORIDA HORTICULTURE – trees and sidewalks
  http://hort.ufl.edu/woody/urbansidewalk.html
- URBAN HORTICULTURE INSTITUTE – free downloadable resources
  http://www.hort.cornell.edu/UHI/
- US FOREST SERVICE NORTHEASTERN AREA
  http://www.na.fs.fed.us/
- US FOREST SERVICE PACIFIC SOUTHWEST RESEARCH STATION
  Northeast Community Tree Guide available here
  http://www.fs.fed.us/psw/programs/cufr/
- URBAN NATURAL RESOURCES INSTITUTE
  http://www.unri.org/