

How to Conduct a Public Tree Inventory



What is an Assessment /Inventory?

Urban Forestry Assessment

Gathering information on a broad scale to help in planning and management.



Tree Inventory

Record of the location, characteristics, and assessment of individual trees within a well-defined group.



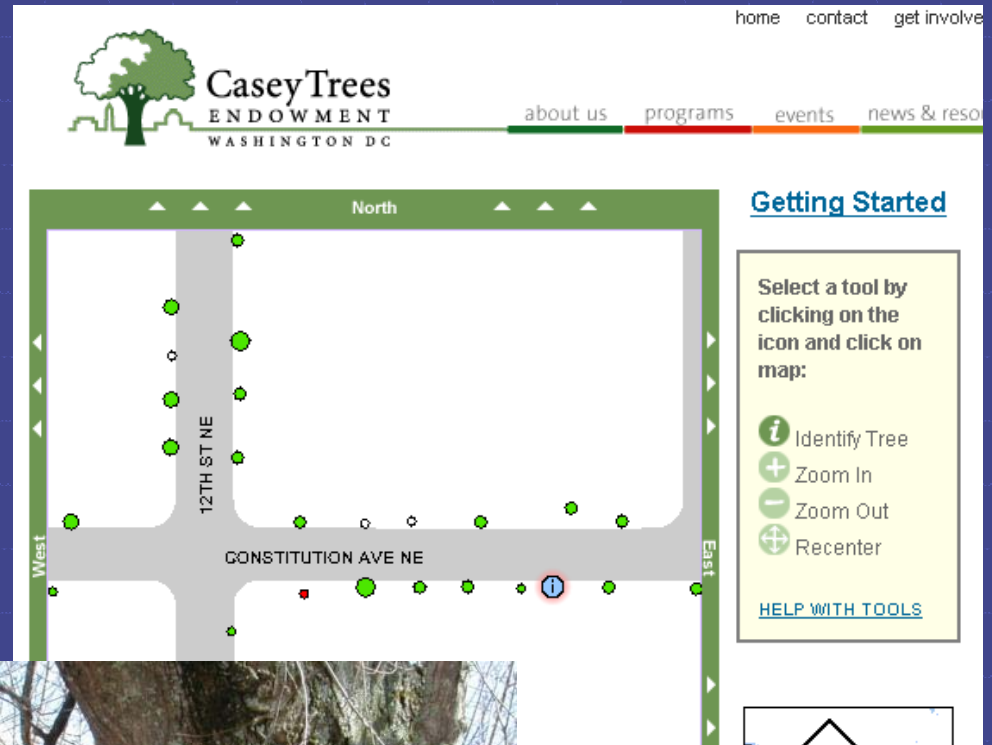
WHY INVENTORY ?

- ◆ Determine Tree Planting Needs
- ◆ Identify Hazard Trees
- ◆ Plan Tree Maintenance
- ◆ Place a Value on Trees
- ◆ Locate Special Trees
- ◆ Profile of Species Composition
- ◆ Develop a Forestry Budget
- ◆ Plan Staff and Volunteer Work
- ◆ Coordinate with Other Depts.
- ◆ Provide Education & Awareness



Plan for Maintenance Needs

- ◆ 1 – None
- ◆ 2 – Minor Pruning
- ◆ 3 – Major Pruning
- ◆ 4 – Mulching
- ◆ 5 – Cable and Brace
- ◆ 6 – Fertilizing
- ◆ 7 – Insect Control
- ◆ 8 – Disease Control
- ◆ 9 – Removal

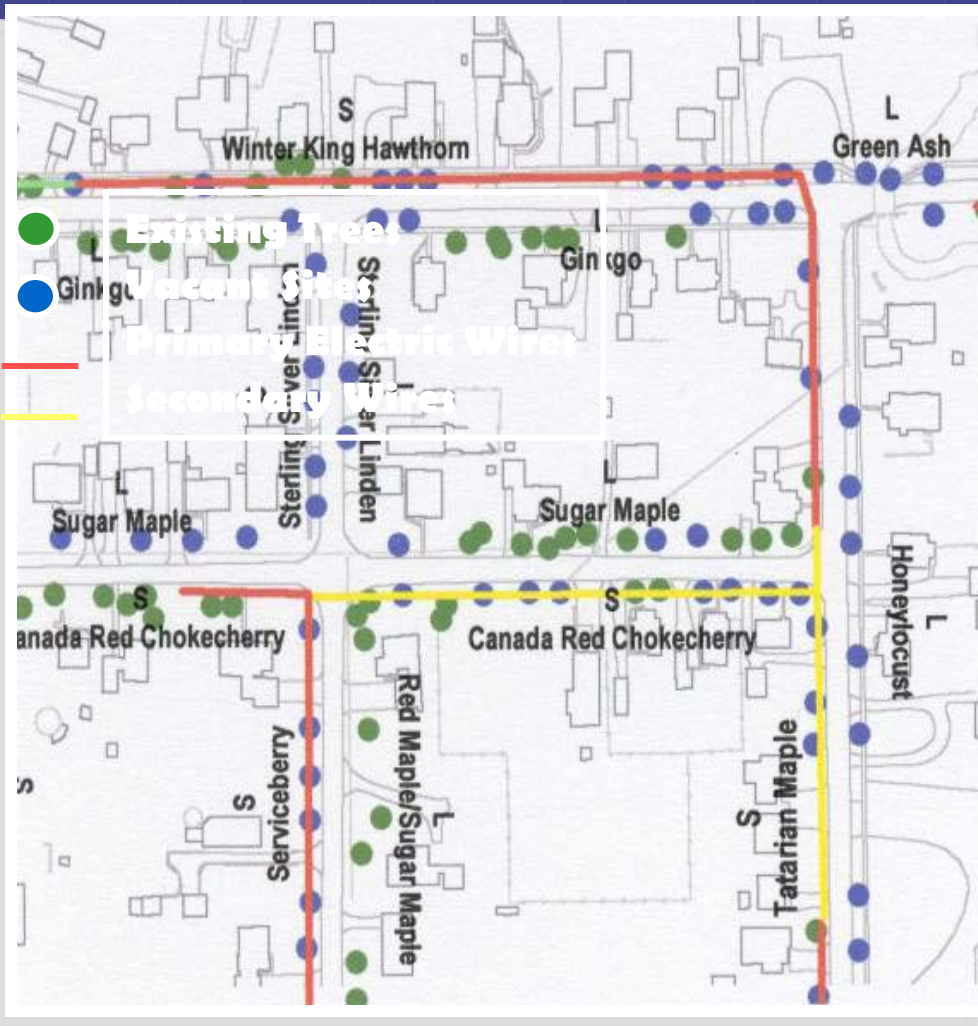


Identify & Remove High Risk Trees



- ◆ Public Safety
- ◆ Reduced, Damage, expense and liability to the community
- ◆ Improved Efficiency of Tree Care Program

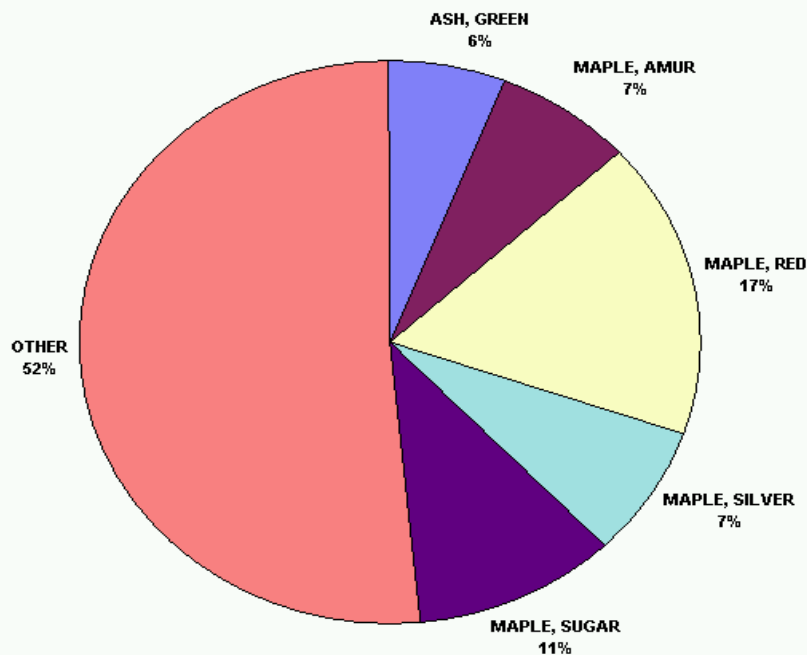
Identify Potential Planting Sites



- Existing Trees
- Vacant Sites
- Primary Electric Wires
- Secondary Wires

Diversify Species Composition

Species Composition



Species Composition

| <i>Species</i> | <i># of Trees</i> | <i>Percent of Population</i> |
|------------------|-------------------|------------------------------|
| MAPLE, RED | 48 | 16.90% |
| MAPLE, SUGAR | 30 | 10.56% |
| OTHER | 28 | 9.86% |
| MAPLE, AMUR | 21 | 7.39% |
| MAPLE, SILVER | 21 | 7.39% |
| ASH, GREEN | 17 | 5.99% |
| ASH, WHITE | 14 | 4.93% |
| CRABAPPLE | 14 | 4.93% |
| ASH | 11 | 3.87% |
| OAK, RED | 11 | 3.87% |
| LILAC, SHRUB | 9 | 3.17% |
| LINDEN, AMERICAN | 8 | 2.82% |
| MAPLE, NORWAY | 8 | 2.82% |
| BOXELDER | 7 | 2.46% |
| POPLAR | 6 | 2.11% |
| BIRCH, PAPER | 4 | 1.41% |
| ASPEN, BIGTOOTH | 3 | 1.06% |
| OAK, WHITE | 3 | 1.06% |

Storm Planning and Response



- ◆ Prioritize Response Areas
- ◆ Estimate Cost
- ◆ Mitigate Storm Damage

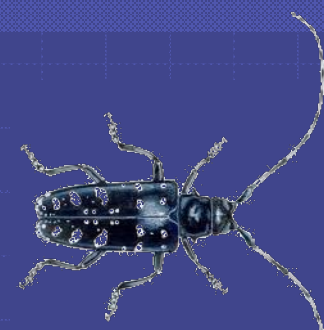


Budget Development

Financial Plan for Lewiston, ME

| Treatment | #Trees/ Cost | #Trees/ Cost | #Trees / Cost | #Trees/ Cost | #Trees/ Cost | #Trees/ Cost |
|-------------------|-----------------|-----------------|---------------------|-----------------|-----------------|-----------------|
| Plant | 50 7,500 | 100 15,000 | 125 18,750 | 124 18,600 | 124 18,600 | 673 78,450 |
| Routine Prune | 50 10,000 | 50 10,000 | 574 80,817 | 574 80,817 | 574 80,817 | 1822 262,451 |
| Urgent Prune | 15 3,000 | 14 3000 | | | | 29 6000 |
| Hazard Removal | 2 300 | | | | | 2 300 |
| Total | 20,800 | 28,000 | 99,587 | 99,417 | 99,417 | 347,201 |
| UNIT | 1 | 2 | 3 | 4 | 5 | Total |

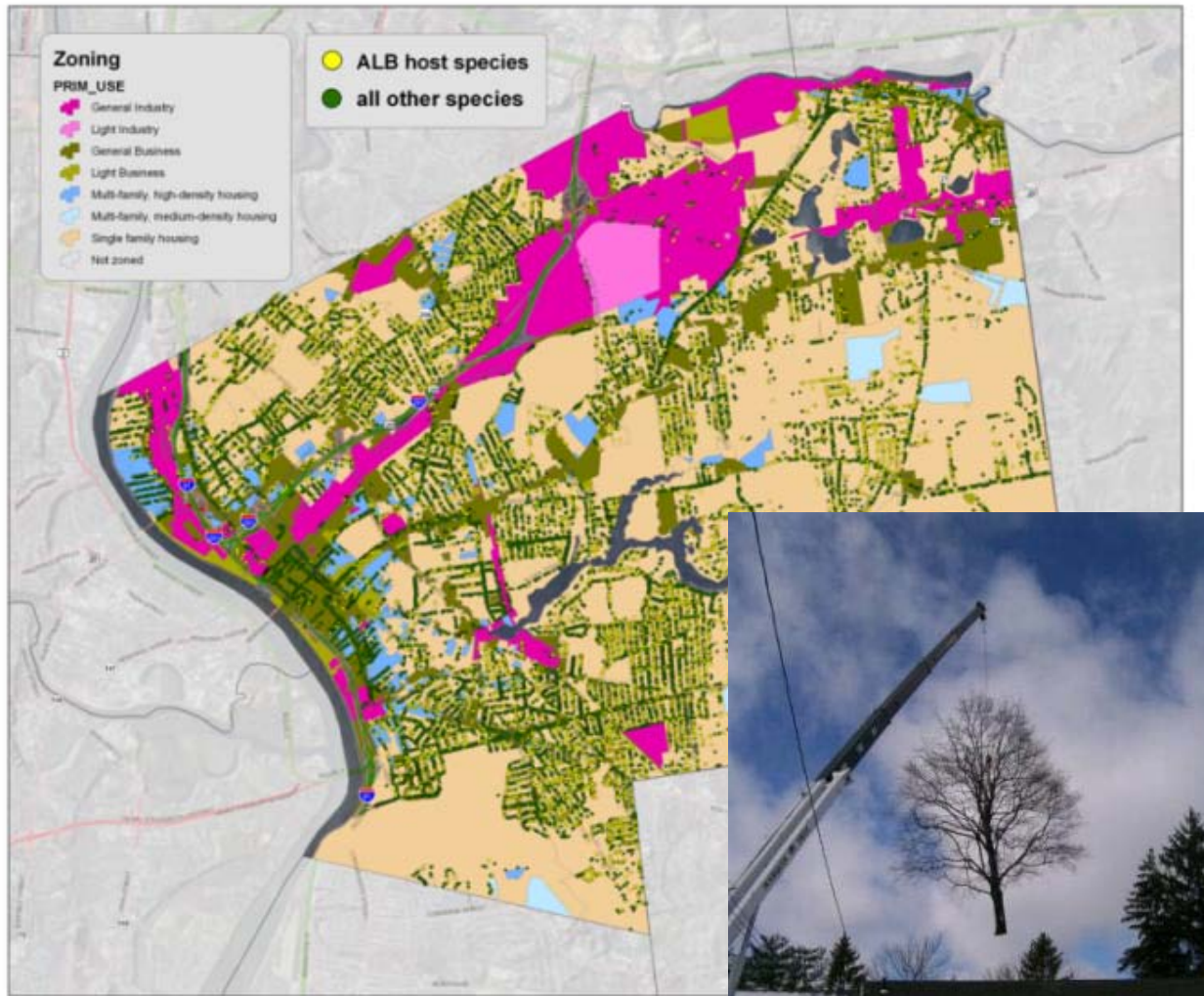
Survey for Invasives



Early detection

Response plans

Species diversity



Advocacy and Public Awareness

- ◆ Build Community Support
- ◆ Improve Management Of Private Trees

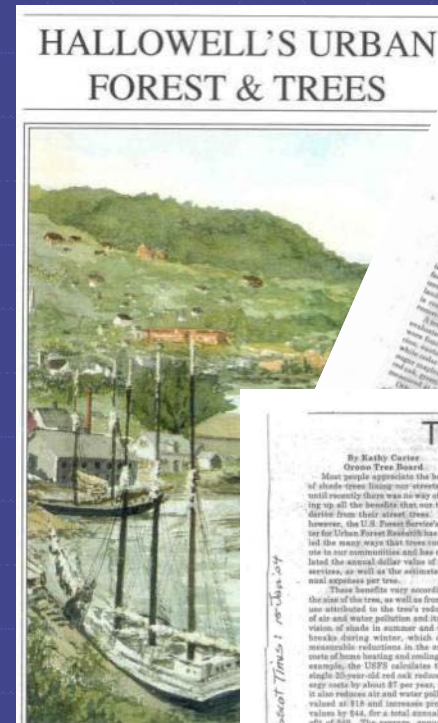
TREES PAY US BACK –
100 Trees Over 40 Years

Costs = \$84,000

Planting, Pruning, Removal/Disposal,
Irrigation, Sidewalk Repair, Legal - Admin

Benefits = \$202,000

Energy, Air Quality, Runoff,
Real Estate



HALLOWELL'S URBAN FOREST & TREES

Orono Town inventory yields 3,743 trees

By Anne P. Jones, Orono Times-Beacon

ORONO A recently completed town forest inventory has yielded a total of 3,743 trees, according to a report released by the Orono Forest Inventory Committee. The report, which was prepared by the Orono Forest Inventory Committee, is the first of its kind in the town. The committee, which was formed in 1998, has been working to inventory the town's trees and to develop a plan for their management. The report shows that there are 3,743 trees in the town, with a total value of \$202,000. The committee estimates that the trees provide an annual benefit of \$10,000 to the town. The report also identifies the types of trees in the town and their locations. The committee plans to use the information from the report to develop a plan for the management of the town's trees.

Trees Are Valuable

By Kathy Carter

Most people appreciate the beauty of shade trees lining our streets, but until recently there was no way of adding up all the benefits that our towns derive from their street trees. Now, however, the U.S. Forest Service's Center for Urban Forest Research has studied the many ways that trees contribute to our communities and has calculated the annual dollar value of these services, as well as the estimated annual expenses per tree.

These benefits vary according to the size of the tree, as well as from value attributed to the tree's reduction of air and water pollution and its provision of shade in summer and wind-breaks during winter, which cause measurable reductions in the energy costs of home heating and cooling. For example, the USFR calculates that a single 10-year-old oak reduces energy costs by about \$7 per year, while it also reduces air and water pollution valued at \$18 and increases property values by \$44, for a total annual benefit of \$69. The average annual expenses for trees in the same size class were calculated to be \$22 based on the probability for requiring pruning or removal. The net annual benefit of \$47

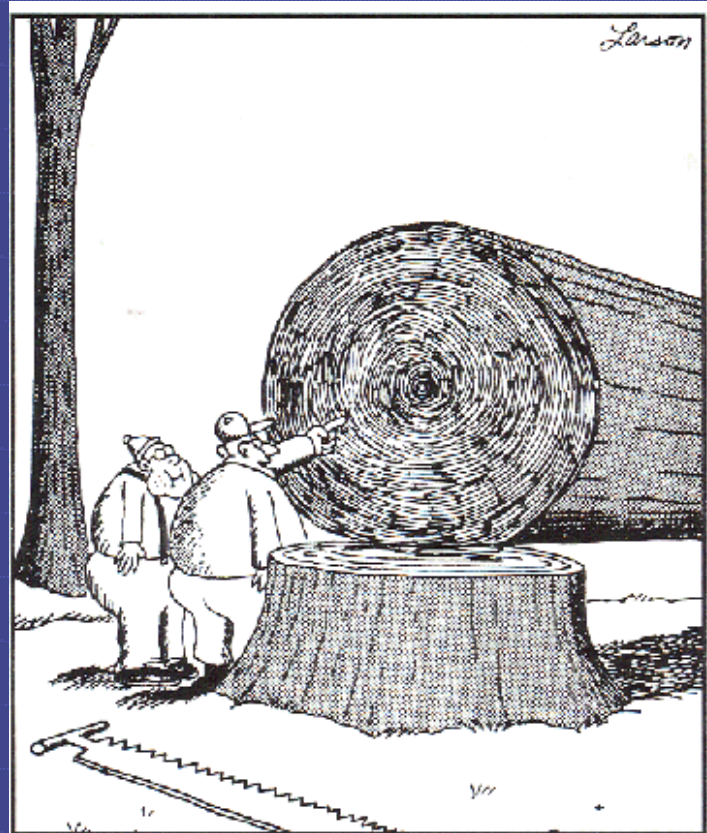
for this 10-year-old oak is similar to the value for other large trees such as sugar maple and beech.

The annual value of a tree's environmental services is primarily related to the size of the tree's crown, so it continues to increase as the tree gets bigger. A 40-year-old red oak can remove 2.4 pounds of air pollutants each year. Large conifers such as white pine are even more valuable for removing air pollution because they have more foliage and the evergreen needles remove pollutants year-round. Small trees produce smaller annual net value due to their smaller crown size. A 10-year-old flowering plum, for instance, is calculated to have a net annual value of only \$5 due to the smaller crown and lower contribution to property value.

By applying the USFR values to their local tree inventories, towns can add up the yearly benefits from their street trees. For example, Orono's inventory of 3,743 street trees is calculated to produce net benefits worth \$130,887 each year. This figure includes only the value of trees within 15 feet of the streets, so the total benefits produced by all trees in the town would be much greater. Readers who would like more information about the value of urban trees can find it on the

internet at <http://info.usfr.edu> which is the address for the USFR's Center for Urban Forest Research.

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"And see this right here, Jimmy? . . .
That's another time when the old fellow
miraculously survived some big forest fire."

Steps in Planning The Inventory

- ◆ Consider Town Objectives
- ◆ Type of Inventory Needed
- ◆ Budget
- ◆ ID Contractor, Staff, Volunteers
- ◆ Computer-Software Needs
- ◆ Develop Method–Info Needed
- ◆ Train and Supervise Crews
- ◆ Do Quality Checks
- ◆ Manage and Update Data
- ◆ Develop Management Plan



Determine The Towns Objective's

- ◆ Is an inventory needed? Will it be used?
- ◆ What are the objectives?

Public Safety

Increased Efficiency

Improved Public Relations

Justify Budget Requests

What to Inventory

- ◆ Special Problems
- ◆ Park Inventories
- ◆ Town Forests, woodlots
- ◆ Public Street Trees
- ◆ Private Trees?
- ◆ Just Trees or Ecosystem
- ◆ Whole Community or Just Part

Type of Inventory

- ◆ Aerial - Cover Type
- ◆ Sample Method
- ◆ Windshield Survey
- ◆ Complete



Tree Inventory Software

Commercial, Freeware, Self Developed?

TreeKeeper 7



Objective: To provide a municipality the ability to manage their tree population.

Tree Manager for Windows

- ◆ Number of Trees
- ◆ Cost
- ◆ Technical Support
- ◆ Ability to Customize
- ◆ Updates

- ◆ Options
 - Tree Valuation
 - Mapping
 - Incorporated into GIS
 - Service Requests
 - Work Orders
 - Online Data Access
 - Photo capability

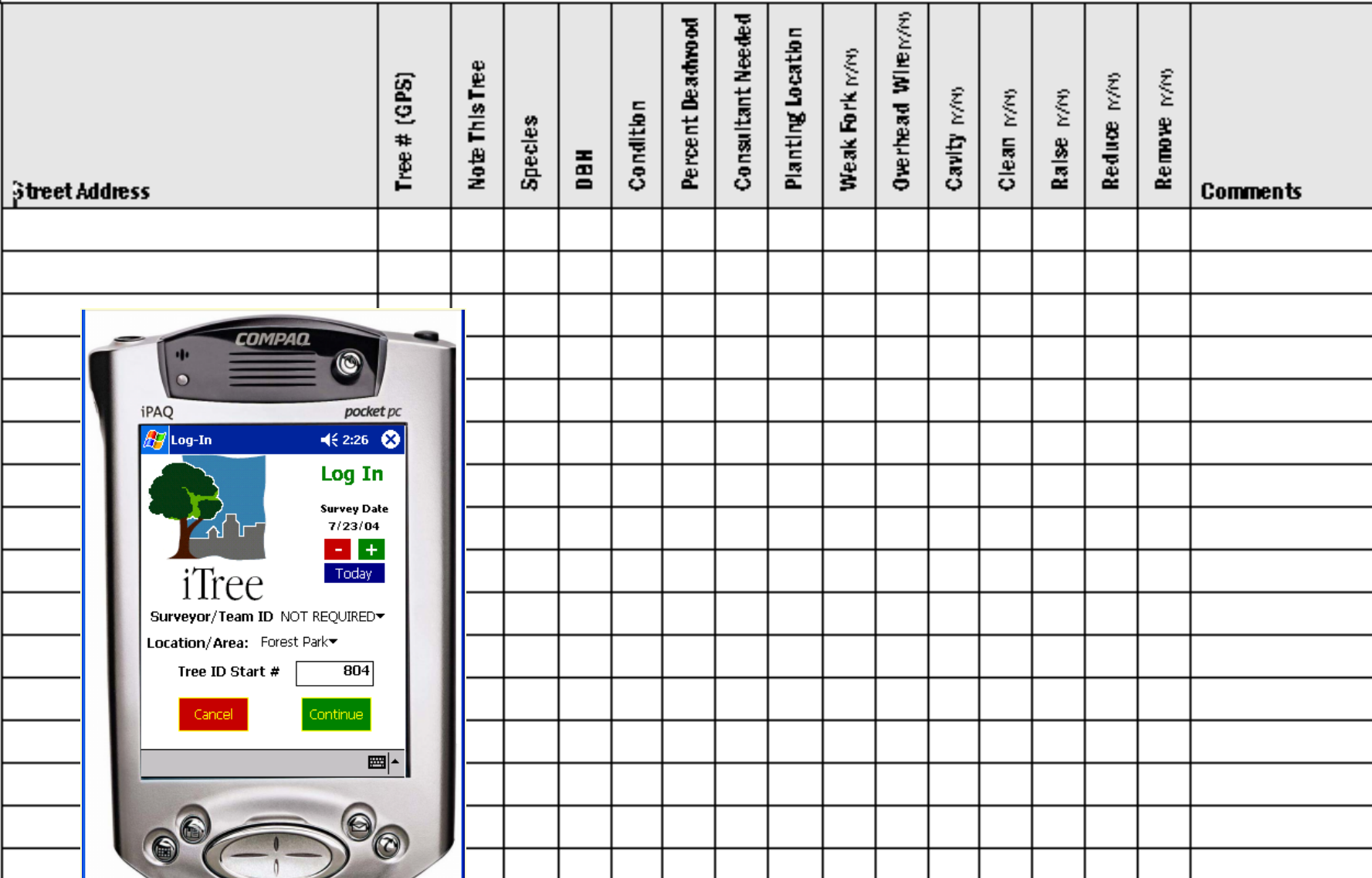


Field Methodology

How and What Information To Collect

- ◆ Location
- ◆ Species
- ◆ Diameter
- ◆ Condition
- ◆ Maintenance Needs
- ◆ Vacant Planting Space
- ◆ Is it a Risk Tree?
- ◆ Site Information





Information/Tools Needed

- ◆ Safety Vest
- ◆ Inventory Forms & Clipboard
- ◆ Site Maps or Aerial Photos
- ◆ ROW Distances
- ◆ Diameter Tape or stick
- ◆ Distance Measuring Tape
- ◆ Compass
- ◆ Digging Tool
- ◆ Camera
- ◆ Binoculars
- ◆ Mallet, Drill, Increment Borer
- ◆ PDA



Planning The Inventory

- ◆ Consider Town Objectives
- ◆ Type of Inventory Needed
- ◆ Develop Methodology
 - What Info Needed
- ◆ Computer-Software Needs
- ◆ Tools
- ◆ Budget
- ◆ Who? Contractor, Staff, Volunteers
- ◆ Train and Supervise Crews
- ◆ Do Quality Checks
- ◆ Manage and Update Data
- ◆ Develop Management Plan



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Tree Number - Location

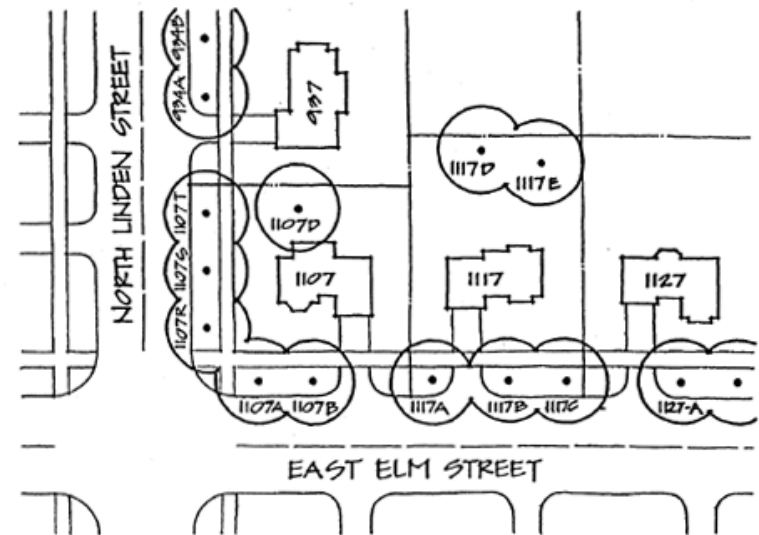
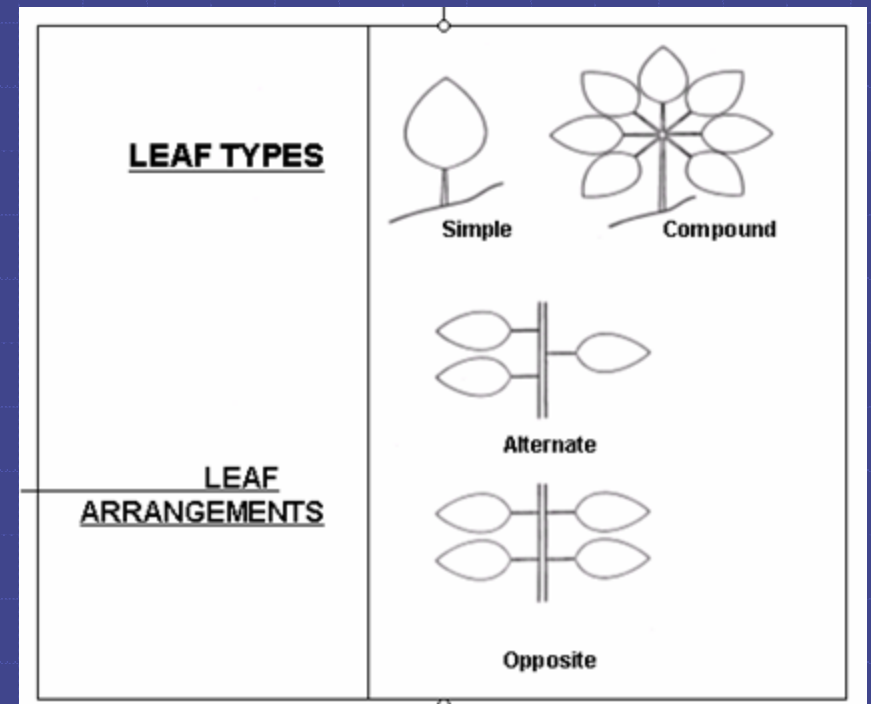
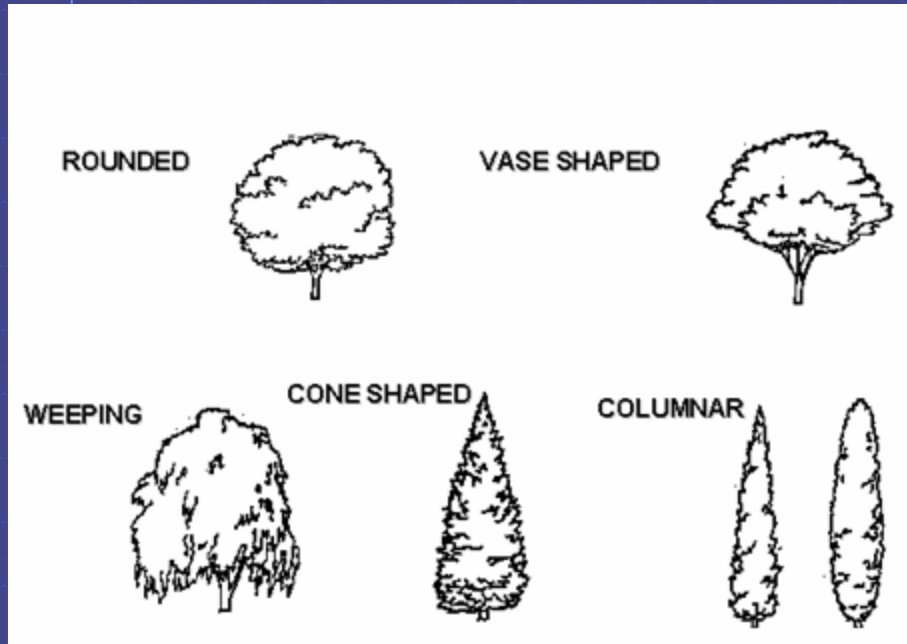
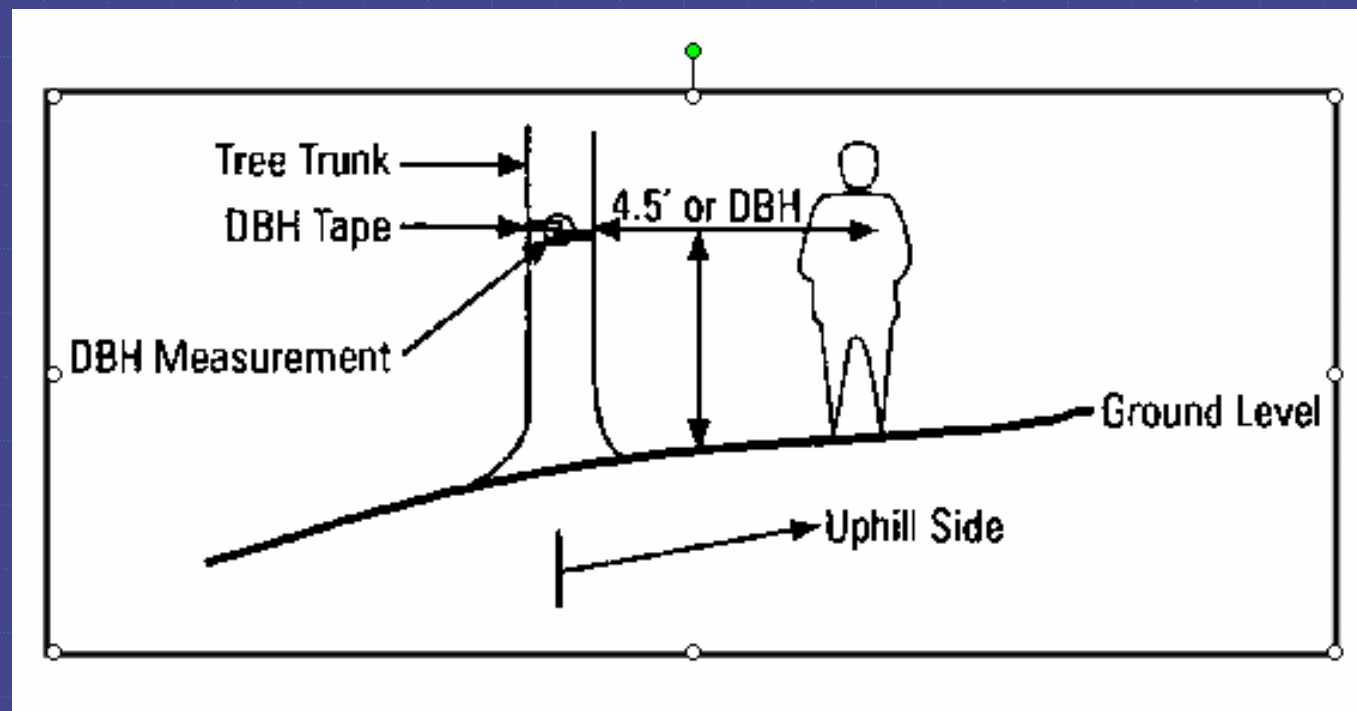


Figure 5-6. Lotline/Letter Method for Locating Trees

Species ID



Diameter



Tree Condition

Evaluating Individual Trees



- ◆ Good
- ◆ Fair
- ◆ Poor
- ◆ Dead or Dying
- ◆ Risk Tree?

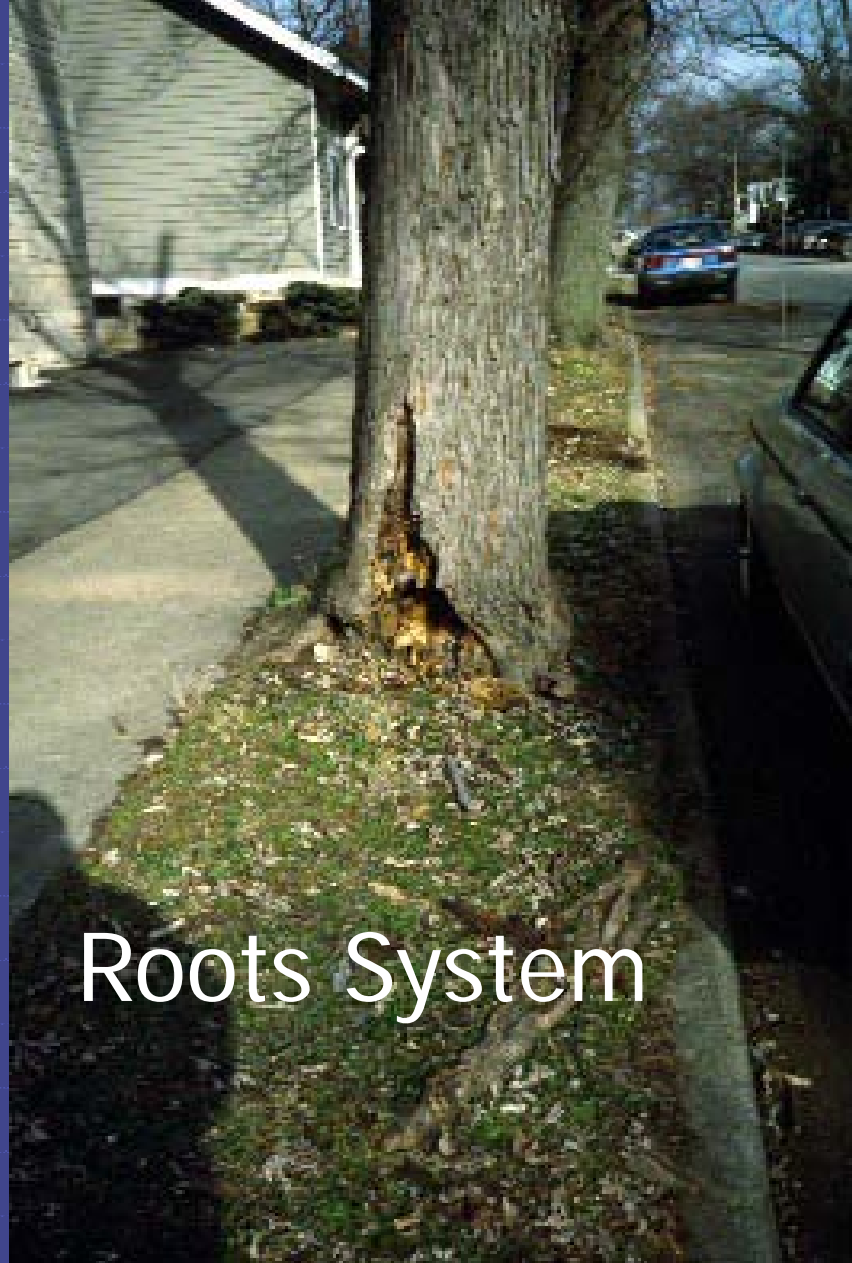
Look at Overall Tree From a Distance



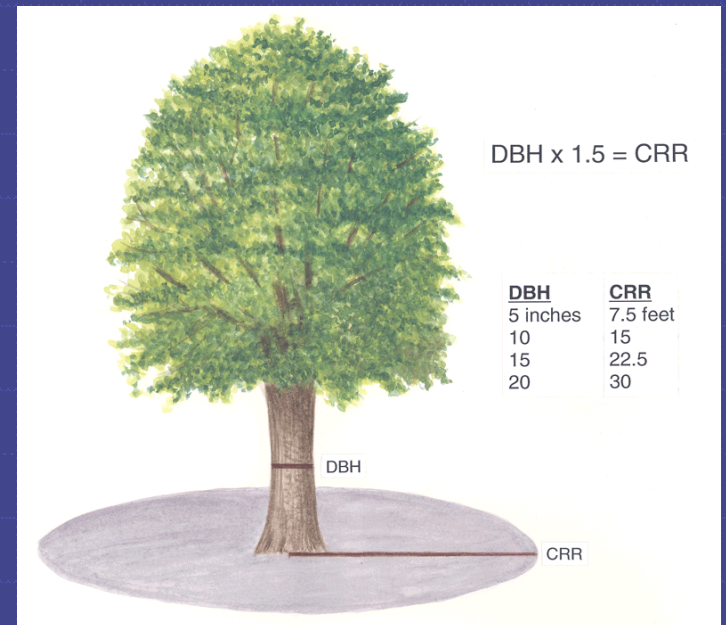
Site Conditions

- Conflicts
- Soils/Drainage
- Aspect
- Land History
- Past Tree Care
- Competition Other Trees





Roots System



Trunks





Branch Structure
Attachment

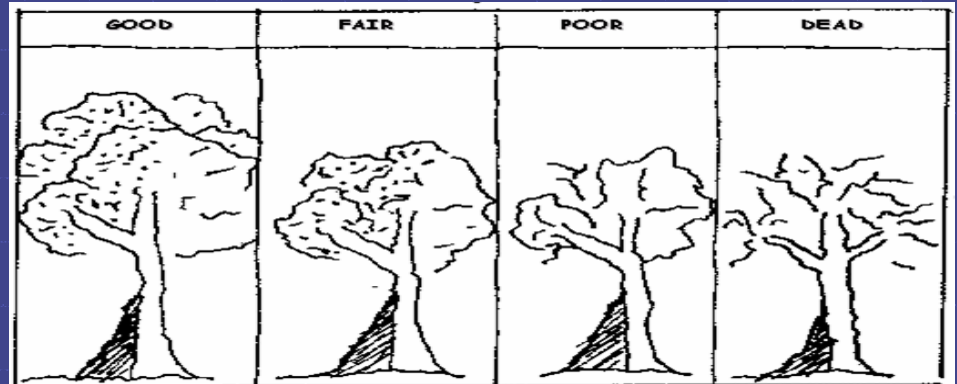
Crown



Foliage



Tree Condition



- ◆ **Good – Healthy and vigorous. No apparent signs of insect, disease or mechanical injuries.**
- ◆ **Fair – Average condition and vigor. May need corrective pruning or repair, lacks desirable form, minor insect/disease.**
- ◆ **Poor – General state of decline. May show mechanical, insect or disease injury, but death is not imminent. Require major repair or renovation.**
- ◆ **Dead or dying – Dead or death imminent within 5 years.**

Defects Present

◆ Defects

Weak Fork

Overhead Wires

Cavity

Root Problems

Dead Wood

Cracks

Poor Architecture



Maintenance Needs

- ◆ 1 – None
- ◆ 2 – Minor Pruning
- ◆ 3 – Major Pruning
- ◆ 4 – Mulching
- ◆ 5 – Cable and Brace
- ◆ 6 – Fertilizing
- ◆ 7 – Insect Control
- ◆ 8 – Disease Control
- ◆ 9 – Removal



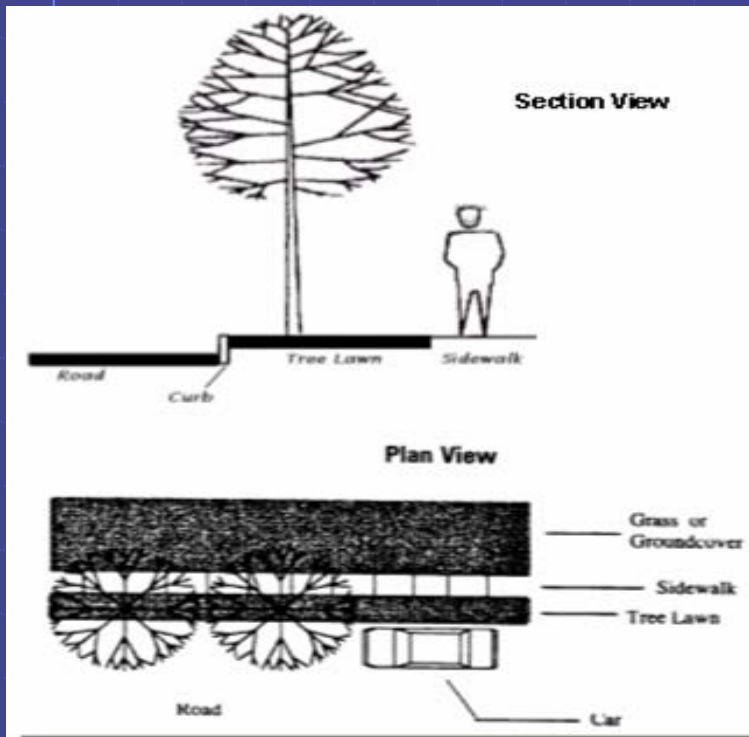
Evaluation of Risk Trees



◆ Is There a Target?

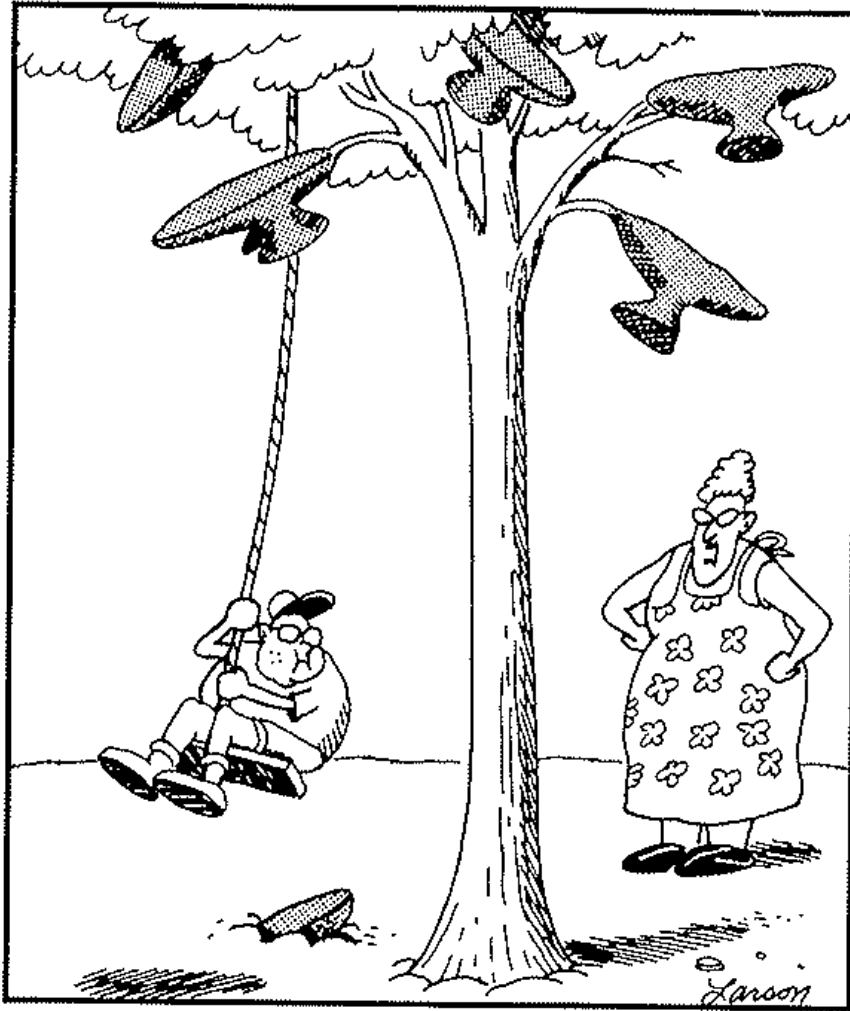
◆ Defect that Could Cause Failure?

Planting Sites



Insect and Disease






"All right, Billy, you just go right ahead! ...
I've warned you enough times about
playing under the anvil tree!"



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WHAT TO DO WITH INVENTORY INFO

DATA ANALYSIS





 **MCTI Version 3**

File Setup Trees Reports About

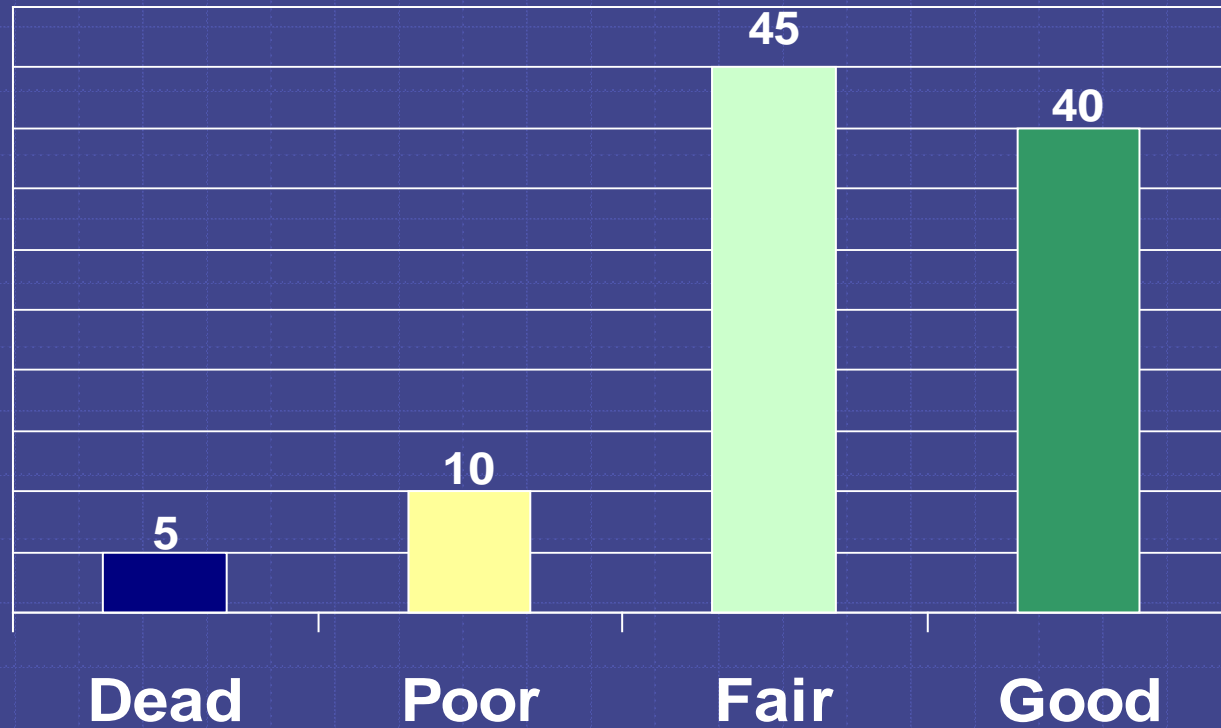
 **Tree List**  **Details**

| Tree ID | Date | Spec. | DBH | Cond. | Loc. | Eval. | Surveyor | Location (Address) | Addr # | Area |
|---------------|------------|-------|-----|-------|------|-------|----------|--------------------|--------|-------------|
| ▶ NH001-00002 | 07/08/2005 | ?? | 0 | 0 | 0 | 0 | 00001 | HIGH ST. | | PARK TREE |
| NH001-00003 | 07/08/2005 | BG | 6 | 2 | 3 | 0 | 00001 | HIGH ST. | 9 | PARK TREE |
| NH001-00004 | 07/08/2005 | ?? | 0 | 0 | 2 | 0 | 00001 | HIGH ST. | 5 | PARK TREE |
| NH001-00005 | 11/01/2005 | CC | 1 | 1 | 2 | 0 | 00001 | DURHAM POINT ROAD | 5 | STREET TREE |
| NH001-00006 | 11/01/2005 | AM | 5 | 1 | 3 | 9 | 00001 | DURHAM POINT ROAD | 2 | STREET TREE |
| NH001-00007 | 11/01/2005 | AP | 3 | 2 | 4 | 0 | 00001 | DURHAM POINT ROAD | 3 | STREET TREE |
| NH001-00008 | 11/01/2005 | BP | 6 | 4 | 0 | 0 | 00001 | DENBOW | 1 | STREET TREE |
| NH001-00009 | 11/01/2005 | AR | 4 | 2 | 3 | 10 | 00001 | MAIN | 5 | STREET TREE |
| NH001-00010 | 11/01/2005 | AP | 4 | 1 | 3 | 10 | 00001 | MAIN | 6 | STREET TREE |
| NH001-00011 | 11/01/2005 | BP | 7 | 3 | 1 | 0 | 00001 | MAIN | 5 | STREET TREE |
| NH001-00012 | 11/01/2005 | BP | 7 | 3 | 1 | 0 | 00001 | MAIN | 5 | STREET TREE |
| NH00100013 | 11/01/2005 | AP | 6 | 2 | 4 | 9 | 00001 | DENBOW | 6 | STREET TREE |
| NH001-00013 | 11/02/2005 | CF | 7 | 3 | 0 | 11 | 00001 | SUNNYSIDE | | STREET TREE |

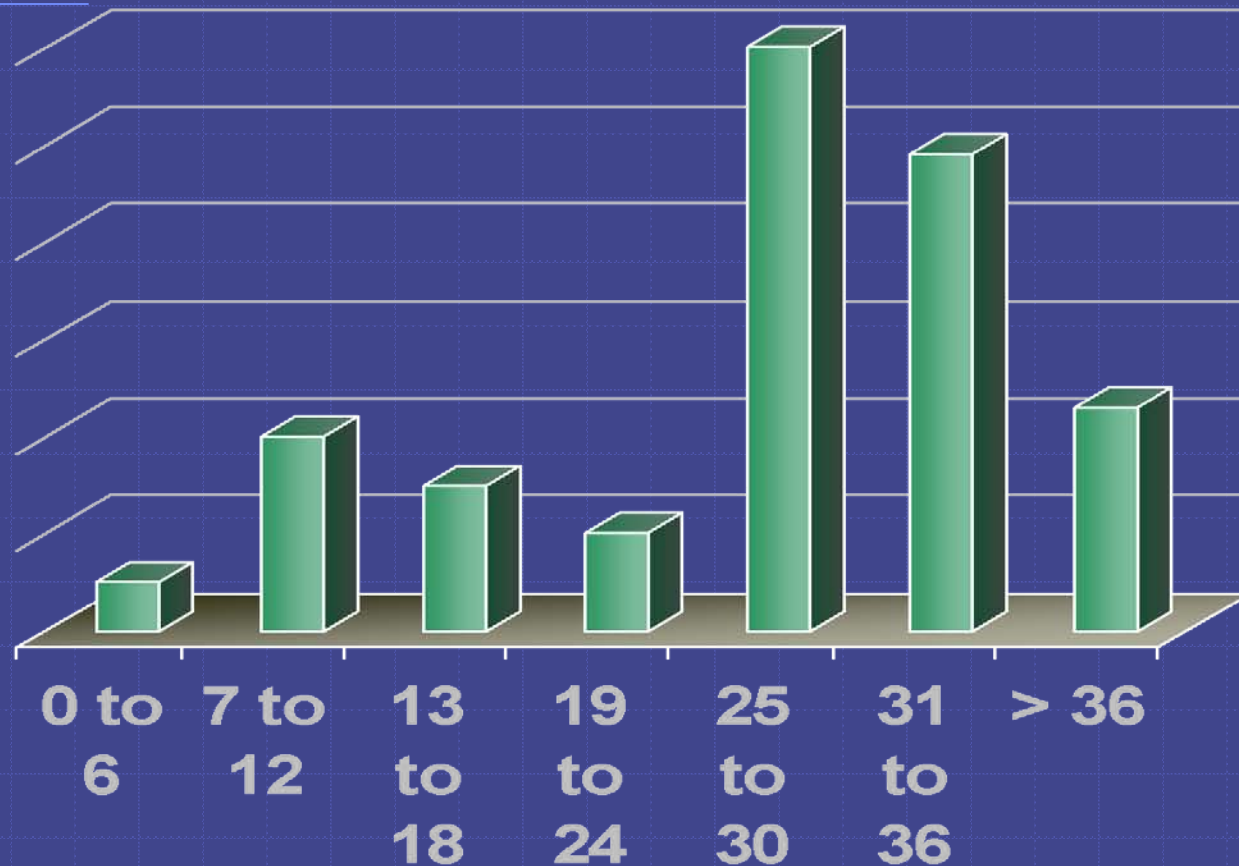
Select a row and place cursor on the cell you wish to decode

  Select a Tree   Refresh Entries on File 13

Condition



Size Distribution



Developing a Management Plan

What Do You Have?

What Do You Want?

How Do You Get What You Want?

Are You On Track?



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FOR MORE INFORMATION

Northeastern Area



(enter query) Search

- ▶ Northeastern Area Home
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Urban & Community Forestry

"Planting and Caring for the Trees and Forests Where People Live, Work, and Play"



The steady expansion of urban areas and associated decline of inner-city environments is a national problem that continues to impact basic ecological functions essential to a healthy and productive society. Healthy trees and forests in urban areas contribute to improved air and water quality, watershed function, energy conservation and social well-being.

The Urban and Community Forestry Program provides technical, financial, educational, and research services to states, cities, and nonprofit groups so they can plant, protect, maintain, and utilize wood from community trees and forests to maximize environmental, social and economic benefits.

State Urban and Community Forestry Programs



Urban Forestry Research Work Units

[Urban Forest Structure and Function](#)

[Understanding and](#)

Hot Topics

- [i-Tree](#)
- [Benefits of Trees](#)
- [Trees & Ice Storms](#) (4.6MB pdf)
- [Urban Watershed Forestry Manual](#)
- [Tree Care Calendar](#)
- [Northern Tree Selection On-line](#)
- [Living Memorials Project](#)
- [Selecting, Planting and Caring for Trees](#)
- [A Technical Guide to Urban & Community Forestry](#)
- [Urban Projects Newsletters - 2007, Vol. 10](#)

www.na.fs.fed.us/urban

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603-868-7688



Protect/Increase Urban Tree Canopy In Urban Areas



MCTI

File Setup Trees Reports About

Tree List **Details**

Tree ID Survey Date

Surveyor

Latitude Longitude

Street Number

Species DBH

Condition Planting Location

☐ Consult Needed

☒ Weak Fork ☒ Wires ☐ Cavity

Hazard Rating (9)

| Prob. Failure | Size Defect | Prob. Impact | Strength |
|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| <input type="text" value="2"/> | <input type="text" value="3"/> | <input type="text" value="3"/> | <input type="text" value="1"/> |

Electric Hazard to Line Electric Contact Hazard

☒ Maintain ☐ Remove

☒ Clean ☒ Raise ☒ Reduce

Historic Trim Type

Comments

Save **Cancel** **View/Edit** **Delete** **Add New** **Exit**

Things to think about before planning.....

- ◆ What kind of plan is needed?
- ◆ Who will be involved in its development and at what stage?
- ◆ How the plan will be used?
- ◆ How awareness and support for the plan will be generated?



Priority Planting Opportunities

