Tree Campus USA Application

Complete this form and submit with any visual or additional written documentation no later than December 31.

Tree Campus USA designation is in recognition of work completed by the college during the calendar year.

Submissions can be sent: electronically to **treecampus@arborday.org**

Or mail to: **Tree Campus USA, Arbor Day Foundation, 211 N 12th Street, Lincoln NE 68508**

I am submitting this application on behalf of the college listed below to be officially recognized and designated as a Tree Campus USA college for the year 2013, having achieved the standards set forth by the Arbor Day Foundation as noted below.

Standard 1: Campus Tree Advisory Committee

This committee must include a representative from each of the following audience:

- Student (undergraduate or graduate).
- Faculty.
- Facility Management.
- Community — for example — city forester, municipal arborist, community tree board member.

Date of committee establishment February 13, 2013

Meeting dates for the past year Feb 13, Feb 17, March 12, April 16, May 24, Aug 17, Aug 22, Oct 12 (2012)

Attach list of committee members, groups they represent (i.e., students) and e-mail.

Standard 2: Campus Tree Care Plan

All of the following criteria must be addressed in your Campus Tree Care Plan:

1. Clearly stated purpose.
2. Responsible authority/department — who enforces the Campus Tree Care Plan.
3. Establishment of a Campus Tree Advisory Committee, terms of the representatives, and role committee plays.
4. Campus tree care policies for planting, landscaping, maintenance and removal including establishing and updating a list of recommended and prohibited species; managing for catastrophic events.
5. Protection and Preservation policies and procedures — include process for implementing tree protection plan including step-by-step process that every project must follow including construction and trenching.
6. Goals and Targets — develop at least one goal and target for your Campus Tree Plan. These could include (but are not limited to) tree canopy target, development of a link between the Campus Tree Plan and other green

initiatives on campus or in the community; completion of a campus-wide tree inventory, etc. Include how the goal will be measured.

7. Tree damage assessment — enforcement, penalties, and appeals.
8. Prohibited practices.
9. Definitions of terminology related to campus trees.
10. Communication strategy — how the campus tree care plan will be communicated to the college community and contractors to heighten awareness about policies and procedures as well as the goals of the institution.

Date Campus Tree Care Plan established March 12, 2012
Attach Plan.

Standard 3: Dedicated annual expenditures for the Campus Tree Care Program

Total Campus Tree Program expenditures $410,354.00
Attach Expenditure Worksheet.

Standard 4: Arbor Day Observance

Date observance held April 20, 2012, April 21, 2012, April 22, 2012, April 27, 2012
Attach a summary of the Arbor Day Observance including pictures and/or media coverage.

Standard 5: Service Learning Project

Date(s) Service Learning Project held April 20, 2012, April 21, 2012, April 22, 2012, April 27, 2012
Attach summary of the Service Learning Project including pictures and/or media coverage.

Note: Application will not be processed without documentation.

General Information

College/University Name (as you would like it to appear on your recognition plaque)

University of Northern Colorado

Contact Patrick S. McDonald Title Manager of Landscaping and Grounds

Address 501 20th Street City Greeley State CO Zip 80639

E-mail patrick.mcdonald@unco.edu Phone (970) 351 1263

Communications Office Contact

Name Nate Haas

Address Carter Hall RM 2009 Campus Box 51

Email nate.haas@unco.edu

University President/Chancellor's Office

Name of President/Chancellor Kay Norton

Address Carter Hall RM 4000 Campus Box 59 (1700 9th Ave)

City Greeley State CO Zip 80639

Signature [signature] Date 11/19/12

Partnership of TOYOTA Arbor Day Foundation

Campus Tree Care Program Expenditure Worksheet

College/University University of Northern Colorado Application Year 2013

Please provide the following expenditure information about your Campus Tree Care Program: Tree Planting and Initial Care:

Include cost of tree purchases, labor and equipment for planting, planting materials, staking, watering, mulching, competition control, etc. $ 5,791.00

Campus Tree Management:

For example: include pruning, public education, professional training, association memberships, campus tree inventory, pest management, fertilization, tree removals (if needed), and all associated costs $ 386,540.00

Volunteer time:

Value of volunteer labor (hours x $18) and other contributions from student and civic organizations. (Value of volunteer labor taken from www.independentsector.org.) $ 23,814.00

Other activities:

Briefly describe other undefined costs not already mentioned. $

TOTAL CAMPUS TREE CARE PROGRAM EXPENDITURES $ 410,354.00

45 Number of trees planted

479 Number of trees pruned

18 Number of trees removed and reason (i.e., storm, construction, etc) Storms: 4 each Pine Beetle: 4 each, Ash boren: 6 each, Construction: 4 each

1,323 Number of volunteer hours

_____ % of tree canopy (if known)

12,497 Full-time student population

Applications will not be processed without the following:

- ☐ ✓ Completed application form
- ☐ ✓ Copy of the Campus Tree Care Plan
- ☐ ✓ Breakdown of Campus Tree Program Expenditures
- ☐ ✓ Documentation of Arbor Day Observance and Service Learning Project including pictures and/or media coverage

UNIVERSITY of NORTHERN COLORADO

STANDARD 1: CAMPUS TREE ADVISORY COMMITTEE

Patrick McDonald,
Manager of Landscaping & Grounds, Facilities Management
AS Forestry, Danville Junior College, 1974
BS Forestry, Purdue University, 1977
Patrick.mcdonald@unco.edu

Richard R. Jurin, PhD Associate Professor Biology, Environmental & Sustainability Studies Program, Coordinator richard.jurin@unco.edu (or Current Sustainability Council Chairperson) Faculty

Shiloh Hatcher, Forestry Manager, Division of Forestry, City of Greeley, Colorado
shiloh.hatcher@greeleygov.com Community

Brent Engel, Student at the University of Northern Colorado. Major: Environmental & Sustainability Studies. Previous employment with the Forestry Department of the City of Westminster, CO.
engel6081@bears.unco.edu

Roles of Representatives
The committee members will accept to serve for a period of one calendar year with a renewal option. Members shall appoint officials who will conduct the business of the committee. Committee members are expected to actively participate and contribute in policy/guideline issues as well as research/research/information gathering that would aid
in the campus tree care plan.

TREE CAMPUS USA

STANDARD 1: CAMPUS TREE ADVISORY COMMITTEE

Committee Established: February 13, 2012

Meeting Dates:

February 13, 2012
Discussed Earth Day/Week plans, activities including Arbor Day Tree Plantings.
Brainstorm session.

February 27, 2012
Discussion and progress reports for Earth Day /Arbor Day celebration activities.

March 12, 2012
Confirmed all Tree Planting events (Location time and dates) for the Arbor Day and Earth Day tree plantings.

April 16, 2012
Discussed Tree inventory process with City Forester, Shiloh Hatcher, using Mapping from the City of Greeley.

May 24, 2012
Tree Inventory began

July, 2012
Tree Inventory in process and Hired Brent Engle, Student Representative of Tree Advisory Committee to assist with tree measuring and health ratings.

August 17, 2012
Tree Inventory completed with 3.695 trees recorded.

August 22
Tree tour with University media relations and Greeley Tribune Reporter conducted via Nate Haas. This feature is planned for our spring/summer edition of Northern Vision magazine. It will include photos of the trees and an interview with pat McDonald. Greeley Tribune writer, Dan England, will be in touch with Pat McDonald with any follow-up questions between now and April.

October 12, 2012
Discussed Statistical reports from Tree Inventory data and preparing final application draft for submission in December.

UNIVERSITY of NORTHERN COLORADO

STANDARD 2: CAMPUS TREE CARE PLAN

PURPOSE

Facilitate the achievement of directives as recommended by the 2002 Campus Landscape Master Plan, which includes but not limited to the following: The establishment of Green Corridors/canopies along streets, pathways and the major arteries and entries to the university campus. This goal to be accomplished by the planting of deciduous and ornamental shade trees of varying species, including Colorado Native Trees.
Another directive includes the incorporation of Xeric-type plantings in all new landscape designs which promote and foster water conservation on campus as recommended by the 2002 Campus Landscape Master Plan and the Mission Statement of Landscaping & Grounds. *(See Appendix).*
See the websites below for specific details:
http://www.unco.edu/facility/Planning%20and%20Construction/Master%20plan%20PDF/CLDP_master with_pictures_8-12-09.pdf

http://www.unco.edu/facility/Planning%20and%20Construction/landscape_guidelines.html

Protect and maintain the campus urban forest by managing the impact of development and construction on campus trees.

Provide protection and to make sure that removal of all trees on campus are conducted with proper considerations and adequate replacement program, according to our approved Facilities Construction Specifications. See website below:

http://www.unco.edu/facility/Planning%20and%20Construction/design_guidelines.html

RESPONSIBILITY/STEWARDSHIP

The responsibility of the Campus Tree Care Plan rests with Facilities Management / Landscaping & Grounds Division.

TREE CAMPUS USA

TREE CARE PRACTICES

TREE PLANTING

Plant Selection

Plant species used on the campus will come from the list of the Landscape Standards in the 2002 Landscape Master Plan. The list contains both recommended native and non-native species that have been screened for adaptability to physical and serviceability, to meeting planting needs based on site orientation, drainage, soil condition, use, etc. Where appropriate, the best plant shall be selected for a given site, which may or may not be a *"native".* Trees to be used on campus must be preselected at the farm or nursery for good quality and tagged.

Only trees of 1.5-inch minimum caliper and maximum of 4"-4 ½" caliper will be planted.

The goal of the campus is to provide a reasonable representation of the Colorado native trees as well as North American species and to achieve arboretum status for the university campus.

Plant selection is also driven by the need to conserve water, and drought tolerant species are given primary consideration in designs.

A list of **Recommended Trees** can be found on the websites below and in the *appendix*

See website for details:

http://www.unco.edu/facility/Planning%20and%20Construction/Landscape%20Guidelines/tree-chart.pdf

http://greeleygov.com/Forestry/Documents/Trees%20For%20Greeley/Trees%20For%20Greeley.pdf

Prohibited Trees are listed in the *appendix.*

Site Preparation

The planting hole should be dug no deeper than the root-ball when measured from the bottom of the root-ball to the trunk flare. If the hole is deeper than the root-ball, it often results in the settling of the plant above the trunk flare and structure roots which can result in the root-ball being planted too deep. But the width of the hole should be at least 2 to 3 times the diameter of the root-ball with sloping sides

TREE CARE PRACTICES

TREE PLANTING

Planting Technique/Procedure

Plants must be set with trunk flare 1”-2” above the existing grade. Once the plant is properly placed, all visible ropes and burlaps at the top one-third should be cut away. The top 8”-16” of the wire basket should be removed once the root-ball is stable in the planting hole; backfill the planting hole with the existing soil. If the existing soil is of a poor quality, addition of soil amendment as recommended by the soil analysis should be used. The backfill soil should be tamped firm enough to remove large air pockets, but not too firm as to remove all fine air spaces needed for a well aerated soil for root development. Complete the backfill by making sure that the trunk flare is completely exposed spread mulch at 2-4” depth but not touching the trunk, water the root-ball and the planting area deeply.

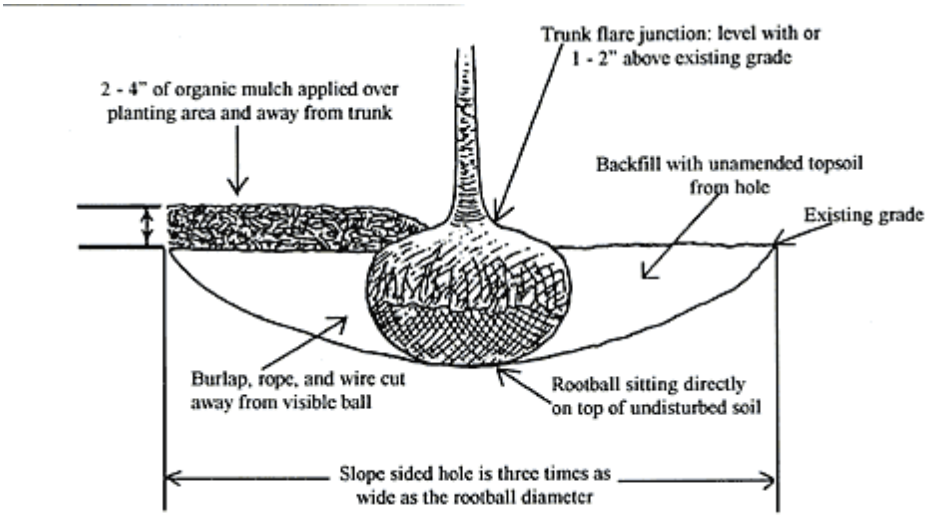


Diagram illustrating proper planting procedure for a tree or shrub.

Newly planted trees must receive adequate water weekly during the entire first growing season right up until dormancy in the fall, by irrigation or placement of ooze bag or hand watering.

Transplanting/Tree Salvage Efforts

Desirable trees in a development area or other construction sites shall be transplanted by selected Contractor where there is an acceptable location and during the Spring & Fall planting seasons. Trees of larger caliper shall be contracted out using comparable tree spades.

TREE CARE PRACTICES

TREE PLANTING

Fertilizing

Newly planted trees should not receive fertilization during the first growing season except in a situation where a soil test recommends its use. A slow release type of fertilizer should be used around the tree basin. Trees in poor condition should receive deep root fertilization of 5-35-10 plus micro nutrients, with repeat application if necessary. Also, when necessary, we shall use 10-20-10 for evergreen trees and 25-10-10 for general application. Routine tree fertilization is not recommended; however, campus trees receive adequate nutrients from turf, shrubs and groundcover routine application of fertilizers.

Staking

Staking of trees at planting is required in this high wind environment of the Front Range. If the root-ball is stable and adequate size then minimal staking is needed. If staking must be done, it will be done in accordance with ANSI most recent edition.

Pruning

After planting, only broken or damaged branches should be pruned. Tree wrapping is generally not recommended.

TREE MAINTENANCE

Preventive Maintenance Pruning

The university contracts tree maintenance services for all major pruning and removals. Pruning Priorities are based on High Risk. Those trees that pose the greatest risk to human life and property damage are considered High Risk.

Currently, the university has completing a 5-year high risk tree assessment on the Central Campus. This has comprised mostly the campus perimeter street trees. This evaluation included many removals and complete pruning of over 300 trees. The older Central Campus, and its respective largest and oldest trees were targeted first, as the older trees pose the greatest risk. The next 5-year (2008-2013) evaluation will comprise the trees on the West Campus and the University Center. After this 5-year period, Tree assessments will rotate back to the Central Campus. The overall impact of hazardous tree evaluation program is to make our campus safer, promote tree health and minimize tree failures due to high winds and other severe weather impacts. Young trees are pruned annually by Landscaping & Grounds staff to promote strong structure and desirable form. Young trees that receive the appropriate pruning measures will minimize the need for corrective pruning as the trees mature. Pruning techniques consider branching structure, trunk development, and clearance. Primary pruning techniques consider pedestrian, vehicle and bicycle clearance: 15-16 ft. clearance for Traffic and 80-inches for above-head clearance for most sidewalks.

TREE CARE PRACTICES

TREE MAINTENANCE

Hazardous Tree /Damage Assessment and Removal

All Trees are evaluated for Hazard Risk by the Manager of Landscape Services. And evaluations that require removal are submitted for approval through the Associate Vice President of Facilities Management and tree removals within the City of Greeley Right-of –Way, are subject to approval by the City of Greeley, Division of Forestry, *www.greeleygov.com/forestry*.
See appendix for Hazard Appraisal Form.

Stump Grinding

Stump Removal is performed by a State-certified Contractor.
After trees are removed the stumps are then scheduled for grinding. When the stump is ground out, the grindings are raked and removed and backfilled with topsoil. In the event that the replacement tree is to be planted in the exact location, the stump will be excavated and removed.

Integrated Pest Management

At the University of Northern Colorado, IPM methods that are employed are strictly cultural. Cultural methods include, but not limited to the following:

Monitoring tree population density and avoiding monoculture plantings.
Promoting species diversification.
Promoting the use of Drought-Tolerant species, and other native vegetation.
Maintaining proper Irrigation, Fertilization and Pruning Regimes.

Pesticide Applications / Ips Engraver Beetle. The University of Northern Colorado continues the constant battle against Ips Engraver Beetle that attacks the older population of our Heritage Blue Spruce trees. The Blue Spruce is the State Tree of Colorado. Some of old-growth trees are nearly 100 years old. A contractor applies an insecticide, *ASTRO* during the Spring Break Period (Mid-March). Faculty and staff are notified via email of the proposed application schedule. For more information on the Ips, and other tree care information, we suggest contacting the Greeley Forestry Division and clicking on their Links. ***www.greeleygov.com/forestry.***

TREE CARE POLICIES

Landscape Design Guidelines and Master Planning

Landscaping on the University of Northern Colorado campus must adhere to the recommended species indicated in the 2002 Landscape Master Plan. Recommended species include a variety that will enhance the overall palette diversity and population density of the campus forest. Monoculture plantings are to be discouraged. All landscaping, new and old shall use the list of acceptable plants in the Campus Landscape Master Plan. Proper Plant selection should be chosen based on the site conditions, not based solely on the merit of its being native.

Goals and Targets

One of the objectives is to establish our campus as an arboretum with the goal of creating a campus that is a living laboratory that enhances learning and discovery, and to improve its value as a resource for university engagement. The university has a Xeric Demonstration/Community Garden that provides community interaction. We continue seeking opportunities to further develop the educational aspect of our *"Campus arboretum"* for students, staff, and residents of surrounding communities.

The Landscape Master Plan directives include the establishment of green corridors along major artery walkways as well as lateral pathways that will achieve greenway connections between the West and Central Campus regions. All Landscape developments are to include and minimum of 20% Xericscape to reduce water usage. The Ultimate Goal is to strive for LEED Gold Certification. See the following Websites for the Landscape Design Guidelines.
Deferred Maintenance funds are provided annually to assist in tree planting directives, tree replacements and the pruning of mature trees.

http://www.unco.edu/facility/Planning%20and%20Construction/landscape_guidelines.html

Emergency Response and Natural Disaster Planning

Supplemental to the University's Emergency Response Plan, a Preparedness Checklist is included to address catastrophic tree losses on the university campus and the adjacent community. It is only a checklist to ensure that steps are taken to mitigate such losses.
Please see *See appendix for Natural Disaster Checklist.*

TREE CARE POLICIES

Protection and Preservation Policies and Procedures

Trees are not the only thing of value in the landscape. The university's policy incorporates not only trees, but the entire landscape.

Scope and Purpose: The overall purpose of this policy is to maintain and enhance the beauty of our campus, and to better manage our trees and landscape plantings in *"built environments"*. Construction is a fact of life at every university. How universities manage the construction process will determine the extent of the long-term implications on the campus landscape and ultimately, the well-being of individuals and the *University of Northern Colorado* community. Trees on our campus occupy very special places in the hearts of individuals, family and campus life. Trees are very powerful symbols, where intense feeling and strong appreciation are felt **and** often expressed. As stewards of this valuable asset, we must be sensitive to these very real social implications. The success of this policy is based on everyone's involvement and willingness to recognize the value of our landscape and the investment we have placed into our landscape heritage.

Intent: It is the intent of this policy to provide standards for the preservation of specimen trees, ornamental plantings, and historically significant trees and landscape plantings at the University of Northern Colorado. These standards are to be a part of the land development and building construction process of the university.

Goals: (1) To educate contractors and those who oversee or coordinate the activities of contractors about the value of trees/landscape plantings and how to protect and preserve them prior to and during construction. (2) To protect trees/landscape plantings and define the permits, fees, penalties and other legal requirements necessary to preserve them. (3) To establish procedures to insure communication among all parties in setting forth expectations concerning tree/landscape protection.

Woody Plant Protection Guidelines

Tree protection zones shall be established and maintained for all trees to be preserved in a construction site. Construct a simple barrier for each tree or grouping to protect the trunk and root systems. This reduces damage from heavy equipment and trucks. Wood, plastic or chain link 4' fencing would be suitable. Install the barrier fence for every inch diameter of that tree's diameter breast height (DBH), provided that in no case shall the protection zone be less than a radius of 2.5 feet. No root raking shall be allowed within any tree protection zone at any time during clearing, grading or construction of a project. No equipment or vehicle shall be parked or construction material stored, or substances poured or disposed of or placed within any tree protection zone at any time during clearing or construction of a project. To the extent possible, all site work shall be planned and conducted in a manner that will minimize damage to protected trees from environmental changes such as altered site drainage or any other land disturbance within or immediately adjacent to the critical root zone of the tree.

TREE CARE POLICIES

New Building or Facilities Construction

Development activities shall be planned to the extent possible in order to preserve and protect trees on the University of Northern Colorado. All Construction proposals/designs are reviewed by the Manager of Landscape Services. Construction designs include proposed tree/landscape demolitions, tree protection plans, and irrigation / landscape designs.
There are Design guidelines in place that address Site-work specifications that include Tree protection, landscape plantings, site furnishings, and irrigation installation.

See website:
http://www.unco.edu/facility/Planning%20and%20Construction/design_guidelines.html

In lieu of a compensation account for tree losses due to construction, an annual portion of Deferred Maintenance funds are diverted to Landscaping & Grounds Division for Tree Replacements and Pruning.

Tree Heritage Program

The overall purpose of this program is to maintain and preserve those significant trees that contribute and enhance the beauty of our campus. Many trees have historical as well as memorial significance. Trees on our campus occupy very special places in the hearts of individuals, family and campus life. Trees are very powerful symbols, where intense feeling and strong appreciation are felt and often expressed. As stewards of this valuable asset, we must be sensitive to these very real social implications. The success of this program is based on everyone's involvement and willingness to recognize the value of our landscape and the investment we have placed into our landscape heritage**.** It is the intent of this program to provide standards for the preservation of specimen trees, and historically significant trees and landscape plantings at the University of Northern Colorado. The goals of this program are (1)to determine existing significant trees based on historical, commemorative or other recognitions associated to a specific tree or planting; (2)To determine species, size/age, location, history and significance as it relates to the university's campus landscape heritage; (3) To educate contractors and those who oversee or coordinate the activities of contractors about the value of trees/landscape plantings and how to protect and preserve them prior to and during construction; (4) To establish procedures to insure communication among all parties in setting forth expectations concerning tree/landscape protection; (5)To secure funding for plaques or brochure that recognizes the campus tree legacy.

Campus Tree Inventory

With the cooperation of the Greeley Forestry Department (Shiloh Hatcher) we are in the process of entering all tree data gathered from the campus. Once all the data is entered into the city forestry software we will be able to generate many reports, analysis about the university's tree population. *See Appendix for List of Reports.*

We began inventorying trees on May 24 and completed the last tree on August 14. It took 57 days to complete at an average 2.75 hrs. per day or 156.75 man hours. We inventoried an average 65 trees per day.

I was assisted by UNC student, Brent Engel, who has also been employed with the Westminster City Forester. I could not have wished for such a collaborator as we pursued such a venture. He also serves on the University Tree Advisory Committee as our Student Representative. Shiloh Hatcher also serves on the committee. The establishment of such an advisory group is a requirement for Tree Campus USA. Brent is continuing to enter the data on the GPS maps at the Greeley Forestry office.

The main purpose of the inventory was to assist with the application for the Tree Campus USA consideration. We have **3,695 trees** documented. The last documented Tree inventory was made in 1987-88 with the total trees amounted to 1,269 trees. Between Brent and myself, we can say that we are the official Tree huggers of UNC. We have touched, measured, evaluated and identified 3,695 trees.

See appendix for a summary of Tree Inventory Facts.

Campus Tree Trail

The university plans to establish tree trails on the campus that will highlight not only our most significant trees, but also those trees that possess historical redeeming value. The trails will also include our Colorado native collections. This proposed trail system will be an ongoing project for the Tree Advisory Committee and will promote our goal to attain arboretum status for our campus; to be a living laboratory that enhances learning and discovery, and to improve its value as a resource for university engagement. This will be an on-going Service Learning Project.

TREE CARE POLICIES

Landscape Journal

The Purpose of the Journal is to chronicle the history of the university landscape and to document annual tree losses and plantings. It also documents memorial tree plantings and Arbor/Earth Day tree planting ceremonies and participants. The Journal also provides information about Donors, and information regarding State Champion Trees noted by the Colorado Tree Coalition.

See appendix for Landscape Journal.

Prohibitive Practices

Campus Tree Planting & Removals

Utility locates must be performed prior to any excavation as required by State law.

Campus Pruning

Topping is not an acceptable method of Pruning and is prohibited.

Campus Tree Removals

Tree Removals cannot be performed without the written approval of the Associate Vice President of Facilities Management and the Manager of Landscaping Grounds.

Memorial Trees and Gift Trees

Memorial and Gift tree and respective plaque proposals must be reviewed and approved by the Manager of Landscaping & Grounds prior to installation.
See Appendix for listing of all campus memorials.

Greeley Division of Forestry Ordinances

The University of Northern Colorado fosters and promotes and good faith effort to comply with all the Ordinances of the City of Greeley Division of Forestry.

Code Information Regarding Tree Trimmers and Pesticide Applicators

We require that all contractors performing commercial tree trimming and removal operations in Greeley obtain a license. First, they must furnish proof of insurance, provide a surety bond, and pay the license application fee to the Finance Department at City Hall. Then, the company proprietor must pass written and/or field tests or provide certain other certification proving competency and skills in the industry. Tree trimming and removal companies can be licensed in two categories, Shade tree (anything over 10') and Ornamental tree (10' and under).

A contractor providing commercial pesticide spraying and fertilization application in Greeley must also be licensed. In order to obtain this license, a contractor must provide a copy of their State of Colorado Department of Agriculture applicator's certificate and pay the license application fee to the Finance Department.

Prohibitive Practices

Greeley Division of Forestry Ordinances

Relating To Tree Trimmers

1. No person or firm shall engage in the business of trimming, spraying, removing or otherwise treating trees, shrubs and plants in the City without first obtaining a license to conduct such business. The business described in this chapter shall be referred to as "tree trimming" and all persons and firms engaging in that business shall be known as "tree trimmers."
2. Licenses for tree trimmers shall be issued by the Director of Public Works. All applications for licenses shall be submitted in writing, on a form prepared by the Director of Public Works. The Director may require each applicant, as a condition to obtaining a license, to demonstrate competence and knowledge in the business of tree trimming by passing a written test and by demonstrating the necessary skills.
3. A license will not be issued to any applicant unless the applicant has furnished proof of liability insurance coverage of not less than five hundred thousand dollars ($500,000) for each person, one million dollars ($1,000,000) for each occurrence. In addition, each applicant shall be required to file a bond and pay any annual fees required.
4. Chemical (insecticide, herbicide, fertilizer) applicators will go to City Hall and furnish proof of a valid applicator's license from the State Department of Agriculture (which also verifies bond and insurance) and pay the appropriate license fee.
5. Each license shall be issued for a single calendar year. Each applicant may be required to renew a license by passing the test referred to above.
6. To engage in the business of trimming or felling trees, the fee is sixty dollars ($60.00) annually. The licensee shall furnish the City Clerk with a bond in the sum of one thousand dollars ($1,000.00). For a permit for each parkway tree to be trimmed, the fee is one dollar ($1.00). For a permit for each parkway tree to be felled, the fee is two dollars ($2.00).
7. No tree trimmer shall remove or trim any tree in a parkway or other public grounds without first obtaining a permit from the Forestry Manager. The Forestry Manager shall not issue a permit unless the tree to be removed or trimmed is dead or interferes with the proper use of parkways for sidewalk purposes or creates traffic hazards.
8. A tree trimmer operating with a permit may use and occupy, for temporary periods of time, alleys and the one-third portion of street roadways adjacent to the parkways where trimming work is being carried on. The Director of Public Works shall have the authority to promulgate rules, regulations and specifications pertaining to the required method of carrying on the business of tree trimming.
9. The Forestry Manager shall issue a cease-and-desist order to any tree trimmer engaging in the business of tree trimming contrary to any such rules, regulations and specifications. Any tree trimmer who violates the terms of the cease-and-desist order is guilty of a misdemeanor and shall be subject to punishment.
10. Chemical applicator problems are referred to the State Department of Agriculture.

Prohibitive Practices

Greeley Division of Forestry Ordinances

New Regulations

We recently received information from Greeley Police regarding compliance with Colorado's Department of Transportation requirements. All commercial vehicles with a single or combined unit weight in excess of 10,000 pounds are required to display US-DOT numbers on that unit.

For registration information, contact the Colorado State Patrol (Evans office 970-506 4999) and ask to be transferred to the Colorado State Motor Carriers office in Golden, Colorado.

If you are stopped at a "spot check" or temporary port within Greeley city limits and you are in violation, expect a lecture and possible vehicle impoundment.

Effective January 1, 2005, Greeley Forestry and other City divisions are advised not to conduct business with contractors who are not in compliance. This requirement is very similar to our requirement for insurance, bond and workers' compensation insurance.

COMMUINCATION STRATEGY

After the adoption of the Campus Tree Care Plan and Policies by the Advisory Committee and the University of Northern Colorado Administration approval, media release will be arranged with the University Media Relations Department. Through this arrangement, announcements of the university's participation in the Tree Campus USA shall be placed in the local newspapers,
The student newspaper *"The Mirror"*, as well as other electronic distribution system and newsletters.

Major web-sites will also announce Tree Campus USA which will include the Facilities Management Home Page as well as the University of Northern Colorado Homepage.

Tree Campus USA initiatives will be an integral part in the annual Earth Day and Arbor Day University planning schedule as well as The Sustainability Council plans.

A News feature is planned for our spring/summer edition of Northern Vision magazine. It will include photos of the trees and an interview with Patrick McDonald. Writer, Dan England, will be in touch with any follow-up questions between now and April. Also, please keep us posted on the Tree Campus USA process, so we publicize the effort/decision when it's appropriate.

University contacts for Media Relations:

nate.haas@unco.edu

gary.dutmers@unco.edu

UNIVERSITY of NORTHERN COLORADO

STANDARD 3: DEDICATED ANNUAL EXPENDITURES FOR THE CAMPUS TREE CARE POGRAM

GRAND TOTAL: $410,354.00

TREE CAMPUS USA

Annual Tree Care Program Expenditures
2012-13

Tree Planting and Initial Care

Tree Planting	4500.00
Equipment (bobcat, 36in auger)	1011.00
Materials (mulch, staking)	300.00
	5791.00

Campus Tree Management

Fertilization and herbicides*****	8175.00
Pesticides	6435.00
Pruning	80,488.00
Tree removals	6690.00
Irrigation Improvements*****	4280.00
	201,166.00

**These costs reflect 15% of the total expenses that would apply to tree care*

Staffing (14 FTE)**	133,333.00

***These costs reflect 15% of the total salary Budget that would apply to tree care*

Equipment	
2000 Vermeer BC935 Auto Feed chipper	24,500.00
Chainsaws, 4ea	1050.00
Chainsaw, extension Maruyama	700.00
Polesaw, Stihl HT75	728.00
Pruning tolls (saws, loppers, hand pruners)	1170.00
Vehicles, fuel average	16,867.00
	45,015.00

Yardwaste Recycling Costs (average)	1235.00

Total Campus Tree Management Expenses	**386,540.00**

Volunteers

Arbor Day /Earth Day Activities	50 volunteers / 1.5 hrs. @$18/hr.	1,350.00
Adopt A Spot Program	24 volunteers 2hr /wk, 26weeks @$18/hr	22,464.00
		23,814.00

TOTAL TREE CARE PROGRAM EXPENDITURES	**$410,354.00**

Annual Tree Care Program Expenditures
2012-13

Tree Care Statistics

2012 Tree Inventory: 3,695 Trees on University Properties.

2012 Tree Population Estimated value: $19,605,400.00

2012 Average Tree value: $5306.00

2012 Trees Planted: 45

2011-12 Trees Pruned: 479

2011-12 Trees Removed: 18

2012 Percentage Canopy: Unknown

2012 Volunteer Hours: 1323

2012 Student Enrollment: 12,497

Per Student cost for Tree Care: approximately $33.00 per student

Per Tree Cost: $111.00 per year average.

UNIVERSITY of NORTHERN COLORADO

STANDARD 4: ARBOR DAY OBSERVANCE

TREE CAMPUS USA

Arbor Day/ Earth Day Plantings by "Bears pay it forward"

April 21st, 2012

Students attending the University of Colorado form together to plant a "Golden Rain," tree outside the recreation center on campus.

This project was assisted by students Alexis Eliades, Zach Davis, Ann Schleinkofer, Courtney Slade, Tyrell Allen, Alex Sherwin, Rachelle Cole, Alyssa Allen and Breanna Kobetitsich.

There was also a "Red Oak," tree planted on at the Michener library just North of where this planting took place the same day. Show below is the same team planting on the south side of the library.

Memorial Tree Planting in Honor of Heat Plant Manager

Douglas Burman

This tree was planted in memory of beloved father, husband and son, Douglas Burman. The planting took place on April 20th, 2012 by family, friends and faculty of the University of Northern Colorado. Shown above is Douglas' grandson who is shoveling dirt around the "Burr Oak." This tree will always be a reminder at the heat plant of the great worker and friend, Douglas Burman.

Earth Day Planting

April 22nd, 2012

Planting done by:

Honors, Scholars and Leadership Department

This "Prairie Fire," Crabapple tree was donated by Happy Life Gardens out of Evans, Colorado and planted at the Michener Library on the UNC campus. Shown below are the volunteers who helped plant this tree in honor of Earth day.

Shown above (in no order) are Scott Treas, Mike Kimball, Michael Frank, Wanda Frank, Jim Frank, Haley Ballenger, Emily Ballenger, Robin Ballenger, Scott Ballenger and Taylor Frank.

National Arbor Day Planting

Friday April 27th, 2012

Tree Planted by the Japanese Culture and Anime Club at UNC

The tree chosen to be planted was a "Japanese Weeping Cherry," (Prunus Subhurtilla "Pendula"). This tree was donated by Lowes of Greeley. Members of the club provided the name for this tree: "*Haruko"* a female Japanese name meaning, "Child of Spring." All club members were excited to plant such a beautiful tree in honor of Arbor Day.

Shown above are the members of the club (in no order) consisting of Megan Szeto, Lilly Herreria *(event organizer),*Diego Alcala, Shannon Bortfeldt, David Atkins, Rachel Kendrick, Marika Lynch, Marissa Bakes, Paul Akiyaama, Maria Zalessky, David Severson, Tyler Ahlem and Mona Kim.

Overall, we had 50 students, staff and faculty volunteers participate in the 2012 April Arbor Day festivities on the University of Northern Colorado Campus.

UNIVERSITY of NORTHERN COLORADO

STANDARD 5: SERVICE LEARNING PROJECT

TREE CAMPUS USA

STANDARD 5: SERVICE LEARNING PROJECT

Service Learning Projects corresponded with each Arbor Day Tree Planting Ceremony

Date(s) April, 21, 22, 27, 2012

Summary

The value and importance of trees were shared at each Planting Ceremony

The role of trees in providing energy savings and the net cooling effect they have. Residential properties can realize a 12% savings in 15 years or an overall reduction in energy use of 30% which is equivalent to $4 billion nationwide.

Also shared the impact of trees on property values and the overall landscape value of a home. Trees can add up to an additional $10,000 to a home's value with an average value of $525 per tree.

Trees provide a vital stimulus for economic development providing such value in attracting new business and growth with pleasant shade and aesthetic surroundings. Parkways, Parks, etc.

Trees are also environmental assets by fostering water quality by reducing erosion and water runt-off. Trees also reduce Carbon dioxide and produce oxygen and therefore help in reducing global warming.

For our campus trees provide homes for our squirrels, hawks, bats and many of our songbirds and trees do provide places for passive recreation for our community.

Trees are a renewable resource, providing lumber for homes, firewood, and mulch and compost for gardening and landscape improvement.

UNIVERSITY of NORTHERN COLORADO

APPENDIX

Mission / Vision Statement

Recommended Trees

Prohibitive Trees

Tree Risk Assessment

Natural Disaster Checklist

Landscape Journal

Memorial Tree List

Definitions

Tree Inventory Reports

Tree Inventory Summary

TREE CAMPUS USA

UNIVERSITY of NORTHERN COLORADO

FACILITIES MANAGEMENT

LANDSCAPING & GROUNDS

MISSION / VISION STATEMENT

TREE CAMPUS USA

MISSION STATEMENT FOR LANDSCAPING & TRANSPORTATION SERVICES

The Vision of the Landscaping & Grounds Department is to maintain a diverse and healthy landscape on the Greeley campus, to provide quality turf for athletic programs, and the campus, and to provide safe, economical, and appropriate transportation to the University of Northern Colorado faculty and staff in order for them to perform their official duties. Our Mission is characterized by the following:

Aesthetic and Passive Recreation

We strive to provide a quality campus setting that can be enjoyed by all and it is our desire that visitors to our campus will experience the beauty of our campus, especially our Xeric Demonstration Garden, which is part of our mission to encourage and promote water conservation. We currently maintain and promote our Xeric Garden and we foster its use for education and enjoyment. We also strive to educate the UNC community in the proper care of our trees and to discourage littering, vandalism and damage to our campus landscape.

Safety

It is also our mission to provide a campus environment that does not pose a risk to the UNC community and we strive to remedy and/or remove any potential hazards on the campus grounds. We strive to maintain our sports turf fields in a manner that promotes good and safe playing conditions.

Plant Health and Preservation

We strive for a diverse population of trees and ornamental plantings in order to assist in educating the UNC community of proper plant selection and arrangement in the landscape. A diverse landscape promotes a healthy campus by discouraging insect infestations disease. Plant diversity enhances our mission of Integrated Pest Management. It is also our mission to promote plant health by performing proper maintenance practices that include proper watering, fertilization, pesticide application and pruning and to serve as the standard for professional horticultural practices for the Greeley community at large. It is our goal to preserve our campus heritage by encouraging tree protection prior to and during construction.

Water Conservation

UNC is located in a semi-arid climate, only receiving annual precipitation of 12 inches. This region has and will continue to experience multi-year droughts, and it is our responsibility to develop long term strategies that will enhance water conservation in our local and perhaps State-wide water conservation efforts. These strategies must include water budgeting, and incorporating innovative irrigation technologies, increased use of xeric landscapes on the campus and education on water conservation in the landscape.

Transportation Services

Transportation Services strives to acquire the type and number of vehicles necessary and appropriate to meet the needs of the faculty and staff to perform their duties. We provide rental service vehicles to qualified departments on either short or long term arrangements, whichever is the most appropriate and economical. We manage our vehicle fleet in a manner that insures the lowest possible operational costs while maintaining consistently high mechanical reliability. It is our mission to organize a staff and maintain a facility which provides superior service, repair, reservations, and administrative support to our University costumers. It is our mission to establish policies and procedures that reflect the best way to operate the fleet with the customer in mind. We are a customer-focused organization.

UNIVERSITY of NORTHERN COLORADO

FACILITIES MANAGEMENT

LANDSCAPING & GROUNDS

RECOMMENDED TREES

TREE CAMPUS USA

GREELEY FORESTRY PROGRAM – TREES FOR GREELEY

**** indicates drought-tolerant trees**

TREE CITY USA

SHADE TREES

Canadian Red Cherry (30'x20')	Broad oval shape with burgundy-red leaf color in summer, white flowers in May and small purple fruit.
Golden Raintree ** (25'x20')	Broad rounded form with showy yellow fragrant flowers covering tree in mid-summer, needs protection.
Hackberry ** (50'x40')	Upright branches arch to create a high canopy of rounded habit. Blocky bark is light gray with knobby ridges.
Catalpa ** (50'x40')	A fast-growing drought-tolerant tree with large heart-shaped leaves. Large tubular white flowers in late June. Fruit is a long brown pod.
Mayday Tree (30'x20')	Rounded form with fragrant white flowers and black fruit, fall color ranges from yellow to bronze-red, good for birds.
Elms ** (50'x30')	These fast-growing vase-shaped trees are chosen for resistance to Dutch Elm Disease. Select varieties include Triumph, Accolade, Discovery, Brandon, Regal, and Prospector.
Swamp White Oak (50'x40')	Broad rounded form with oblong oval leaves, clay soil can be a problem for this tree.
Ohio Buckeye (35'x20')	Globe-shaped tree with yellow to orange to reddish-brown fall color.
Bur Oak ** (65'x50')	Broad rounded form with furrowed bark, flossy lobed leaves turning yellow to red in fall.
English Oak ** (50'x40')	Rounded pyramidal form with dark gray deep furrowed bark, clay soil can be a problem for this tree.
Imperial Honeylocust (40'x30')	Symmetrical compact variety with gold fall foliage, works better in smaller areas than other Honeylocusts.
Shademaster Honeylocust ** (50'x40')	Broad oval tree with dense ascending branches, fine yellow fall color.
Skyline Honeylocust (50'x40')	Distinct upright pyramidal form with uniform branching and dark green foliage.
Greenspire Linden (40'x30')	Dense formal shape with very fragrant flowers in June to July, dark green leaves with yellow fall color.
Kentucky Coffeetree ** (50'x40')	Open spreading crown with fragrant white flowers and mahogany-colored seed pods.
Redmond Linden (45'x40')	Pyramidal form with large dark green leaves and fragrant yellow flower cluster in June to July.

ORNAMENTAL TREES

Toba Hawthorn (15'x15')	Broad rounded shape with white flowers in late May, some problems with Hawthorn Rust.
Amur Chokecherry (25'x20')	Rounded form with fragrant white flowers and small black fruit, good for birds but does not perform well in very heavy clay soil.
Russian Hawthorn ** (20'x15')	Small attractive, broad-headed tree, small thorns and deep lobed leaves, gnarled branching form.
Washington Hawthorn ** (20'x15')	Rounded form with clusters of white flowers in May, scarlet-orange fall color, abundant thorns.
Cockspur Hawthorn ** (20'x15')	Sharp red thorns with white flowers in early summer, good wildlife tree.
Thornless Hawthorn ** (25'x20')	Thornless variety with good resistance to fireblight, clusters of white flowers in late May.
Downy Hawthorn ** (25'x25')	2" long thorns with showy white flowers in May, rust may be a problem.
Japanese Tree Lilac ** (20'x20')	Prolific bearer of creamy white fragrant flowers in mid-June.
Coralburst Crabapple (15'x15')	Ruby-red flower buds open to semi-double pink flowers, good fireblight resistance.
Dolgo Crabapple (30'x30')	Large tart fruit makes good jelly, white flowers, good resistance to fireblight.
Thunderchild Crabapple (20'x15')	Dark purple leaves adorn upright, spreading branches. It has pink flowers in spring before foliage emerges; produces dark, purple-red ½" fruit.
Radiant Crabapple (25'x20')	Slender branches form a dense, rounded canopy. Deep red buds open to single flowers in spring. A multitude of fruits mature in late summer. Leaves emerge purplish-red becoming bronze-green through the fall.
Cleveland Select Pear (30'x20')	Strong, upright branches create a narrow, pyramidal tree with uniform outline. Flat-topped clusters of single, white blooms open in spring. Wide, egg-shaped leaves are glassy dark green changing to maroon during autumn. Fruitless.

EVERGREEN TREES

Colorado Blue Spruce (60'x30')	Colorado State Tree, symmetrical, pyramidal native, requires regular water.
Pinyon Pine ** (20'x15')	Slow-growing, bushy pine, edible seeds in cones, do not over-water.
Bristlecone Pine ** (20'x20')	Slow-growing native, very drought-tolerant once established.
Concolor Fir, White Fir (50'x30')	Conical evergreen with long soft bluish-green needles, offers a good change from Blue Spruce.
Austrian Pine ** (50'x40')	Dense pine with uniform crown, becoming open with age, can become chlorotic in heavy soils.
Rocky Mountain Juniper ** (30'x15')	Pyramidal typically, but can become a mounding shrub with multiple stems, tolerates many varied conditions.
Ponderosa Pine ** (60'x30')	Large open-growing pine with long yellow-green needles, very drought tolerant.
Scots Pine ** (60'x30')	Reddish-orange bark with well-branched pyramidal shape, blue-green needles and gray to reddish-brown cones.

Feel free to contact us with your questions, comments, or concerns at (970) 339-2405

Landscape Development Concept Tree Planting Table

	1	2	3	4	5	6	7	8	9
Acer x freemanii ‘Autumn Blaze’ Autumn Blaze Maple	○ ●			○ ●	○ ●		○ ●		
Acer ginnnala ‘Flame’ Amur Maple	○ ●							○ ●	○ ●
Acer rubrum ‘Red Sunset’ Red Sunset Maple					○ ●		○ ●		
Acer saccharum ‘Legacy’ Legacy Sugar Maple	○ ●			○ ●				○ ●	○ ●
Amelanchier Canadensis Shadblow Serviceberry	○ ●							○ ●	○ ●
Amelanchier graniflora ‘Autumn Brilliant’ Autumn Brilliant Serviceberry				○ ●					○ ●
Betula platyphylla ‘Whitespire’ Asian White Birch							○ ●		○ ●
Carpinus caroliniana American Hornbeam							○ ●		○ ●
Catalpa speciosa Western Catalpa						○ ●			○ ●
Celtis occidentalis Western Hackberry	○ ●							○ ●	○ ●
Cercis Canadensis Eastern Redbud	○ ●							○ ●	○ ●
Crataegus crus-galli ‘Inermis’ Thornless Cockspur Hawthorn	○ ●							○ ●	
Crataegus phaenopyrum Washington Hawthorn			○ ●						
Crataegus succulenta Colorado Hawthorn			○ ●						○ ●
Fraxinus Americana ‘Skyline’ Skyline Ash			○ ●			○ ●			
Fraxinus mandshurica ‘Mancana’ Mancana Ash					○ ●	○ ●			
Fraxinus pennsylvanica ‘Summit’ Summit Ash					○ ●	○ ●			
Gleditsia triacanthos ‘Imperial’ Imperial Honeylocust						○ ●	○ ●		○ ●
Gleditsia triacanthos ‘Skyline’ Skyline Honeylocust							○ ●		○ ●
Gleditsia triacanthos inermis ‘Sunburst’ Sunburst Honeylocust							○ ●		○ ●
Koelreuteria paniculata Goldenrain Tree	○ ●						○ ●	○ ●	○ ●
Malus ‘Centurion’ Centurion Crabapple							○ ●	○ ●	○ ●

UNIVERSITY of NORTHERN COLORADO

FACILITIES MANAGEMENT

LANDSCAPING & GROUNDS

PROHIBITED TREES

TREE CAMPUS USA

PROHIBITED TREES

Although the university campus aspires to achieve arboretum status, and that includes the planting of native trees, we do not encourage the planting of many undesirable species. The university does have a collection of Cottonwoods, White Poplars, Russian olives, and many Silver Maples. Many of these *"Undesirables"* were planted in the early 1900's and are now our most prized old-growth trees. In the future, the university will continue to maintain our native tree collection and plant token specimen trees for educational purposes.

Tree Genus: Populus All species and cultivars of this genus are not desirable trees for the university campus. All poplars are soft-wooded, short-lived and prone to storm damage, and are aggravated by their susceptibility to serious stem and trunk canker diseases. This genus is notorious for shallow root systems that produce abundant root sprouts resulting in lawn maintenance problems. This genus not to be included into new designs or replacement schedules.

Tree Genus: Salix All species and cultivars of Willows are strongly discouraged. They are typically a wet soil species that require abundant water to survive. Willows again are typically weak-wooded, short lived and produced abundant litter in form of broken twigs and branches. This includes the hybrid, Austree (*Salix alba X matsudana*).

Silver Maple (Acer Saccharinum) This is species is fast-growing, is also soft-wooded and prone to storm damage. It also has shallow root systems which cause lawn maintenance problems.

Siberian Elm (Ulmus Pumila) Although highly resistant to Dutch elm disease, it is fast growing and soft wooded, and also very prone to storm damage. The species is also prone to insects, including scale and various leaf beetle infestations. It produces mass amounts of seed that result in many weed seedlings that invade the landscape.

Salt Cedar (Tamarisk) This species is prohibited in the state of Colorado. It is considered an invasive species that will eventually displace Colorado native vegetation.

Russian Olive (Eleagnus Angustifolia) This species is also considered invasive and is no longer planted in the state of Colorado. As existing trees on campus fail or die, they will not be replaced.

Ginkgo Biloba (Female) Female trees of the species produce fruit what constitute serious litter problems and give off an unpleasant odor as they decay. Male cultivars are currently available that make excellent use in the landscape.

UNIVERSITY of NORTHERN COLORADO

FACILITIES MANAGEMENT

LANDSCAPING & GROUNDS

TREE RISK ASSESSEMENT

TREE CAMPUS USA

UNIVERSITY OF NORTHERN COLORADO
FACILITY OPERATIONS / LANDSCAPING & GROUNDS
HAZARDOUS TREE APPRAISAL

Date: *July 09, 2009*

Species: ***2ea** Pinus sylvestris (Scotch Pine)* Age/Height: *Approx 25 ft height / 45 yrs*

Diameter: *15 inches dbh* Location: *Frasier Hall, east side*

Code No.: _____

RATINGS				TREE HAZARD FACTORS	COMMENTS
1	2	3	4	*TREE CROWN CONDITION*	*COMMENTS*
X				Die-back Location	Top canopy
X				Die-back Quantity	65%
				Broken Top/Limbs	
				Narrow Forks	
				Nesting Holes	
				Fungus Growth	
X				Disease/Insect	
				Other	
1	2	3	4	*TRUNK CONDITION*	*COMMENTS*
				Bark Die-back Location	
				Bark Die-back Quantity	
				Open Wounds	
				Cavities	
				Fungus - Growth	

X				Disease/Insect	Diplodia Tip Blight
				Other	
1	2	3	4	*ROOT-ZONE CONDITIONS*	*COMMENTS*
				Disease/Insects	
				Pitch	
				Wet-spots - Location	
				Fungus - Growth	
				Injury - Exposed	
				Girding Roots	
				Graft Incompatibility	
				Other	

1	2	3	4	*Final Tree Rating and Recommendations*
X				Diplodia tip blight damage is severe and Trees will not recover from this infection.
				Highly moist conditions are needed for infection. Large numbers of spores are dispersed only during rainy periods and high relative humidities are required for spores to germinate and for germ tubes to grow and penetrate needles and shoots. If there is little rain when new shoots are highly susceptible infection levels usually are very low. Once the fungus penetrates needles, tissues are rapidly destroyed, resulting in stunted shoots and needles.

SIGNATURE APPROVALS FOR REMOVAL

Manager of Landscaping & Grounds

_____ _____

DATE

Assistant Vice President of Facilities Management

_____ _____

DATE

RATINGS DEFINITIONS

1. High hazard potential. Condition beyond repair or preventative measures or treatments. Tree must be removed as soon as possible.
2. Potential for hazard, but condition can be resolved with treatments, repairs and/or other measures. See recommendations given.
3. Some indications of decline, but not a hazard yet. Will watch and monitor its condition. See recommendations regarding treatments and other measures to reduce or eliminate state of decline.
4. Tree healthy and vigorous. No outward indications of decline or potential hazards present.

UNIVERSITY of NORTHERN COLORADO

FACILITIES MANAGEMENT

LANDSCAPING & GROUNDS

NATURAL DISASTER CHECKLIST

TREE CAMPUS USA

NATURAL DISASTER PLANNING
FOR THE CAMPUS FOREST

AT THE

UNIVERSITY OF NORTHERN COLORADO

Introduction

Natural Disasters include floods, tornadoes, and related high-velocity winds, as well as ice storms. Preparing for these natural disasters should involve the cooperative effort of a wide array of agencies, private enterprise and *the University of Northern Colorado Facilities* services. We must be prepared for the disasters that will come when we least expect it. They won't wait for us to get ready.

So, how do we get ready? The following is a *Preparedness Checklist* that was compiled after attending the *"Storms over the Urban Forest"* Conference (May 18-20,1998) at the Arbor Day Foundation in Nebraska City, Nebraska:

1. **Establish a Hazard Tree Policy**
2. **This policy will establish legal ownership of the Trees, especially when dealing with adjacent City trees. Having a policy in place will reduce the University's liability. It indicates a demonstrated *"Reasonable Care; a good faith effort"*. Such a policy will spread the risk to the highest levels. FEMA favors such a policy.**

2. **Tree inventory Software**
   - **Maintenance records**
   - **Tree History**
   - **Damage Survey Estimates Capability**
3. **Prominent Urban Forestry Division or Program**
   - **Adequate Staffing***
   - **Adequate Capital Equipment & Supplies**
     ***See Campus Forester Proposal**
   - **Proper Tree Selection Evident**
   - **Proper Tree Care Evident**
   - **Procedures in place that will reduce risk, tree losses and damage**
4. **Establish Tree Protection Policy**
   - **Approval**
   - **Education/training of University Staff**
   - **Pre-Planning Construction Strategies in place**
   - **Enforcement of Policy**
5. **Tree Hazard Program**

- **Criteria established**
- **Evaluation Forms**
- **Inspection Schedules**

6. **<u>Establish Pre-Existing Contracts For Emergencies</u>**

    - **Guarantee priorities with penalty clauses**
    - **Guarantee prices (pre-disaster/locked-in)**
    - **Bonded; insured; licensed**
    - **Identify Vendors**
        - **Line clearance Arborists**
        - **Commercial Tree Services**
        - **Stump Removal Services**
        - **Certified Arborists Preferred**
    - **Identify Large Equipment Contractors/operators**
        - **Local; regional**
    - **Accounting & Documentation Requirements**
        - **University Audit Standards**
        - **State Audit Standards**
    - **Federal/FEMA Audit Standards and Requirements**

7. **<u>Establish Mutual Aid Agreements</u>**

    - **Weld County**
    - **Adjacent Counties**
    - **City of Greeley**
    - **Public Utilities**
    - **MDOT**
    - **Regional Campuses?**
    - **Other Universities or Community Colleges**

8. **<u>Establish Procurement Procedures</u>**

    - **Designate Who Will be Responsible**
    - **Forecasting Supply**
        - **Difficult to acquire items**
        - **chainsaws, generators**
        - **brush chippers**
        - **Safety Supplies/PPE**
    - **Stocking Levels of Materials**
    - **Establish Vendor File for Emergencies**
        - **Establish Agreemeents (Pre-Disaster)**
        - **Equipment Repair**
        - **Chainsaw Repair & Parts**
        - **Debris Hauling Services**
    - **Establish Resource-Sharing Initiatives**
        - **City of Greeley**
        - **Weld County**

- **Public Utility Companies**
- **Line Clearance Companies**
- **Colorado Forestry & Natural Resources**
- **State Universities**
- **Regional Campuses**

9. <u>Establish Emergency Procedures</u>

- **Define *"Critical Personnel".* So that everyone understands their role during an emergency.**
- **Establish Call-out Procedures**
- **Establish Emergency Priorities**
- **Life-Threatening**
- **Communications**
- **Power Restoration**
- **Accessibility**
- **Establish Command Center**
  - **Establish Chain-of -Command**
  - **Who is in Charge?**
  - **Communication Links**
  - **State & Federal Interface**
- **Evacuation Routing**
- **Emergency Vehicle Routing**
- **Damage Assessment**
- **Establish Documentation Procedures**
  - **FEMA Forms**
  - **Maintain Journal or work logs**
  - **Photos; videos**
- **Utility/Power Companies Interface**
- **Mobilization of Contractual Assistance**
- **Initiate Mutual Aid Agreements**

10. <u>Establish Emergency Documentation Procedures</u>

- **Tracking & Recovery**
  - **Error Correction Measures *(The ways and means to correct errors in real time, as opposed to post disaster outcomes)***
- **Establish Codes**
  - **Locations**
  - **Materials/supplies**
- **Pay rates**
- **Vehicles**
  - **Chainsaws**
  - **Equipment**
  - **Codes for Work Type**
  - **Hazard Abatement**
  - **Tree Removals**

- **Debris Hauling**
- **Street Clearance**
- **Debris Management at Disposal Site**
- **Develop EXCEL Format for Emergency Documentation**

11. **Determine Debris Disposal / Utilization Measures**

- **Determine Responsible Person**
- **Determine Storage Sites**
  - **Accessibility to Large Equipment**
  - **Heavy Traffic**
  - **Permits?**
- **Establish Debris Processing Contracts (Tub Grinding Operators)**
  - **Pre-disaster quote prices**
  - **Bonded, Certified, Insured**
- **Alternative Disposal/Utilization Methods**
  - **Burning**
    - **Fire & Safety**
    - **Permits**
    - **Environmental and Public Concerns**
    - **Firewood**
    - **Sawlogs**
    - **Contact Sawmills**
    - **Contact Colorado Forestry**
    - **Contact US Forest Service**

12. **Establish Disaster / Email Address File / NET Connections**

- **FEMA**
- **Colorado Tree Coalition**
- **IDNR/ State Forester**
- **Colorado Environmental Management**
- **EHS**
- **Governor of CO (Disaster declaration)**
- **University Relations**
- **UNC News Service**
- **Arbor Day Foundation**
- **Storms Conference Roster**
- **"TREELINK"**
- **Mirror, Greeley Tribune**
- **See Listing provided**

13. **Response & Recovery Measures**

- **Mobilize Command Center**
- **Review Documentation Procedures with Emergency Personnel**
  - **Prior to Clean-up efforts**
  - **Forms for each assigned Vehicle (clipboards)**

- **Follow-up on thoroughness of data at end of each day**
- **Utilize code system for location & equipment**
- **Assign Record-keeper for each vehicle**
- **Establish Communication links**
- **Families of Emergency Personnel**
- **Home Page Disaster Update to inform UNC Community**
- **Recovery Efforts**
- **Funding Alternatives**
    - **FEMA**
    - **UNC Foundation**
    - **State Grants**
    - **Bank Trusts / Grants**
- **Local Foundations**
    - **Service Clubs**
    - **State Legislature**
    - **Private Gifts**
    - **Class Gifts**
- **Disaster Assistance Programs (Federal)**

- **Planting New Trees**
- **Facilities Planning / Landscape Architect**
- **Impact on Landscape Master plan**
- **Tree Selection**

14. <u>Follow-Up / Critique</u>

- **Infrastructure impacts / Changes**
- **Level of Destruction**
- **Overall Effectiveness**
    - **Initial Assessment**
    - **Initial Response**
    - **Documentation**
    - **Federal / State Interface issues**
    - **Audits . Record keeping**

- ***HOW PREPARED WERE WE? AND WHAT ARE WE GOING TO DO BETTER THE NEXT TIME WE HAVE TO RESPOND?***

UNIVERSITY of NORTHERN COLORADO

FACILITIES MANAGEMENT

LANDSCAPING & GROUNDS

LANDSCAPE JOURNAL

TREE CAMPUS USA

UNC LANDSACPE JOURNAL

Year		Description
1870		Union Colony established (Horace Greeley, Nathan Meeker)
1889-90		Colorado State Teacher's College (Normal) founded. 40 acres required and $15,000 for building construction per legislative bill
1891	**Z.X Snyder, President**	Dr. Zachariah Xenophon Snyder Becomes President Snyder begins first landscape efforts on the campus. He hires Hans Hockbaum from Cornell College as Landscape Architect. **First Project** : Library and its respective **Fountain landscape**
1895		First Tree Planted on the Campus was an American Elm. A gift from the graduating class. *(Albert Carter, "Forty Years of CSTC")* UNC Campus becomes an Arboretum
1900		Landscape Milestone: Over 400 different species. Blue Spruce, locusts. Plum, Russian Olive, lindens, many fragrant trees. Current State Champion trees: Silver Maple at Presidents' Row.
1915		Amur Cork and Pecan trees were planted during this era.
		John Crabbe, President
		George Willard Frasier, President
1915-1942		Richard Dempsey employed at UNC, and eventually became Superintendent of Building and Grounds. Only Buildings at time of employment were Kepner Hall and the President's Home (Visitor Center). Mr. Dempsey played a significant role in the initial campus landscape development/tree planting.
1935	Name Change to Colorado State College of Education	
		Memorial Plaque is located at the Garden honors Mr. Dempsey. The Garden Theatre was his last Facility Project prior to his departure from UNC.

James Michener arrives (late 30's)	
1940	***Plaque: Garden Theater erected in 1940 by RG Dempsey, Superintendent of Buildings and Grounds (1907-1942). Fw Ireland, JR, College Architect.***
	Mr. Dempsey is responsible for the planting of the first Ginkgo tree (Crabbe Hall), as well as other future State Champion trees (1988).
1942-48	William R. Ross Era (Ross Hall Fame)
1950-80	W. Ross was a Professor of Biology, but also served as the Superintendent of Buildings & Grounds. Harold Browning and Robert Brown Era
1957	Petrikin Farm Purchased (West Campus expansion begins) Post War Enrollment Increase (GI Bill)
1964	**Darrell Holmes President**
1976	**Dick Bond, President**
1970	Name Change to University of Northern Colorado
1976	April, Memorial Tree honoring DR Darrell Homes, 5th President (1964-76) located North of Michener Library with Plaque on boulder.

Colorado Tree Coalition Campus Tree Survey/Inventory

1987-88	1269	Trees on campus		Tree inventory of Campus tree / Tree Count	

State Champion Designations on UNC Campus

Species		DBH (in)	Circum	Ht		Location
Ginkgo biloba		6.5	20.4	27		Crabbe hall, south
Kentucky Coffee-Tree		22.9	72	70		NW frasier hall
Silver Maple		72.5	228	69		S lawn Faculty apts
Japanese Pagoda		25.8	81	43		Nw corner Fac apts
Pecan		29	91.5	96		S lawn Faculty apts
Tree of Heaven		14.4	45.2	37		Gunter , S lawn
Amur Cork Tree		30.5	94	43		Gray hall, north

Year	Previous	Removed	Planted	New	New Total	Description
2002	1269			12	1282	Z lot New landscape
2003				1		Arbor Day Tree:

						Black Pine, Garden
						theater
2003	1282	-14	**39**	283	1590	CC Residence halls,
						Ross, 11th Ave
2004	1590	-57	**108**	26	1667	President's Row
						Renovation
2005	1667	-13	**34**	188	1876	Q -lot, A-south lot,
						Holmes,Cancer rehab
2006	1876		**10**		1886	
2006	1886		**1**		1887	Arbor Day Tree:
						Pinus sylvesris
						"French Blue"
						UNC
						Young Democrats
						Club
	1887					Contact: Casandra
						Sale 4.20.06
2006	1887		**1**		1888	Memorial Tree
						Planted for the School
						of Nursing by
						Graduating Students.
						Location: SE Corner of
						Gunter Hall
						Species: Syringa
						Reticulata "Ivory Silk"

Year	Previous	Removed	Planted	New	New Total	Description
2006						May 10: 15 Rocky Mnt
						Blue Columbines
						Donated by Bruce
						Broderius; Gift Vale:
						187.5; Planted at Visitor's
						Center and patio area
2006	1888	-9			1879	Fatalities at new
						landscape: Holmes, A-

						South and 11th Ave
						Pedestrian Project
2006	1879	-2			1877	Removed 2 Greenash at
						M Lot
2006	1877	-1			1876	Honeylocust due to
						construction near
						Guggenheim
2006	1876		12		1888	Spring/Summer Planting
						and
						Replacements
2006	1888	-2			1886	Tree Failures due to
						storm winds on Sept 14
2006	1886		24		1910	Fall Planting and
						Replacements
2006	1910	-2			1908	Oct 26: 200 Daffodil bulbs
						donated by Bruce
						Broderius; Gift Vale:
						$400, J - Lot Substation
						2 Blue Spruce
						Removed

Year	Previous	Removed	Planted	New	New Total	
2007	1908	-15	**73**		1966	
2007	1966			139	2105	

Description

Tree salvage project at McCowen Hall; J-Lot Island Turf Restoration; Tunnel Landscape/Iceplant; 11th Ave Parkway Tree replacement and power line removals; Memorial garden at Carter/Sandy Davenport
New Landscapes: Jackson Lot: 34, A-Sout Lot: 57 T Lot: 37, Nottingham East: 11 Total of 139

Year	Previous	Removed	Planted	New	New Total	
2008	2105	302	**3**	**73**	2483	

Description

April 22, Earth Day Blue Spruce, SE Lawn of Garden Theatre
American Chemistry Society
Contacts: Matthew Langford, Brittany Writer
Thunderchild Crabapple: E. Lawn of Garden Theatre
Environmental Studies Club

Contacts: Adam Davidson, Chris Stelzer, Linda Langum, Chandra Valenza. Tree donated by Lowes. Burr Oak: North lawn of University Center Center of Honor, Scholars, and Leadership & Schulze Interdisciplinary Studies Contacts: Debra Holman, Michael Kimball, Katie Goulet Tree donated by Eaton Grove Nursery 72 Trees planted for WCHousing South Phase Landscape						
Totals			**305**	**722**	**31854**	

Year	**Previous**	**Removed**	**Planted**	**New**	**New Total**	
2009	Total	Removed	Planted	New		
Description						
April 24, 2009 Earth Day/Arbor Day Tree Planting						
Description						
Burr Oak, North of Gray Hall. American Chemistry Society Tree provided by Fossil Creek Nursery, Ft Collins Contact: Kayla Horst Planted in memory of Chemistry student Jay Walker who died unexpectly. 74 Trees planted at WCHousing North Phase Landscape 45 Replacement or new trees						
Totals	**2066**	**-5**	**46**	**74**	**2181**	

Year	**Previos**	**Removed**	**Planted**	**New**	**New Total**	
2010	2181	-34	64	68	2279	
Description						
April 28, 2010 Memorial Tree planted in honor of Former Grounds Employee Dan Raisley. Burr oak (2.25 in Cal) planted at the West side of Carter Hall, replacing an American Elm. Ten Acer Rubrum Autumn Blaxe removed for Landscape Renovation at the east side of Recreation Center. 15 additional trees planted with the new landscape. Butler Hancock Renovation: 3 trees removed, 34 planted Campus Gateway sign at 16th St and 10th Ave. 19 new trees; 63 replacment trees						
Totals			**415**			

Year	**Previous**	**Removed**	**Planted**	**New**	**New Total**	
2011	2279	-12	55	1	2323	
Description						
Snow storm of Oct 26 destroyed 5 trees. Many trees damaged, resulting in 1740 cubic yards of debris and $41,070 of labor (Contractor and Grounds combined) in clean-up costs. Adopt-A- Spot at Gray Hall provded one Northern Catalpa Enrollment Management: Jennifer Stokes, Jackie Auker and Tammy Etl						

Year	**Total**	**Removed**	**Planted**	**New**	**New Total**	
2012	2323			2	2325	

Description						
Arbor Day/Earth Day April 21, 2012 by "Bears Pay it Forward"						
Red Oak at South side of Michener Library; Golden Rain Tree at						
Rec Center Courtyard						
Student Lovers: Alexis Eliades, Zach Davis, Ann Schleinkofer						
Courtney Slade, Tyrell Allen, Alex Sherwin, Rachelle Cole, Alyssa						
Allen, and Breanna Kobetitsich						
	2325			1	2326	
Description						
Memorial Tree honoring Heating Plant Manager Douglas Burman Planted on April 20, 2012 by family, UNC employees, and friends. Burr Oak planted on East lawn of the Heat Plant on Colorado Arbor Day						
	2326			1	2327	
Description						
Earth Day, April 22, 2012 Planting by Honors, Scholars, and Leadership Department, Scott Treas Prairie Fire Crabapple donated by Happy Life Gardens Tree planted on West lawn of Michener Library by the following: Scott Treas, Mike Kimball, Micheal Frank, Wanda Frank, Jim Frank, Haley Ballenger, Emily Ballenger, Robin Ballenger, Scott Ballenger, and Taylor Frank						
	2327			1	2328	
Description						
National Arbor Day, Friday, April 27, 2012 Tree planting by the Japanese Cultre & Anime Club University Center N. lawn Japanese Weeping Cherry (Prunus subhurtilla "Pendula") Donated by Lowes; Club members named this tree Haruka, meaning "Child of Spring" Tree planted by: Megan Szeto, Lilly Herreria (organizer of event), Shannon Borffeldt, David Atkins, Rachel Kendrick, Marinka Lynch, Marissa Bakes, Paul Akiyaama, Marie Zalessky, David Severson, Tyler Ahlem, Mona Kin, and Diego Alcala						
Campus Tree Inventory Conducted					**3695**	
Most Recent Count conducted May through September 2012						

UNIVERSITY of NORTHERN COLORADO

FACILITIES MANAGEMENT

LANDSCAPING & GROUNDS

MEMORIAL TREES & GARDENS

TREE CAMPUS USA

Memorial Trees and Gardens

State Champion Designations on UNC Campus						QU
Species	**DBH**	**Circum**	**Ht**	**Crown**	**Location**	
Ginkgo biloba	6.5in	20.4	27	13ft	Crabbe Hall, South	
Kentucky Coffee-Tree	22.9	72	70	45	NW Frasier Hall	
Silver Maple	72.5	228	69	83	S Lawn Faculty Apartments	
Japanese Pagoda	25.8	81	43	55	NW Corner Faculty Apartments	
Pecan	29	91.5	96	51	S Lawn Faculty Apartments	
Tree of Heaven	14.4	45.2	37	38	Gunter, S Lawn	
Amur Cork Tree	30.5	94	43	62	Gray Hall, North	7

Arbor Day Tree: Pinus sylvesris *"French Blue"* UNC Young Democrats club Contact: Casandra Sale 4.20.06 UC North lawn.	2006	8
Memorial Tree Planted for the School of Nursing by Graduating Nursing School Students Location: SE corner of Gunter Hall Contact: Katie Klaussmeier Species: Syringa reticulata *" Ivory Silk"* Dedicated to UNC SON	2006	9
May 10: 75ea Rocky Mountain blue Columbines *(not Blue Columbine/State Flower*) donated by Bruce Broderius (353-4793) Gift Value: 187.50) Planted at front foundation of Visitor's Center and patio areas.	2006	10
Oct 26: 200ea Daffodil bulbs donated by Bruce Broderius (353-4793) $400.00	2006	11
April 22, Earth Day	2008	
Blue Spruce, SE Lawn of Garden Theatre. American Chemistry Society Contacts: Matthew Langford, Brittany Writer	2008	12
Thunderchild Crabapple: East lawn of Garden Theatre. Environtl Studies Club. Contacts: Adam Davidson, Chris Stelzer, Linda Langum, Chandra Valenza. Tree donated by Lowes.	2008	13
Burr Oak: North lawn of University Center. Center of Honor, Scholars & Leadership / Schulze Interdisciplinary Studies Contacts: Debra Holman, Michael Kimball, Ktie Goulet. Tree donated by Eaton Grove Nursery 2008	2008	14
April 24, 2009 Earth Day/Arbor Day Tree Planting 2009 **Burr Oak,** North of Gray Hall. American Chemistry Society Tree provided by FossilCreek Nursery, Ft. Collins Contact: Kayla Horst. Planted in memory of Chemistry Student Jay Walker who died unexpectedly.	2009	15
April 28, 2010 Memorial Tree planted in honor of Former Grounds Employee, Dan Raisley. Burr oak (2.25 in Cal) planted at the West side of Carter Hall (replacing an American elm that once graced that location.	2010	16
April, 1976 Memorial Tree honoring Darrell & Elenore Holmes Dr Holmes, 5th President of University, 1964-76 Michener north lawn Red Maple	1976	17

1992 Memorial Tree "In loving Memory of
William VanLoo. Associate Professor of Theater-Arts
1973-92 Red Maple 1992 18

Memorial Tree: Clarence & Katherine Baab, Plaque Red Maple
Carter Hall, SE lawn 19

Memorial Tree: Don Meyers, Director Of Computer Center, 1966-89
Burr Oak Carter Hall, East lawn 1989 20

Memorial Tree: Barb Richau
Gray Hall North 21

Memorial Tree: Blue Spruce
A remembrance of John Gapter UNC
Professor & Dean from friends in
Gourmet Xeric Demonstration Garden 22

Memorial Garden: Monte & Sandy Devenport, June 13, 2007
Carter Hall. East side (Plaque on boulder)
2007 23

Edgar Alan Poe Ash tree
No plaque.
Transplanted from Frasier Circle in 2003 to current location north lawn of Carter Hall
Tree purchased on line. Not the actual tree, but seedlings from original tree that
were from Birthplace, or tree referenced in his writings, etc.
See Historic Tree Nursery website for example: americanforests.org 2003 24

Memorial Garden: Toni May
Plaque
Gray Hall North lawn
Garden includes benches 25

Memorial Tree: Spring Snow Flowering Crabapple 26
Scott-Wilcoxin Hall, SE Lawn.
Plaque: 'LIFE CAN FLOURISH
UNDER MANY CIRCUMSTANCES"

This tree was planted in honor of all women, men,
and children who have suffered sexual assault.
You have the strength to heal and grow.
Assault Survivors Advocacy
Program, April, 2001 2001

Memorial Tree honoring Heating Plant Manager, Douglas Burman
Planted on April 20, 2012 by Family, UNC employees and friends.
Burr oak planted on East lawn of the Heat Plant.
Colorado Arbor Day 2012 27

Arbor Day/Earth Day **April 21, 2012 by *"Bears Pay it Forward"***
Red Oak at south side of Michener Library 28
Golden Rain Tree at Rec Center courtyard 29
Student Tree Lovers: Alexis Eliades, Zach Davis, Ann Schleinkofer
Courtney Slade, Tyrell Allen, Alex Sherwin, Rachelle Cole, Alyssa Allen
Breanna Kobetitsich 2012

Earth Day, April 22, 2012 Tree Planting by Honors, Scholars, and Leadership Department, Scott Treas.
Prairie Fire Crabapple donated by Happy Life Gardens. 30
Tree planted on the West lawn of Michener Library by the following tree huggers:
Scott Treas, Mike Kimball, Michael Frank, Wanda Frank, Jim Frank, Taylor Frank
Haley Ballenger, Emily Ballenger, Robin Ballenger and Scott Ballenger 2012

UNIVERSITY of NORTHERN COLORADO

FACILITIES MANAGEMENT

LANDSCAPING & GROUNDS

DEFINITIONS/GLOSSARY

TREE CAMPUS USA

DEFINITIONS

Caliper - *The diameter or thickness of the main stem of a young tree or sapling as measured at six (6") inches above ground level. This measurement is used for nursery-grown trees having a diameter of four inches or less.*

Canopy trees - *A tree that will grow to a mature height of at least 40 feet with a spread of at least 30 feet.*

Clearing - The removal of trees or other vegetation of two inches DBH or greater.

Critical Root Zone - *The minimum area surrounding a tree that is considered essential to support the viability of the tree and is equal to a radius of one foot per inch of trunk diameter (DBH).*

Development - *The act, process or state of erecting buildings or structures, or making improvements to a parcel or tract of land.*

Diameter, breast height (DBH) - *The diameter or width of the main stem of a tree as measured 4.5 feet above the natural grade at its base. Whenever a branch, limb, defect or abnormal swelling of the trunk occurs at this height, the DBH shall be measured at the nearest point above or below 4.5 feet at which a normal diameter occurs.*

Green space - *Any area retained as permeable unpaved ground and dedicated on the site plan to supporting vegetation.*

Green space plan - *A map and/or supporting documentation which describes for particular site where vegetation is to be retained or planted in compliance with these regulations. The green space plan shall include a tree establishment plan, or a tree protection plan, and a landscape plan.*

Impervious surface - *A solid base underlying a container that is nonporous, unable to absorb hazardous material, free or cracks or gaps and is sufficient to contain leaks, spills and accumulated precipitation until collected material is detected and removed.*

Landscape plan - *A map and supporting documentation which describes for a particular site where vegetation, is to be retained or provided in compliance with the requirements of this policy. The landscape plan shall include any required buffer elements.*

Native tree - *Any tree species which occurs naturally and is indigenous within the region.*
Tree establishment plan - *A map and supporting documentation which describes, for a particular site where existing trees are to be planted in compliance with the requirements of these regulations, the types of trees and their corresponding trees for reforestations.*

DEFINITIONS

Tree protection plan - *A map and supporting documentation which describes for a particular site where existing trees are to be retained in compliance with the requirements of the regulations, the types of trees and their corresponding tree for reforestations.*
Tree protection zone - *The area surrounding a preserved or planted tree that is essential to the tree's health and survival, and is protected within the guidelines of these regulations*.

Xericscape - *a landscaping method developed especially for arid and semiarid climates that utilizes water-conserving techniques (as the use of drought-tolerant plants, mulch, and efficient irrigation)*

Integrated Pest Management - *IPM includes pest control strategies that focuses on the least evasive pest control methods first, before moving on to chemical pest control methods. Some less evasive pest control methods include natural enemies, crop rotation, pest-free plant varieties, companion planting and pruning.*

UNIVERSITY of NORTHERN COLORADO

FACILITIES MANAGEMENT

LANDSCAPING & GROUNDS

TREE INVENTORY

List of Reports

TREE CAMPUS USA

TREE INVENTORY REPORTS

1. **Campus Species / Tree Diversity**
   Total of each species on campus

2. **Twenty Largest Trees on Campus**
   Common Name
   Location
   Value
   Diameter
   Condition

3. **Tree Species Density / Distribution**
   15 most common species

4. **Colorado Natives**
   Total species
   Maps indicating location – GREEN ASH
   Percentage of total tree population

5. **Age of Tree P**
6. **opulation**
   Trees reported by diameter size

7. **Tree Health**
   Trees reported by Good, Fair and Poor Health

8. **Tree Demographics Summary**
   From the above information a comprehensive picture can be drawn about the age, health, distribution and diversity of our campus trees.

10.18.12

UNIVERSITY of NORTHERN COLORADO

FACILITIES MANAGEMENT

LANDSCAPING & GROUNDS

TREE INVENTORY

SUMMARY

TREE CAMPUS USA

CAMPUS TREE TOTALS BY SPECIES

Total of All Species	
SPECIES	**TOTAL**
ash, green	**389**
honeylocust, thornless	**365**
crabapple	**289**
spruce, Colorado	**267**
pear, callery	**217**
linden, littleleaf	**105**
oak, bur	**88**
hackberry, common	**85**
elm, Siberian	**69**
maple, Freeman	**69**
pine, ponderosa	**63**
juniper, Rocky Mountain	**62**
ash, white	**61**
pine, pinyon	**60**
pine, Austrian	**57**
oak, Gambel	**54**
linden, American	**51**
maple, silver	**50**
hawthorn, cockspur	**49**
elm, American	**48**
maple, sugar	**48**
catalpa, northern	**46**
maple, Amur	**46**
eastern redcedar	**41**
goldenraintree, panicled	**40**
lilac, Japanese tree	**40**
maple, Norway	**40**
maple, red	**40**
oak, northern red	**40**
cottonwood, eastern	**38**
fir, white	**37**
hawthorn, Washington	**37**
oak, English	**35**
juniper, upright other	**34**
Russian-olive	**32**
coffeetree, Kentucky	**31**
redbud, eastern	**31**
pine, mugo	**30**
hawthorn, Morden	**29**
horsechestnut, red	**29**

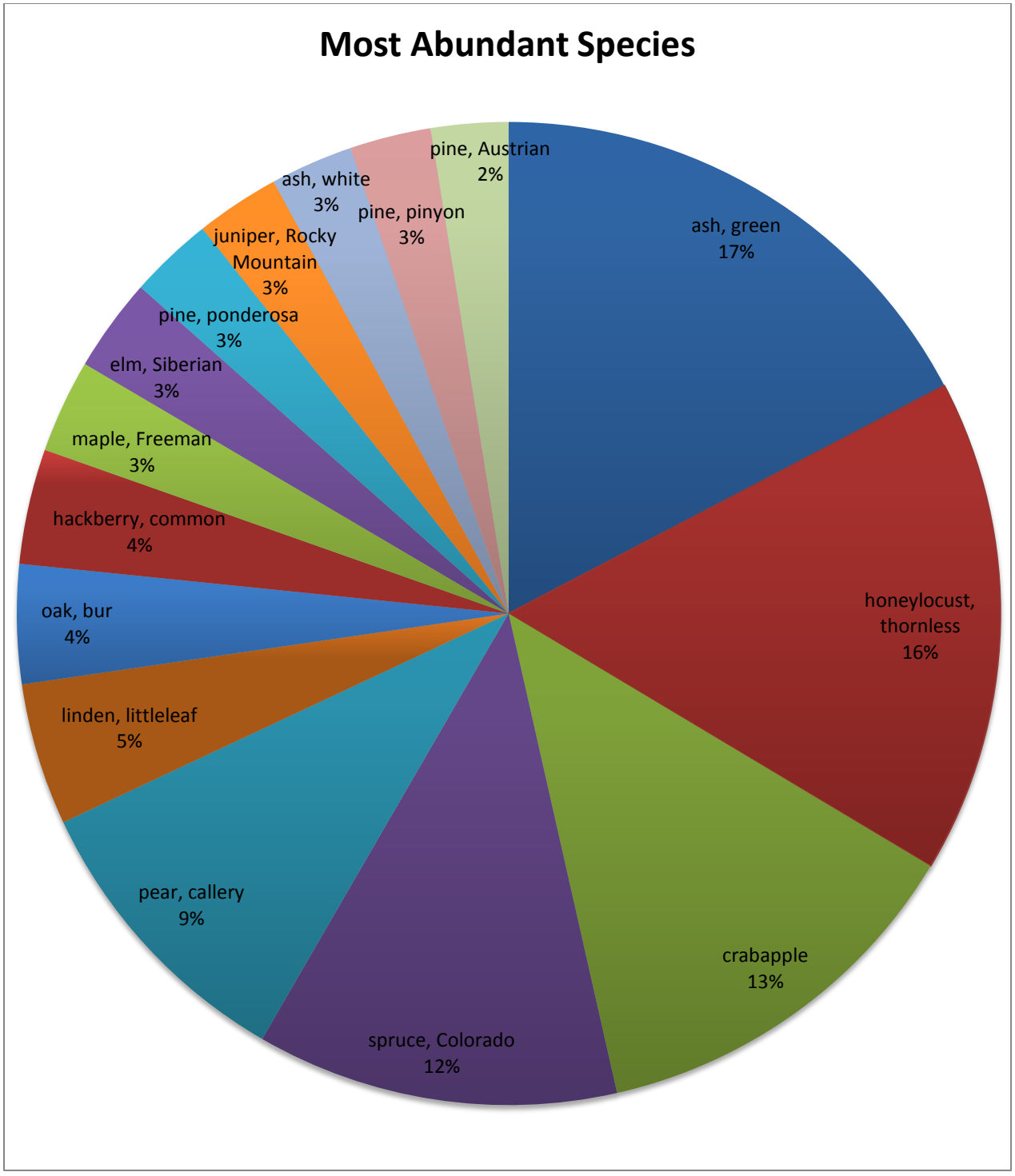
serviceberry, apple	**29**
plum, purpleleaf	**19**
hawthorn, Russian	**17**
chokecherry	**15**
hornbeam, European	**15**
linden, silver	**15**
pine, lodgepole	**14**
oak, swamp white	**13**
buckeye, Ohio	**12**
zelkova, Japanese	**12**
boxelder	**11**
elm, lacebark (Chinese)	**11**
aspen, quaking	**10**
blacklocust	**10**
juniper, oneseed	**10**
planetree, London	**10**
birdcherry, European (mayday tree	**9**
hawthorn, downy	**9**
magnolia, star	**9**
pine, Scotch	**9**
cottonwood, lanceleaf	**8**
maple, Tatarian	**7**
walnut, black	**7**
arborvitae	**6**
buckthorn, common	**6**
ginkgo	**6**
mulberry, white	**6**
pear, Usserian	**6**
pine, eastern white	**6**
pine, limber	**6**
alder, thinleaf	**5**
elm, hybrid	**5**
goldenchain tree	**5**
viburnum, lentago	**5**
beech, European	**4**
plum, American	**4**
serviceberry, Alleghany	**4**
serviceberry, shadblow	**4**
spruce, Engelmann	**4**
ash, Manchurian	**3**
corktree, Amur	**3**
cottonwood, narrowleaf	**3**
oak, chestnut	**3**
pagodatree, Japanese	**3**
pecan	**3**

poplar, silver (white)	**3**
spruce, white	**3**
sumac, smooth	**3**
sycamore, American	**3**
willow, weeping	**3**
apple, fruiting	**2**
ash, black	**2**
baldcypress	**2**
buckthorn, glossy	**2**
cherry, sour	**2**
euonymus, European (spindle-tree)	**2**
horsechestnut, common	**2**
magnolia, saucer	**2**
oak, white	**2**
spruce, Norway	**2**
tree-of-heaven	**2**
ash, European	**1**
cherry, weeping	**1**
cottonwood, hybrid	**1**
douglas-fir	**1**
elder, American	**1**
honeylocust, native	**1**
hornbeam, American	**1**
maple, Black	**1**
mountain-ash, European	**1**
pine, Globe White	**1**
walnut, English	**1**
yellowwood, American	**1**
Grand Total	**3695**

TWENTY LARGEST TREES ON CAMPUS

SPECIES	LOCATION	VALUE	DIAMETER	CONDITION
cottonwood, eastern	UNC Campus	$94,400	62	Good
maple, silver	UNC Campus	$92,100	60	Fair
maple, sugar	UNC Campus	$80,500	55	Good
maple, silver	UNC Campus	$66,600	51	Good
ash, green	UNC Campus	$78,300	50	Good
elm, American	1940 10th ave.	$73,100	50	Fair
elm, Siberian	1700 9th ave.	$48,100	48	Fair
elm, Siberian	UNC Campus	$44,200	46	Poor
cottonwood, eastern	UNC Campus	$49,800	45	Good
maple, silver	UNC Campus	$51,900	45	Fair
elm, American	1940 10th ave.	$54,100	43	Good
maple, silver	UNC Campus	$47,400	43	Fair
maple, silver	UNC Campus	$47,400	43	Fair
ash, green	1700 9th ave.	$55,300	42	Fair
maple, silver	1947 8th ave.	$45,200	42	Fair
maple, silver	UNC Campus	$43,100	41	Good
ash, green	UNC Campus	$50,200	40	Good
ash, green	UNC Campus	$50,200	40	Good
ash, green	828 19th street.	$50,200	40	Good
ash, green	1940 10th ave.	$50,200	40	Good
Total		$1,172,300		

FIFTEEN MOST COMMOM TREES

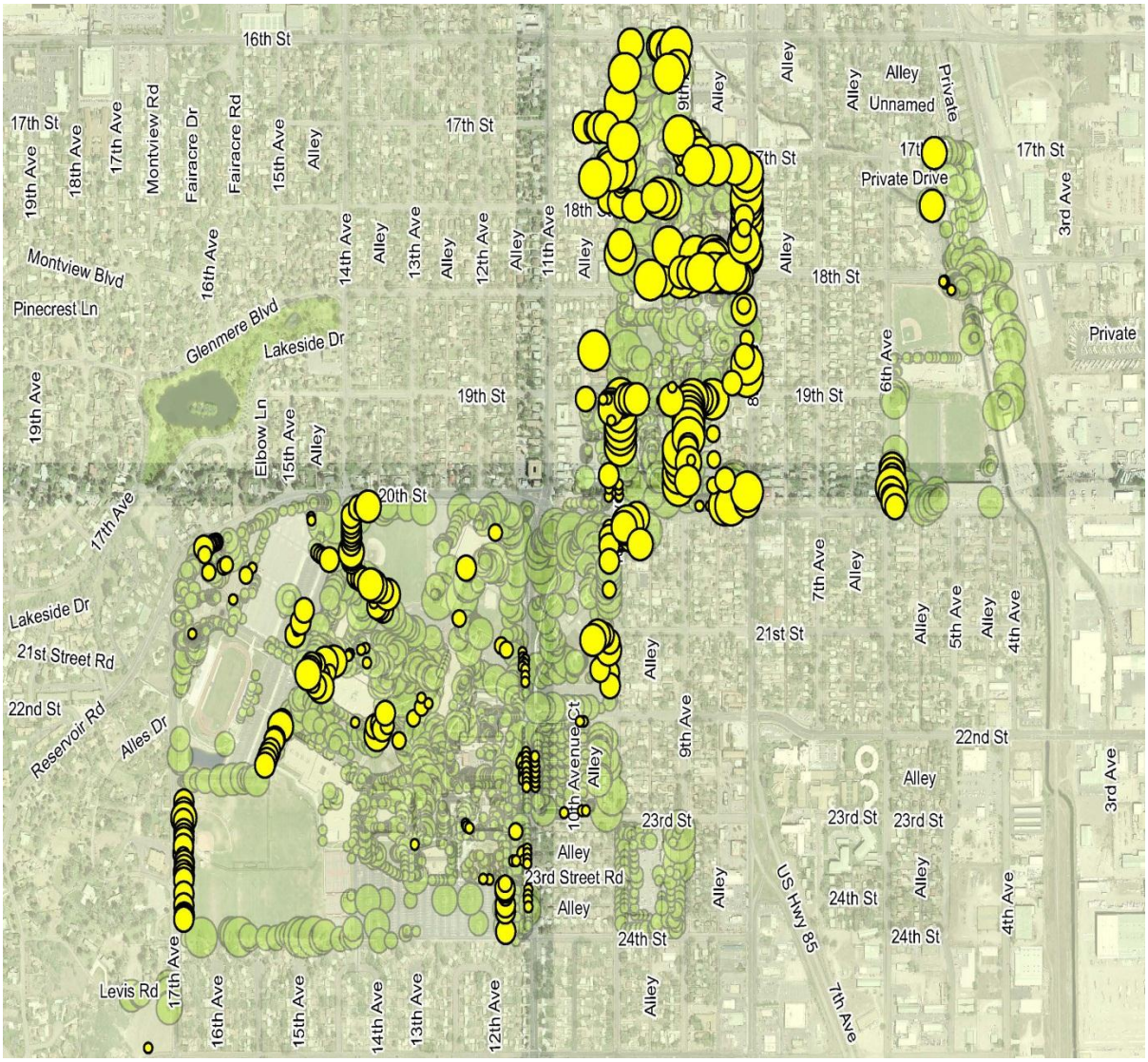


COLORADO NATIVES

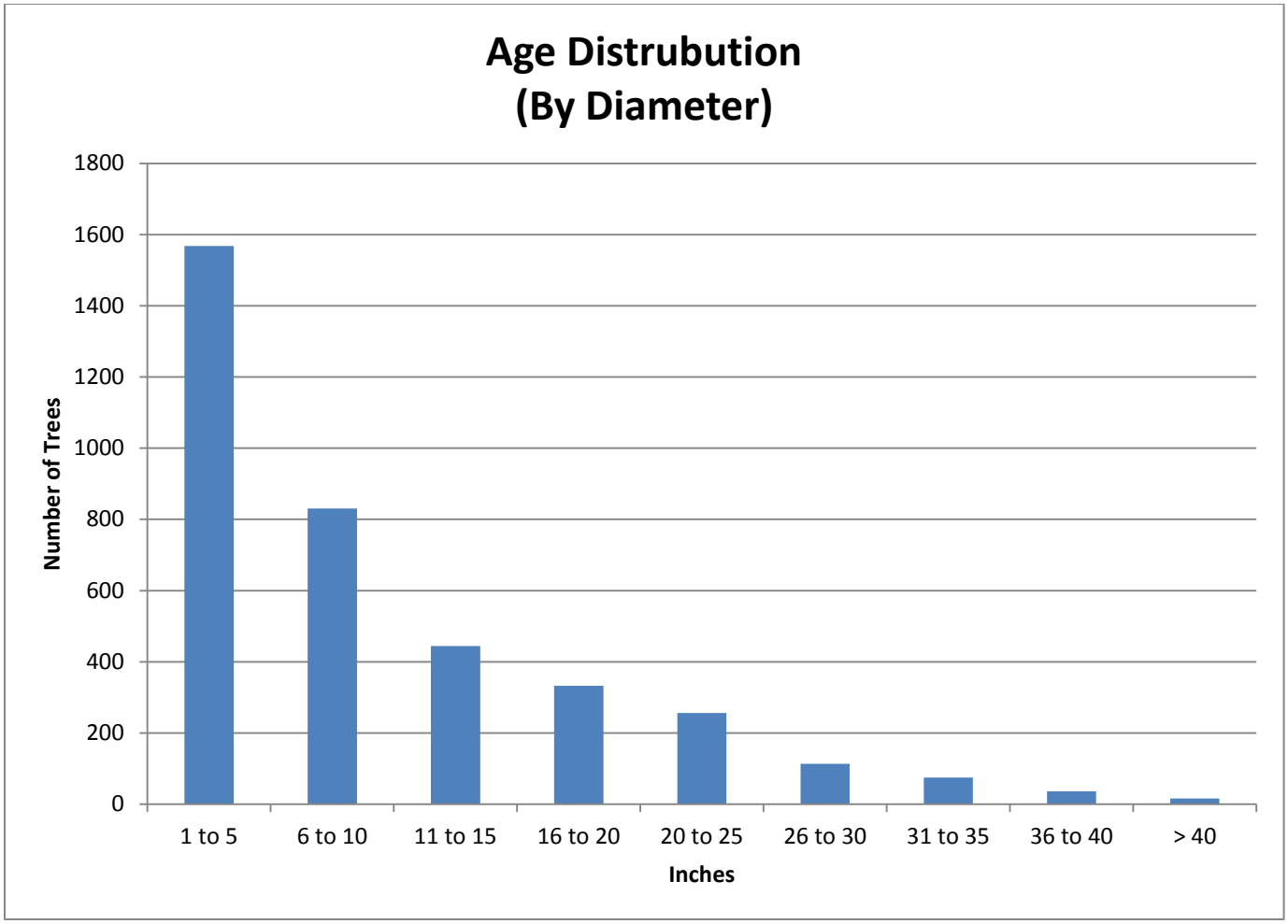
Native Species	Total	Percentage of Native Species
alder, thinleaf	5	0.40%
apple, fruiting	2	0.16%
ash, green	389	31.00%
aspen, quaking	10	0.80%
boxelder	11	0.88%
buckthorn, common	6	0.48%
chokecherry	15	1.20%
cottonwood, eastern	38	3.03%
cottonwood, hybrid	1	0.08%
cottonwood, lanceleaf	8	0.64%
cottonwood, narrowleaf	3	0.24%
douglas-fir	1	0.08%
fir, white	37	2.95%
hackberry, common	85	6.77%
juniper, oneseed	10	0.80%
juniper, rocky mountain	62	4.94%
juniper, upright other	33	2.63%
maple, sugar	48	3.82%
oak, gambel	54	4.30%
pine, limber	6	0.48%
pine, lodgepole	14	1.12%
pine, pinyon	60	4.78%
pine, ponderosa	63	5.02%
plum, American	4	0.32%
plum, purpleleaf	19	1.51%
spruce, Colorado	267	21.27%
spruce, Engelmann	4	0.32%
Total	1255	33.96%

***Of the 3596 trees on campus 1255 are native species, approximately 34 percent.**

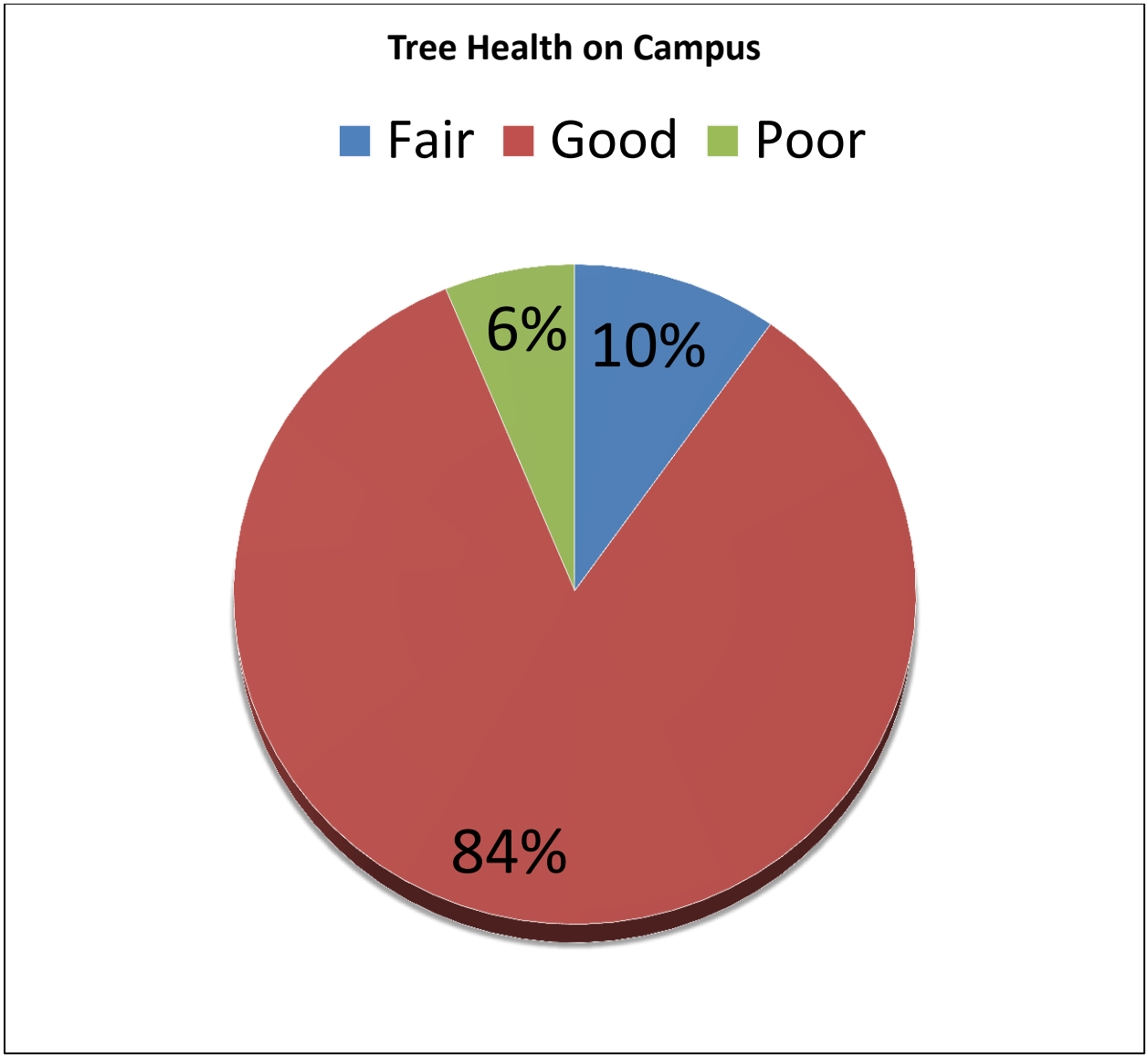
DENSITY AND DISTRIBUTION OF GREEN ASH



AGE DISTRIBUTION BY DIAMETER



TREE HEALTH



TREE DEMOGRAPHIC SUMMARY

Looking over the data acquired over the summer of 2012, the University of Northern Colorado has generated reports to determine the largest trees on campus, diversity of tree species, tree density, percentage of native species, and overall health of our urban forest. With over $19,000,000 estimated in tree value throughout the campus, UNC has dedicated countless hours in the maintenance and care for the trees that thrive in our community. The species with the largest population on campus is the Green Ash (Fraxinus pennsylvanica). This tree is very common throughout the Colorado region and provides much of the universities canopy shade. The Green Ash total to almost 400 trees, and have the majority hold on the overall population of trees on campus. After the green ash, other species like the thornless Honeylocust, Crabapple, and the Colorado spruce make up the majority of the population. These reports demonstrate the type of tree population found on the Northern Colorado campus.

At the University of Northern Colorado, our mission is to plant increase substantially the number of native species. After evaluating all the data, we determined that 34% of our total tree population is of native Colorado species. Maintaining native species on campus not only helps keep our native species thriving, but also sustains healthy biodiversity to our region. We look to plant more native species on campus in the future to instill greater Colorado heritage and pride.

Having all of our trees on campus at their peak health is the mission of our facilities and grounds department at UNC. Countless hours have been spent pruning, shaping, testing and planting trees all over the campus. After review of the data we retrieved over the summer of 2012, we can confidently say that 84 percent of the trees on campus have a "good" health rating. In order achieve a "good" rating, the trees have to express qualities that deem it to be healthy and thriving. The University of Northern Colorado prides itself on having a campus that has a healthy landscape. With 84 percent of our total tree population meeting that standard, the goal of maintaining healthy, beautiful trees on our campus is being met.

UNIVERSITY OF NORTHERN COLORADO

TREE FACTS

AUGUST 22, 2012

TREE INVENTORY 2012

With the cooperation of the Greeley Forestry Department (Shiloh Hatcher) we are in the process of entering all tree data gathered from the campus. Once all the data is entered into the City Forestry software we will be able to generate many reports, analysis about the university's tree population.

We began inventorying trees on May 24 and completed the last tree on August 14. It took 57 days to complete at an average 2.75 hrs. per day or 156.75 man hours. We inventoried an average 65 trees per day.

I was assisted by UNC student, Brent Engel, who has also been employed with the Westminster City Forester. I could not have wished for such a collaborator as we pursued such a venture. He also serves on the University Tree Advisory Committee as our Student Representative. Shiloh Hatcher also serves on the committee. The establishment of such an advisory group is a requirement for Tree Campus USA. Brent is continuing to enter the data on the GPS maps at the Greeley Forestry office

The main purpose of the inventory was to assist with the application for the Tree Campus USA consideration. We have **3,695 trees** documented. The last documented Tree inventory was made in 1987-88 with the total trees amounted to 1,269 trees. Between Brent and I, we can say that we are the official Tree huggers of UNC. We have touched, measured, evaluated and identified every one of those 3,695 trees.

Tree Population Value

The Inventory software also calculates an estimated landscape appraised value for each tree. The trees of the University of Northern Colorado campus are worth approximately **$19,605,400.00.** For the total trees on campus the average value per tree is about $5306. This is quite an investment and one that is to be protected and perpetuated for years to come.

Colorado Native Trees

Contrary to popular belief, the campus forest does not have all the Colorado native trees represented. We lack the following trees: ***River birch, Peach-leaf willow, Bristlecone Pine, Utah Juniper, Subalpine fir, Mountain Alder, and Single leaf Pinyon Pine. This is based on the US Forest Service Native Trees of Colorado.*** There may have been at one time, a full representation of all the Colorado natives, but that collection has failed to be maintained over the years. The harsh climate of the Front Range is difficult for many *"mountain species"* to survive

long term. There *a*re Plans to introduce these species in our collection in the near future. They will play a significant role in our proposed Campus Tree Trail.

Significant Trees

As you might expect, our oldest and biggest trees are located on the oldest part of campus. Many of these old growth giants were planted in the late 1800's and early 1900's and most in the 1920's. Some of these trees exceed 30 inches in Diameter (dbh or diameter at breast height).

2012 State Champions (as selected by the Colorado Tree Coalition)

The most prominent giants include a Silver Maple (72 inches dbh) at the South side of Presidents Row (formerly called Faculty Apartments). This Silver Maple once held the title of State champion, but in recent years it has been surpassed by others. Close by there is a Pecan Tree that measures 37.25 in dbh. The Pecan tree has recently been given champion status and we also have two other pecan trees on the University Center North lawn.

Our other **current State Champion includes our Amur Cork tree, which measures 33.25 in dbh**. Approximate planting date is 1922. It is located in the Central Campus Quad and is surrounded by many old growth trees that include a Green ash (39.74 in dbh), Northern catalpa (33.25in) and a Ginnala Maple measuring 14.5, which is huge for this species.

We also have another Amur Cork tree located south of Gray hall (in Z-lot) which also holds second place to our Champion Amur Cork tree.

The Kentucky Coffee Tree at Frasier hall, measuring 29 in dbh holds a 3rd place ranking among Colorado's finest trees.

Unique trees

We do have a **Cottonwood at the visitor center that is 62 inch dbh** that is in good health and if given time could become a state champion tree-providing the other ones succumb to old age. It is the 2nd largest tree on the campus.

Other trees we have that exceed the 40 inch dbh mark include an **American elm at the Patton House that is 42inch,dbh,** and several large **Siberian elms (**not Chinese) along 18th street near the heat and co-generation Plants. **They measure 47.75 in dbh.**

Other trees that warrant attention for their size and girth include the Burr oak (34in) and a Green ash (33in) located near Gray hall. Near Stonehinge park we have a **55-inch silver Maple, 32-inch Black pine and a 24-inch American elm.** The American elm still stands as my most favorite shade tree ever.

Other prominent trees can be found at Guggenheim Hall which is the home of **our Ginkgo tree (17 in dbh),** and some very large Green ash trees that measure over 30 inch dbh. There are also **Blue spruce trees that exceed 25 inch diameters.**

There are some absolutely breath-taking **white firs** along the South side of Doubenmier field that when covered with snow are the perfect photo of a winter wonderland.

Yellow wood 1.75dbh: Gray hall planted in 2012

Tri-colored Beech: Carter hall Planted in 2004

Willow leaf Pear: Kepner hall is often mistaken to be a Russian olive

Black Maple (17.25dbh) at Kepner hall (also planted on the East side of Gunter Hall)

Dwarf Korean Lilac: 2012 at Kepner and Carter

Ohio buckeyes can be at Kepner, Gunter and University Apartments

Star Magnolias at Guggenheim and Xeric Garden Planted in 2003, 1999 respectively

Fern-Leaf Buckthorn (6.0 in dbh) located at the West side of Ross hall is one of my favorite unique Trees. 1998

Beech trees at McKee south **(Rohanii)** and Cancer Rehab building **(Riversii)**

Bald cypress Trees (2ea) west of McKee hall are not doing well and there are plans to relocate to a more suitable and wetter site(s). They are a swamp-loving tree and they will not thrive unless we find a new home for them.

Ginkgo Trees that grace our campus can be found at Guggenheim, Crabb and Mckee and most recently one was planted at West Campus South hall.

Edgar Allen Poe Ash tree is planted in the North lawn of Carter hall. This Green Ash tree was ordered on line by a university professor and supposedly is a seedling from an ash tree that was from his birthplace in Boston, or his place of death in Baltimore, or perhaps from a tree that is referred to in his writings.

Nanny berry (5.5in dbh) is a Viburnum and normally a large shrub, but can be considered a small tree if cultivated as such. There are several Planted at the Bishop-Lehr Lab School and were planted in 1962.

White or silver Poplar (21 inch dbh) is located SW of McKee Hall. Planted in 1968.

Horse chestnut is located at Frasier hall. We only have one other and was recently planted at the new west campus Residence halls

Oriental spruce 4.25 in dbh West side of Mckee

Limber Pines (Colorado Native) grace the landscape at Ross Hall and the courtyard there

Gambell Oaks (Colorado native) can be found at Xeric Garden, Ross courtyard and a fine specimen on the University center lawn.

Evelynn Flowering Crabapples are the pink –flowering showpieces in spring that are admired at Harrison hall-North as well as the north side of West Campus Housing-North hall. Some remnants can be found near the corner of 20th street and 10th avenue at the University center.

Eastern Redbud (7.25in dbh) is located at the corner of 20th street and 10th avenue near Weibking hall. I get more phone calls in the spring time about this tree than any other tree on campus. It is absolutely a beauty when it shows off all its pink-blossoms. Redbuds can also be found at the Roudebush cottage as well as the West Campus Housing-South and North Halls.

Apple trees , 2ea (18.75, 21.0 in dbh) located at the west side of Frasier hall planted in 1953 are a source of food for our resident fox squirrels and apple pies at my home.

Memorial Trees

There are 10 Memorial trees on campus. One honors Darrell and Elenore Holmes the 5th President of the University (1964-75). He was President during the West Campus Development. A Red Maple honors him in the north lawn of Michener Library.

Arbor Day trees

There have been 13 documented trees planted in celebration of Arbor Day on the University campus. Some of these trees are also are memorial trees. Hopefully, as a future Tree Campus USA, the tradition of Arbor Day plantings will continue on an annual basis. We had five Arbor Day Tree Plantings occur this past April, 2012.

Misc. Facts

Without exact data in front of me and only based on my inventory observations the most prominent trees in our campus forest are (from most to least) Green ash, Honeylocust (many varieties and cultivars), Silver Maple, and Cottonwoods. The most dominant trees on west campus are Honey-locust and Green ash. The campus is also graced with many fine specimen American Basswoods and Little-leaf Lindens. Some of these exceed 20 in dbh.

New Introductions

The university master plan has a directive that promotes tree diversity in our tree population. So as new landscapes are installed we attempt to introduce new species to our campus forest. A diverse tree population is a healthy approach to a comprehensive Tree

care program. By promoting diversity we also prevent major disease /insect infestations that can devastate specific species. American elm trees that once graced the streets of major urban centers nationwide, is a prime example of how one tree was wiped out from the American landscape due to a species-specific disease carried by the elm bark beetle: dutch –elm disease.

Some of our recent new species include Ivory silk Tree lilacs, Prairie fire crabapples, Autumn Blaze Red Maples, American elm Hybrids (dutch-elm disease resistant), sugar maples, swamp white oak, Tartarian maples and drought tolerant Burr oaks. **Chinese elms (not Siberian elms)** are planted in C-Lot, south of the University Center. **Zelkova trees and Chestnut oaks** were also planted in C-lot. We also have some Black ash planted in T-lot.

Tree Problems.

During our inventory, we have observed many of the green and white ash cultivars have been infested with Ash borers, which concurs with the Greeley Forestry Department's recommendation to not plant these trees.

We continue our battle against Ips Engraver beetles on our Old Growth blue spruce, and recently we removed some Pinyon and Ponderosa pines due to Mountain Pine Beetle.

Conclusion

We all enjoy this lovely tree-laden landscape because of all those who preceded us and who knew and appreciated the value of trees and their effect on the human psyche. I am thankful for my predecessors for their foresight. They did not have to rely on the recent Green/Sustainability movement; the ecology movements of the 1970's or Arbor Days to do what was always the right thing to do: Plant trees. I don't do it to claim to be a "Green Campus", I do it because it is right, and it is good, and besides this campus has always been "green".