



Arkansas Association of Conservation Districts

Monroe R. Samuel Forestry Clinic Manual

February 2009 Edition

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INTRODUCTION TO AACD

Conservation Districts in Arkansas are political subdivisions of the State. They are created by Act No. 197 of the General Assembly of 1937, the Nations first Conservation District Law.

There are 75 Conservation Districts in the State of Arkansas. District boundaries generally coincide with established County Government boundaries. Each district carries out work under the direction of five directors, two appointed and three elected in county elections, and all serve without pay.

The **Arkansas Association of Conservation Districts** is a body composed of all Conservation Districts in Arkansas plus other contributing members. Technical assistance is provided primarily through a Memorandum of Understanding with the United States Department of Agriculture, Natural Resources Conservation Service.

The purpose of the Association is to conduct exclusively educational, scientific, charitable, pollution abatement, and environmental quality work concerning the maintenance, improvement, development and use of land, soil, water, trees, vegetation, fish wildlife, open space and other renewable natural resources.

INTRODUCTION TO MONROE R. SAMUEL

A native of Hope, Arkansas, Mr. Samuel was dedicated to Natural Resource Conservation and devoted much of his time, voluntarily to promoting proper use and management of the Nation's forest resources.

He was very active and served many years as the Chairman of the Hempstead County Conservation District Board the Chairman of the Arkansas Association of Conservation Districts, Chairman of the Arkansas Association of Conservation Districts' Forestry Committee, and finally as Chairman of the National Association of Conservation Districts Forestry Committee.

It is because of his commitment and dedication to the promotion of forestry and his interest in forestry education to the youth of Arkansas that the Arkansas Association of Conservation Districts has proudly dedicated this Annual Clinic to Mr. Monroe R. Samuel.

INTRODUCTION TO THE MONROE R. SAMUEL FORESTRY CLINIC

Each year the Monroe R. Samuel Forestry Clinic herein after termed the "Clinic", shall be held in Arkansas for the purpose of providing Arkansas Youth a working knowledge of forestry. The Clinic is sponsored by the Arkansas Association of Conservation Districts (AACD), with technical assistance from the USDA Natural Resource Conservation Service. Further assistance is provided by various Federal and State agencies and from the private and industrial forestry community.

The Clinic shall not be confused with the State Future Farmers of America (FFA) Contest.

The Clinic is governed by the AACD Forestry Clinic Committee hereinafter termed Clinic Committee. The Clinic is held each year at a location determined by the Clinic Committee. Competition involves youth who are full time students.

The Clinic is sanctioned by the Arkansas Activities Association each year.

The Clinic provides a setting for participants to gain insight into what is involved in managing forestlands. The Clinic enables opportunities for Youth to train and talk with professional foresters who are involved with the management of public, industrial and non-industrial forestlands. For any young person considering forestry as a possible career choice, this kind of experience can be extremely valuable.

OBJECTIVES

The AACD has laid out four primary objectives for the Clinic.

1. To familiarize Arkansas' Youth with the science of forestry management, not to necessarily make forestry professional vocation, but familiarize them enough that they will know when they need professional assistance and where to get professional assistance when, as adults they are faced with very challenging decisions on their own forests.
2. To develop an awareness and understanding of the value of a managed forest that promotes a greater appreciation for the many renewable resources in our forest that depend on soils.
3. To teach Youth the methods of developing and managing healthy and profitable forests.
4. To teach Youth the multiple use values of forests which can be managed for wildlife, wood products, recreation, and other uses.

GENERAL RULES

Last updated March 10,2006

TEAM ARRANGEMENT: Each District shall send up to **four (4)** teams. These teams shall be made up of any four (4) full time students within the Conservation District.

EQUIPMENT NEEDED TO PARTICIPATE IN THE CLINIC:

1. Clipboard
2. Pencil
3. Cruise or Tree Scale Stick
4. Compass
5. Pocket Calculator

PAPERS: Clipboards shall be empty at the start of the Clinic. Score sheets and provided tables are the only papers that shall be allowed to be carried during the clinic.

AWARDS: The three highest scoring individuals and the six highest scoring teams shall be awarded. The rotational Plaque shall be presented to the highest scoring team.

SCORING: The top three scores by team members will constitute the team score. The Clinic will consist of the following events and assigned points:

| | |
|----------------------------------|----------------------|
| TREE VOLUME | 25 POINTS |
| TREE IDENTIFICATION- | 15 POINTS |
| GLOBAL POSITIONING SYSTEMS (GPS) | 5 POINTS |
| WOOD QUALITY | 3 POINTS |
| SELECTIVE THINNING | 15—30 POINTS |
| WOOD PRODUCTS | 10 POINTS |
| SITE INDEX | 10 POINTS |
| <u>COMPASS AND PACING</u> | <u>10 POINTS</u> |
| TOTAL: | 93—108 POINTS |

ADVISORS/INSTRUCTORS: Shall remain away from the event area and scoring table until the conclusion of the Clinic.

TIES: The tiebreaker for teams shall be the team that has the participant with the highest overall score of all tied teams, followed by the next highest until the tie is broken. The tie-breaker for individual participants shall be the participant with the highest score in tree volume, followed by the order of events listed in "Scoring List" in rules, until the tie is broken.

LEGIBILITY: All answers entered on score sheets must be legible. Any entry that cannot be read with reasonable effort and with discernable outcome shall be given a "0" for that answer.

ALTERNATES: Each team will be allowed only four members to be scored and considered for awards. At the discretion of the Clinic committee persons present shall designate if an alternate shall be allowed to participate. This determination shall be based on time constraints and the total number of participants in that Clinic. If allowed to participate, an alternate's score sheet shall not be considered for standings in the competition, and therefore shall not be entered into the computer for scoring tally.

LATE ARRIVALS: Teams or individuals arriving after the official start of the contest will not be allowed to compete. However, if the late arrival is due to extenuating circumstances, it shall be to the discretion of the Clinic Committee persons present as to whether the late team or individual can be worked in and tallied.

PROCEDURES: Starting time, program arrangement, and other organizational items shall be determined at an annual planning meeting of the clinic committee in consultation with the host District and shall be announced prior to the start of the Clinic.

REGISTRATION: Pre-registration is required. Any changes in registration information must be made at least one hour prior to Clinic starting time.

FINALITY: Scores and placing of teams and the top individual announced at the conclusion of the clinic will be deemed final. Any errors that might be discovered after this time will not be considered. Individual scores and/or score sheets shall be mailed to advisors/instructors who request them in writing with mailing information prior to leaving the clinic site. Said request shall be presented to the host district. The governing committee known as the AACD Monroe Samuel Forestry Clinic Committee has final interpretation and shall rule upon all activities of the Clinic.

HOST DISTRICT: A Conservation District shall be selected to host the Clinic by the Clinic Committee no later than September 30th each year.

DESCRIPTION OF CLINIC EVENTS

TREE IDENTIFICATION: Before anyone managing a forest can develop a forest management plan, whether for their family or someone else, he/she must be aware of what particular species of trees exist in the their forest. Forty-five species of trees have been selected as being significant species for identification in our Clinic. During the Clinic only fifteen species, including both hardwood and southern pine will be selected for identification. Participants should know all the listed species by leaf, bud, stem, and fruit identification. Periodically limbs with good identification characteristics shall be imported to the Clinic site from another site for testing.

Prior to the start of any Clinic the participants will be given a "Question Sheet" and a "Score Sheet" for each event. The Question Sheet for Tree Identification shall contain a numbered list of the tree species participants are expected to know

Upon arrival at the Tree Identification station participants shall be asked to identify fifteen previously selected trees. These selected trees shall be designated by cards with capital letters printed on them. The cards will be attached to the bark of the selected trees at or near 4.5 feet above natural ground level or firmly fixed to limbs that might be used and be readily visible. The participant shall enter the corresponding NUMBER of the species on the provided list.

One point will be awarded for each correct answer.

EXAMPLE - TREE IDENTIFICATION: If the tree with a card with the letter "A" is a Black Cherry. The participant shall locate block "A" on their score sheet and write the number "4" inside the block, because Black Cherry is number 4 on the tree list found on the Question Sheet. (*See figure 1*)

| | | | | |
|--------------------------------|----------------------|----------------------|----------------------|----------------------|
| <input type="text" value="4"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| A | B | C | D | E |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| F | G | H | I | J |

Figure 1

GLOBAL POSITIONING SYSTEM (GPS):

WHAT IS GPS: The Global Positioning System (GPS) is a worldwide radio-navigation system formed from a constellation of 24 satellites and their ground stations, which makes it possible to precisely identify locations on earth by measuring distance from satellites. The first GPS satellite was launched in 1978. GPS became available to the public by Executive decree in the 1980's. Then the full fleet of 24 satellites came on line in 1994. This armada established for the US Department of Defense with US taxpayer money; therefore it is free to all.

The average altitude for these satellites is 12,000 miles and each is moving at an average speed of 7,000 miles per hour. The high altitude allows greater coverage of the earth's surface from one satellite. They are powered by solar energy and were designed to last about 10 years each.

Your favorite FM Radio stations that broadcast music and other audible radio waves range from 88 MHz to 108 MHz, and power wattage of 100,000 watts. Global Positioning Systems use radio frequencies over 1500 MHz and a power wattage of 20—50 Watts. Can you imagine listening to a 50 watt radio station that is 12,000 miles away?

GPS uses these "man-made stars" or satellites as reference points to calculate positions accurate to a matter of meters. In fact, with advanced forms of GPS you can make measurements to better than 1 centimeter! In a sense it's like giving every square meter on the planet earth a unique address.

HOW GPS WORKS:

1. The basis of GPS is "triangulation" from satellites.
2. To "triangulate," a GPS receiver measures distance using time of travel of radio signals to and from pre-programmed satellite orbits above earth.
3. To measure travel time, GPS Units utilize timing systems built into each Unit.
4. Along with distance to the High orbits of 24 satellites, GPS UNITS come pre-programmed to know exactly where the satellites are in space at a given moment in time.
5. Finally your GPS Unit must correct for any delays the signal experiences as it travels through the atmosphere, elevation above sea level.

GPS technology has matured into a resource that goes far beyond its original design goals. These days scientists, sportsmen, farmers, soldiers, pilots,

surveyors, hikers, delivery drivers, sailors, dispatchers, lumberjacks, fire-fighters, and people from many other walks of life are using GPS in ways that make their work more productive, safer, and sometimes even easier. Sometimes an exact reference locator is needed for extremely precise scientific work. Just getting to the world's tallest mountain was tricky, but GPS made measuring the growth of Mt. Everest easy.

The main purpose of navigation is to be able to get from point A to point B as easily as possible. GPS units can store several hundred points, or locations, called "waypoints". Your house, parked car, a great fishing/hunting spot are just a few examples of the locations you could store and navigate back to later. If you have never been to the spot, but know its coordinates or where it is on a map, a GPS receiver can create waypoints of places with these coordinates and navigate you to that spot. Using the GOTO feature, the GPS unit will draw a straight line to that point and guide you there with a pointer arrow, compass bearing, desired course line, or a 3D "highway" representation. When you are navigating to a specific place, the GPS always keeps track of where you are, where you are going, how fast you are going, how far away you are from your destination, and how long it will take you to get there. If an obstacle, such as a lake or canyon, lies in your direct path, you can tell the unit to go to a series of waypoints in a certain order called a "route". As you travel along, your GPS unit will automatically record your journey in a "track log". As you twist and turn along a forest path, your every movement is being stored in the GPS. When activated, the unit will look at your track log and automatically create a reverse route along your same path, taking you back to where you started. You can even store this information to use over again.

Latitude and longitude: Your current location can viewed in the GPS in the form of coordinates. The most common format is latitude and longitude.

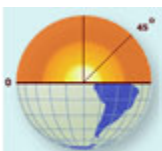


These coordinate values are measured in degrees, and represent angular distances calculated from the center of the Earth.



What is Latitude?

We can imagine the Earth as a sphere, with an axis around which it spins. The ends of the axis are the North and South Poles. The Equator is a line around the earth, an equal distance from both poles. The Equator is also the latitude line given the value of 0 degrees. This means it is the starting point for measuring latitude. Latitude values indicate the angular distance between the Equator and points north or south of it on the surface of the Earth.

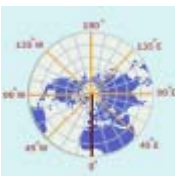


A line connecting all the points with the same latitude value is called a line of latitude. This term is usually used to refer to the lines that represent values in whole degrees. All lines of latitude are parallel to the Equator, and they are sometimes also referred to as parallels. Parallels are equally spaced. There are 90 degrees of latitude going north from the Equator, and the North Pole is at 90 degrees N. There are 90 degrees to the south of the Equator, and the South Pole is at 90 degrees S. When the directional designators are omitted, northern latitudes are given positive values and southern latitudes are given negative values.



What is Longitude?

Lines of longitude, called meridians, run perpendicular to lines of latitude, and all pass through both poles. Each longitude line is part of a great circle. There is no obvious 0-degree point for longitude, as there is for latitude. Throughout history many different starting points have been used to measure longitude. By international agreement, the meridian line through Greenwich, England, is currently given the value of 0 degrees of longitude; this meridian is referred to as the Prime Meridian. Longitude values indicate the angular distance between the Prime Meridian and points east or west of it on the surface of the Earth.



The Earth is divided equally into 360 degrees of longitude. There are 180 degrees of longitude to the east of the Prime Meridian; when the directional designator is omitted these longitudes are given positive values. There are also 180

degrees of longitude to the west of the Prime Meridian; when the directional designator is omitted these longitudes are given negative values. The 180-degree longitude line is opposite the Prime Meridian on the globe, and is the same going either east or west.

How precise can we be with latitude and longitude?

Degrees of latitude and longitude can be further subdivided into minutes and seconds: there are 60 minutes (') per degree, and 60 seconds (") per minute. For example, a coordinate might be written 65° 32' 15". Degrees can also be expressed as decimals: 65.5375, degrees and decimal minutes: 65° 32.25', or even degrees, minutes, and decimal seconds: 65° 32' 15.275". All these notations allow us to locate places on the Earth quite precisely – to within inches.

A degree of latitude is approximately 69 miles, and a minute of latitude is approximately 1.15 miles. A second of latitude is approximately 0.02 miles, or just over 100 feet.

A degree of longitude varies in size. At the equator, it is approximately 69 miles, the same size as a degree of latitude. The size gradually decreases to zero as the meridians converge at the poles. At a latitude of 45 degrees, a degree of longitude is approximately 49 miles. Because a degree of longitude varies in size, minutes and seconds of longitude also vary, decreasing in size towards the poles.

Commonly Used Terms

Equator—The line which encircles the Earth at an equal distance from the North and South Poles.

Geographic coordinates—Coordinate values given as latitude and longitude.

Great circle—A circle formed on the surface of a sphere by a plane that passes through the center of the sphere. The Equator, each meridian, and each other full circumference of the Earth forms a great circle. The arc of a great circle shows the shortest distance between points on the surface of the Earth.

Meridian—A great circle on the surface of the Earth, passing through the geographical poles and some third point on the Earth's surface. All points on a given meridian have the same longitude.

Parallel—A circle or approximation of a circle on the surface of the Earth, parallel to the Equator and connecting points of equal latitude.

Prime Meridian—The meridian of longitude 0 degrees, used as the origin for the measurement of longitude. The meridian of Greenwich, England, is the internationally accepted prime meridian in most cases.

In this Clinic, testing on the participant's knowledge of GPS will be done with match the word columns. A list of relevant words, terms or phrases will be listed in a column on the left side of a page by number, with a list of related words, terms or phrases on the right side of the page with a blank beside them. The student will be asked to place a number from the left column in the blank beside the best match in the right column. All answers can be found in the above explanation on GPS.

Example GPS: The participant knows from the above information that GPS became available to the Public in the 1980's, so the number 4 is correctly placed in the blank next to the phrase - GPS available to the public. (See figure 2.)

One point will be awarded for each correct answer

GPS Glossary:

Write the number of the phrase on the left on the space next to the phrase on the right that best matches.

- | | |
|-----------------------------|--|
| 1) Power level of satellite | _____ Greater than 1500 Mhz |
| 2) Between 88 and 108 Mhz | _____ Band frequency of GPS |
| 3) 1978 | _____ Number of available satellites |
| 4) 1980's | _____ <u>4</u> GPS available to public |
| 5) 1994 | _____ Power level of FM radio stations |

figure 2

WOOD QUALITY – Rate of Growth: The speed that a tree grows has a great deal to do with the quality of wood produced. When looking at trees grown for lumber production, a good indicator of quality will be the number of annual rings per inch of radial growth. The following description of growth rates deal only with Southern Yellow Pine, the most economic wood species in the Southeastern United States. For good lumber characteristics trees should grow at the rate of five (5) to eight (8) rings per inch of radial growth. More rings per inch are un-

economical, and an indicator of slow growth. Fewer rings than five per inch of radial growth are indicative of weak wood, and generally lower quality due to the tree growing too fast.

In this event, participants shall examine three (3) blocks of processed lumber with an inch marked off on each. They will determine from which classification each block should be assigned:

- 1—TOO FAST
- 2—TOO SLOW
- 3—ABOUT RIGHT

The number that describes the rate of growth will be placed in the appropriate block on the Answer Sheet.

One point will be awarded for each correct answer

EXAMPLE: If upon examining sample block of lumber "A", the participant determines that there are ten rings per inch, the participant should put the number "2" representing "too slow a rate of growth" in Block A (*See Figure 3*)

| RATE OF GROWTH | | |
|--|--|--|
| <div style="border: 1px solid black; padding: 5px; display: inline-block;">2</div> | <div style="border: 1px solid black; width: 40px; height: 30px; display: inline-block;"></div> | <div style="border: 1px solid black; width: 40px; height: 30px; display: inline-block;"></div> |
| A | B | C |

Figure 3

1. **TREE TONNAGE:** In this Clinic our participant will calculate the Tonnage of 5 trees. Utilizing the tonnage method as recently sanctioned by the State of Arkansas in the Arkansas Codes (26—58—111(7) A. C. A) as the accepted method for calculating tree quantity.

In this Clinic the participant shall determine the diameter of five (5) trees at DBH (4.5 feet above natural ground) to the 2-inch class (*i. e. 10", 12", etc.*) For

example the 10" class would contain all trees that measures from 9.0" to 10.99 inches.

The participant shall then determines merchantable height in numbers of 16 foot long logs to the nearest ½ log (*e. g. 1 log, 1 ½ logs, 2 logs, 2 ½ logs, etc.*) using a cruise stick. The minimum top diameter for saw logs shall be 8 inches.

For this Clinic, trees with excessive roughness, limbiness, and whorls will be avoided by the volunteer personnel setting up the event, and therefore should not be a consideration in computations.

A tonnage table (**page 14**) and a score sheet shall be provided.

For this Clinic partial credit shall also be given for being within 5% or 10% of the correct TOTAL TONNAGE. Scoring shall be:

- 1 point for each correct DBH
- 1 point for each correct height
- 1 point for each correct tree volume
- 5 points if within 5% to 10% of correct total volume
- 10 points if within 5% of correct total volume

The number found in the Tonnage table on the row to the right of the where the diameter measured and the column under the number of logs measured meet is the number of tons contained in that tree.

This procedure is repeated for each tree, then all five tonnages are added together to come up with the total tonnage.

TREE VOLUME EXAMPLE: Let us assume that the participant correctly measures five pre-determined trees finding the following diameters and heights:

- 1) 16" DBH with 2.5 Logs
- 2) 16" DBH with 3.0 Logs
- 3) 14" DBH with 2.0 Logs
- 4) 12" DBH with 1.5 Logs
- 5) 14" DBH with 1.5 Logs

TREE TONNAGE EXAMPLE: Let us assume that the participant correctly measures five pre-determined trees finding the following diameters and heights:

1. 16" DBH with 2.5 Logs
2. 16" DBH with 3.0 Logs
3. 14" DBH with 2.0 Logs
4. 12" DBH with 1.5 Logs
5. 14" DBH with 1.5 Logs

TREE TONNAGE EXAMPLE: These same measurements entered on the scores sheet under the TONS column. In this example the sum of all five trees indicates that the number of TONS of wood is 3.936 TONS. Therefore the TOTAL TONNAGE is entered in the Totals 3.936 at the bottom of the TONS column of the Score Sheet. *(see figure 6)*

| TREE NO. | DBH | NO 16' LOGS | TONS |
|----------|-----|---------------|--------------|
| 1 | 16 | 2.5 | 1.144 |
| 2 | 16 | 3.0 | 1.288 |
| 3 | 14 | 2.0 | 0.656 |
| 4 | 12 | 1.5 | 0.312 |
| 5 | 14 | 1.5 | 0.536 |
| | | TOTALS | 3.936 |

Figure 6

| | TONNAGE TABLE | | | | | | | | |
|---------------|---------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| DBH Inches | 1 LOG | 1.5 LOGS | 2 LOGS | 2.5 LOGS | 3 LOGS | 3.5 LOGS | 4 LOGS | 4.5 LOGS | 5 LOGS |
| 10 | 0.128 | 0.160 | 0.184 | 0.192 | 0.208 | 0.224 | 0.248 | | |
| 12 | 0.248 | 0.312 | 0.376 | 0.416 | 0.456 | 0.480 | 0.496 | | |
| 14 | 0.416 | 0.536 | 0.656 | 0.744 | 0.832 | 0.872 | 0.912 | 0.960 | 1.008 |
| 16 | 0.616 | 0.808 | 1.000 | 1.144 | 1.288 | 1.392 | 1.488 | 1.592 | 1.704 |
| 18 | 0.864 | 1.152 | 1.432 | 1.648 | 1.872 | 2.032 | 2.184 | 2.344 | 2.512 |
| 20 | 1.152 | 1.544 | 1.936 | 2.256 | 2.568 | 2.784 | 2.992 | 3.168 | 3.336 |
| 22 | 1.480 | 2.000 | 2.520 | 2.944 | 3.360 | 3.664 | 3.976 | 4.232 | 4.488 |
| 24 | 1.848 | 2.512 | 3.176 | 3.728 | 4.288 | 4.664 | 5.404 | 5.424 | 5.800 |
| 26 | 2.256 | 3.088 | 3.912 | 4.608 | 5.304 | 5.816 | 6.328 | 6.816 | 7.296 |
| 28 | 2.712 | 3.728 | 4.736 | 5.600 | 6.456 | 7.080 | 7.488 | 8.320 | 8.944 |
| 30 | 3.200 | 4.460 | 5.624 | 6.656 | 7.680 | 8.440 | 9.192 | 9.984 | 10.768 |

SOURCE: ARKANSAS CODES 26—58—111(7) A. C. Rate of tax on timber Pine Conversion Factors to Tons

TABLE 2

WOOD PRODUCTS: A number of different wood products can be produced on properly managed forests at different stages or age. The main products of southern yellow pines, in order of decreasing value are: 1) Poles and Piling; 2) veneer and Sawlogs; 3) Pulpwood and fence posts. In the Clinic the participant shall examine ten (10) trees and determine what forest product each are suited considering highest value first. Each of the ten trees will have an alphabetically lettered tag on it and the participant is to record the correct product code in the corresponding box for each letter on the Score Sheet.

The codes are: 1 – Poles and Piling
2 – Veneer and Sawlogs
3 – Pulpwood and fence Posts

Poles and Piling are the highest value wood products from pine stands in the South. To qualify for poles and piling, trees have to be very straight for the minimum length of pole (30 feet) from the ground. A test for straightness is to stand several feet from the tree and drop an imaginary plumb line from the center

of the tree; this method should be followed from two different views of the tree. If that imaginary plumb line remains within the wood from the top to the bottom, the tree is straight enough to qualify as a pole (based on straightness). In addition, the trees can have no ring knots (a point where several branches are on the body of the tree at roughly the same height above the ground). Ring knots create areas of weakness in the pole or piling and are subject to breakage more readily than areas without ring knots.

The minimum length for a pole in the clinic shall be 30 foot. The top diameter shall be a minimum of 6 inches, outside the bark. Normally trees that are being measured for poles are measured at 6 feet above ground. In the Clinic the minimum diameter at DBH (4.5 feet) above natural ground shall be 8 inches. IN THIS CLINIC, the participant is considering that local pole buyers are not purchasing any poles greater than 20 inches DBH.

Pilings have the same standards for straightness and lack of ring knots as the poles. However, pilings tend to be much larger in top diameter. In this clinic the participant is considering that local buyers are not purchasing any piling greater than 20 inches DBH.

Sawlogs and Veneer logs are the next most valuable wood products obtained from southern yellow pines just after Poles and Pilings. To qualify as a sawlog or veneer log, the minimum DBH is 10 inches and the length must be at least 1 (16 foot) log. Sawlogs may have knots or limbs on them, provided they are not excessive, but veneer logs must be practically branch and knot free. Both sawlogs and veneer logs must be relatively straight however, not as straight as pole and piling material.

Wood Products Example: A tree in this clinic event is tagged with the letter "D". It is a 14 inch DBH and has two large branches on it at 8 foot and 20 foot from the ground. The participant decides that the tree is best suited for sawlogs and puts the code "2" in the block for letter D.

(SEE FIGURE 7)

One point will be awarded for each correct answer

WOOD PRODUCTS

| | | | | |
|----------------------|----------------------|----------------------|--------------------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text" value="2"/> | <input type="text"/> |
| A | B | C | D | E |
| <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| F | G | H | I | J |

Figure 7

SITE INDEX: Site Index is an indicator of the productivity of a woodland site. The site index number is the height that the average dominant trees in a stand can be expected to reach in 50 years (the age used for southern yellow pines). Site index is determined by measuring the average height of the dominant and co-dominant trees in an even-aged stand and relating this to the average tree age. Soil is a factor that greatly influences the productivity of a site and therefore the site index. In addition, local climatic conditions influence tree growth and development.

The participant shall be provided *table 3*, which identifies the site index for loblolly pine. No matter what species the tagged tree is, the participant shall assume it is a dominant or co-dominant loblolly pine for this clinic. A tree cross section or increment core shall be available so that the contestant can count the rings and determine the tree's age. The number of rings counted will be used for

the age. Do not add anything to this count. The total tree height will be determined by each participant. Remember, that site index refers to the total height. Each participant may need to round the age to the nearest five years and the total height for that age class when determining a site index due to the construction of the site index table.

The site index table (*Table 3*) is used by reading down the left-hand column to the nearest age; then across to the nearest height; and back up to the top row for the correct site index.

Scoring shall be:

- 10 points = correct Site Index
- 5 points = plus or minus 10 feet of the correct site index
- 2 points = more than 10 feet but less than 15 feet of the correct site index
- 0 points = more than 15 feet from the correct site index

Site Index Example: The participant counts 45 rings and measured the total tree height as 75 foot. Using the table, the participant finds the site index is 80 and enters this into the block on the score sheet. (*see figure 8*)

SITE INDEX:

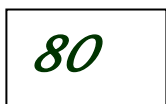


Figure 8

SELECTIVE THINNING: Forest stands that are becoming over crowded or overstocked should be thinned to give the remaining trees more space in which to grow in size and value. It is always a good idea to remember that once spacing is determined to be equal that the larger trees are larger due to superior genetics of the individual tree. Therefore, in this clinic, you are trying to maximize timber growth by cutting and removing smaller trees, crooked trees, and defective trees. Highest priority should be to cut any tree that could die within 8–10 years or before our next thinning. Next priority to cut a tree should be that it will produce the least amount of growth in the next 8 –10 years. If trees are of the same good quality and good health, then the decision should be made on which ones needs to be cut on the merits of proper spacing will be left after the trees are cut and removed. Too wide spacing invites brush to grow unchecked, and in hardwoods too much sun striking he tree bole promotes branching on the bole of the tree, lessening the quality of lumber it will produce, and therefore the price.

If wildlife habitat management is considered a goal of the forest landowner, then considerations should be addressed when planning and conducting all thinning operations. You may want to **leave=L** some trees that are beneficial to wildlife that otherwise should be deadened. Generally speaking wildlife game species do not utilize more than 9 –12 well spaced mast producing or den trees per acre.

Methods used in thinning should include:

1. Determine which species of trees (pine, red oak, white oak, etc.) you want to **leave=L** as your cash crop.
2. Select those **"leave trees"** on the basis of best condition, value, size, vigor, and spacing.
3. **CUT** and remove commercial grade trees that are overtopped, damaged, diseased, deformed, or of poor quality, or that are crowding trees you want to leave=L.

For this clinic, species to leave as the cash crop will be predetermined and given to the participant. 15-- 30 commercial trees shall be selected and designated for use in Thinning. The trees may be all of one species or a mixture of species. An area of up to 30 feet in radius shall be selected. The trees that are numerically tagged shall represent a timberstand that needs Thinning. Our landowner wants to be able to cut the same acres every 8—10 years. She does draw an income from hunters who lease the land on an annual basis for hunting squirrel, and white-tailed deer. Considerations therefore will be allowed for wildlife benefits; however the landowner wants to grow a healthy stand of commercial timber. Participants are asked to simply mark a **"C"** for Cut or **"L"** for leave, in each corresponding box.

THINNING EXAMPLE: Tree marked with the number "1" in the thinning is a fair quality tree of good commercial size and species, however it is crowding two larger trees one each side. Therefore it needs to be cut. The example shows that the participant correctly marks box number 1 with a **"C"** for **cut**. *See figure 9*

One point shall be awarded for each box correctly marked.

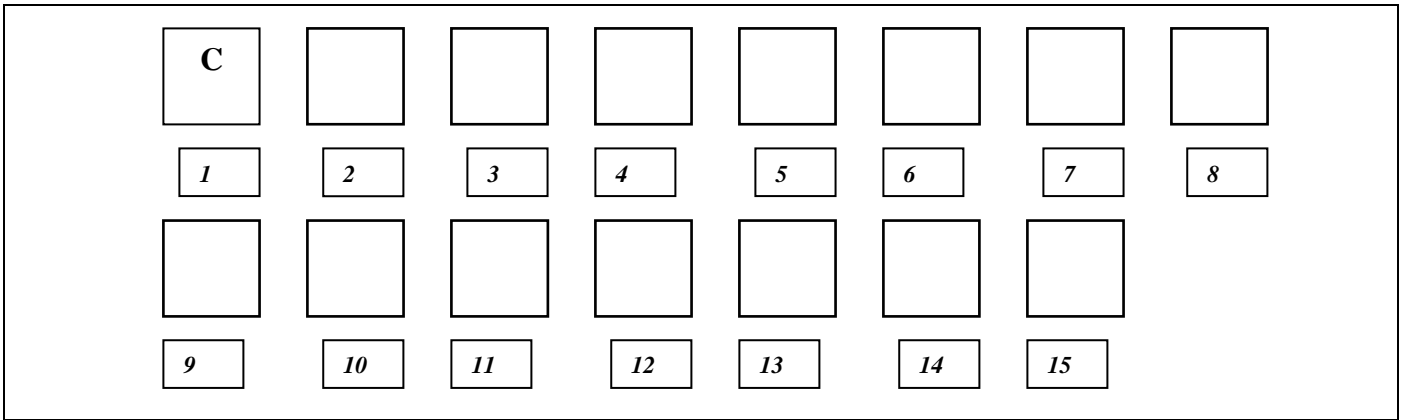


Figure 9

COMPASS AND PACING: The ability to use a compass and to pace accurately in forest situations is invaluable skills. The clinic includes a compass course which will have one turn and the course shall not exceed 6 chains (396 feet). The participant will be given both bearings and corresponding azimuths (participants may use either) and distance to each waypoint. Compasses will be set to a 0 degree declination. Scores will be based on how close to the correct ending point the participant finishes. In the clinic, the set of courses may vary as much as 180 degrees in their directions. Therefore, one participant following another may not lead another to their correct ending point.

The ability to accurately pace known distances is just as important as the ability to use a compass in this event. The persons setting up this event should lay out a course at is at least two chains long. The course may involve level ground but should also include some up-and-down hill distances.

To determine the participants pacing distance the participant should practice by laying out a two chain (1 chain = 66 feet) course. Then beginning with the toe of the left foot at the beginning of a two-chain course then pace while and counting the number of times the left foot touches the ground to the ending point. Then divide the number of paces by two to determine the number of paces in 66 ft. Several factors can affect the number of paces involved in measuring distances by pacing; therefore, it would be good idea for any contestant to lay out a short course and determine his pace on the day of the clinic.

In the clinic the participant will be issued a pin to stick in the ground where they finish pacing. The individual in charge of the event will then award any points earned and will remove the flag.

Scoring for Compass and Pacing:

| | | |
|--|---|--------|
| Less than 5 feet from correct ending point | - | 10 pts |
| Greater than 5 feet but less than 15 feet | - | 5 pts |
| Greater than 15 feet but less than 30 feet | - | 2 pts |
| Greater than 30 feet | - | 0 pts |

Compass and Pacing Example: The participant is given the following course directions at this event:

- 1) 45° (N 45 E) 3 chains (198 feet)
- 2) 315° (N 45 W) 2 chains (132 feet)

After finishing this course the contestant places the flag at the end point. The participant has finished **12 feet** from the correct ending point and is **awarded 5 pts.**

SITE INDEX TABLE

| <i>Total Age Years</i> | SITE INDEX OF LOBLOLLY PINE | | | | | | | | | | | | | | |
|--------------------------------|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|
| | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 |
| | Heights of Dominant Trees Expressed In Feet | | | | | | | | | | | | | | |
| 10 | 16 | 18 | 20 | 22 | 25 | 26 | 28 | 30 | 32 | 34 | 35 | 337 | 39 | 41 | 43 |
| 15 | 22 | 25 | 28 | 31 | 34 | 36 | 38 | 40 | 43 | 45 | 47 | 50 | 52 | 54 | 57 |
| 20 | 28 | 32 | 35 | 38 | 42 | 44 | 47 | 50 | 53 | 56 | 58 | 61 | 64 | 67 | 70 |
| 25 | 34 | 38 | 41 | 45 | 49 | 20 | 55 | 58 | 62 | 66 | 70 | 73 | 76 | 80 | 83 |
| 30 | 39 | 43 | 47 | 51 | 55 | 59 | 63 | 66 | 70 | 74 | 78 | 82 | 85 | 89 | 93 |
| 35 | 43 | 48 | 52 | 56 | 60 | 64 | 68 | 72 | 77 | 81 | 85 | 90 | 94 | 98 | 102 |
| 40 | 46 | 50 | 55 | 60 | 64 | 68 | 73 | 78 | 82 | 86 | 91 | 96 | 100 | 105 | 110 |
| 45 | 48 | 53 | 58 | 62 | 67 | 72 | 77 | 82 | 86 | 91 | 96 | 101 | 106 | 110 | 115 |
| 50 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | 105 | 110 | 115 | 120 |
| 55 | 52 | 57 | 62 | 68 | 73 | 78 | 83 | 88 | 93 | 98 | 104 | 109 | 114 | 119 | 124 |
| 60 | 54 | 59 | 64 | 70 | 75 | 80 | 85 | 90 | 96 | 102 | 107 | 112 | 117 | 122 | 128 |
| 65 | 55 | 60 | 66 | 72 | 77 | 82 | 87 | 92 | 98 | 104 | 110 | 115 | 120 | 126 | 131 |
| 70 | 56 | 61 | 67 | 72 | 78 | 84 | 89 | 94 | 100 | 106 | 112 | 116 | 123 | 128 | 133 |
| 75 | 57 | 62 | 68 | 74 | 79 | 85 | 91 | 96 | 102 | 108 | 114 | 119 | 124 | 130 | 135 |
| 80 | 57 | 63 | 69 | 74 | 80 | 86 | 92 | 98 | 103 | 109 | 115 | 120 | 126 | 132 | 137 |
| 85 | 58 | 64 | 70 | 76 | 81 | 87 | 93 | 98 | 104 | 110 | 117 | 124 | 128 | 134 | 139 |
| 90 | 59 | 64 | 70 | 76 | 81 | 88 | 94 | 100 | 105 | 112 | 118 | 124 | 129 | 134 | 140 |
| 95 | 59 | 65 | 71 | 76 | 82 | 88 | 95 | 100 | 106 | 112 | 118 | 124 | 130 | 136 | 141 |
| 100 | 60 | 65 | 71 | 76 | 82 | 88 | 95 | 100 | 106 | 112 | 119 | 125 | 131 | 136 | 142 |

Table 3

FOREST – FORAGE – WILDLIFE RELATIONSHIPS

A. Purpose of identifying Browse Plants Used by Deer

Virginia white-tail (*Odocoileus virginianus*) populations in some southeastern United States have increased nearly 400% according to 1970 to 1996 records. Arkansas harvest records show that 26,017 deer were harvested in Arkansas in 1980, 42,873 in 1983, and 152,460 in 1996 with the total population over 900,000 in 1996.

AACD Monroe R. Samuel Forestry Clinic Question Sheet

1. **Tree Identification** - Use the numbers below to identify the tagged trees.

- | | | |
|------------------------|------------------------|----------------------|
| 1) American Beech | 17) Honey Locust | 33) Black Oak |
| 2) American Holly | 18) Hop Hornbeam | 34) Blackjack Oak |
| 3) Ash | 19) Iron Wood | 35) Cherry Bark Oak |
| 4) Bald Cypress | 20) Plum | 36) Laurel Oak |
| 5) Black Cherry | 21) Pecan | 37) Northern Red Oak |
| 6) Black Gum | 22) Red Maple | 38) Nuttall Oak |
| 7) Black Tupelo | 23) Red Mulberry | 39) Overcup Oak |
| 8) Black Walnut | 24) Sassafras | 40) Post Oak |
| 9) Black Willow | 25) Southern Magnolia | 41) Shumard Oak |
| 10) Common Persimmon | 26) Sugar or Hackberry | 42) Southern Red Oak |
| 11) Eastern Cottonwood | 27) Sweetgum | 43) Water Oak |
| 12) Eastern Redbud | 28) Sycamore | 44) White Oak |
| 13) Eastern Red Cedar | 29) Loblolly Pine | 45) Willow Oak |
| 14) Elm | 30) Longleaf Pine | |
| 15) Flowering Dogwood | 31) Shortleaf Pine | |
| 16) Hickory | 32) Slash Pine | |

Global Positioning Systems (GPS) – Match the Glossary words with the best matching phrase.

Wood Quality – For quality lumber and an economical growth rate, the marked pieces of lumber were growing: **1**- Too Fast **2**- Too Slow **3**- About right

Selective Thinning – Circle the number corresponding to the tagged tree that should be **CUT**.

Tree Volume – Determined in either board feet or tons; using DBH; and merchantable height for each of the five tagged trees. Calculate either the total board feet or total tons.

Wood Products – Each of the (10) tagged trees will normally bring the most income if sold as: 1—Poles or Pining 2—Sawlogs or Veneer logs 3—Pulpwood or fence posts.

Site Index – Determine the proper site index for the tagged tree.

Timber Stand Improvement (TSI) – The stand of timber could best be managed according to the landowner's objectives if each of the tagged trees were: C=cut L=Left or D=deadened

Compass and Pacing – Complete the assigned compass and pacing course.

Arkansas Association of Conservation Districts **Code of Ethics**

The Arkansas Association of Conservation Districts (AACD) is a private, nonprofit, tax exempt (IRS 501 ©(3) organization representing the seventy five (75) local conservation districts in the state. AACD is controlled by its member districts, and regular functions are financed by contributions of its membership. AACD serves its members by providing information and services in accordance with the policies and recommendations of its Board of Directors.

The mission of AACD is to advance the interest of the Conservation Districts and provide them needed services to further the conservation, wise use and orderly development of natural resources.

The general goals of AACD are to serve as the voice of the State's conservation districts; to assist districts with building and strengthening their capabilities; to provide services needed by districts; and to maintain and improve member commitments to, and identification with, their association.

In serving the cause of Conservation Districts, AACD is dedicated to abiding by the highest ethical standards of performance and acting in the best interests of conservation districts and the environment.

Effective participation in AACD functions requires that the Board and Committee members be impartial, responsible and representative of the interests of their regions and the State.

This Code of Ethics is designed to provide guidance for AACD Board of Directors, Executive Board and Committee members in carrying out the duties of their offices and positions.

Board of Directors, Executive Board and Committee Members will:

- 1) Keep their constituents informed and allow opportunity for their participation in the decision-making process.
- 2) Devote the time and effort necessary to ensure the successful functioning of the conservation district, Executive Board, Board of Directors and Committees, by participating in, and encouraging others to participate in, the activities of the state association and local conservation districts.
- 3) Advocate the highest standards of conduct and competence for all that serve or participate in conservation district programs.

- 4) Strive for self-improvement by learning more about AACD and conservation district programs through attendance at local, area and state association meetings, training sessions and other activities.
- 5) Adhere to the spirit as well as the letter of all-applicable local, state and federal laws and regulations.
- 6) Avoid any action that might result in, or create the appearance of:
 - a) Using their position for personal gain (whether their own or others with whom they are associated in a personal, family, or business relationship).
 - b) Giving improper preferential treatment to any person.
 - c) Impeding efficiency or economy.
 - d) Losing independence or impartiality.
 - e) Making a work-related decision that affects, involves or binds AACD outside of official channels or prescribed procedures.
 - f) Affecting adversely the confidence of members, vendors or suppliers in the integrity of local districts and/or AACD and its operations.
- 7) Not directly solicit any gift or accept any gift, whether in the form of money, services, loan, travel, entertainment, hospitality, promise, or any other form, under circumstances in which it could reasonably be inferred that the gift was intended to influence actions or policies of the association.
- 8) Not directly or indirectly disclose, use or allow the use of any information they have through or in connection with the conservation district that is not generally and publicly available on an equal basis to everyone else with an interest in it, for the purpose of furthering their own personal interests or interests of anyone else with whom they might have a personal, family or business relationship.
- 9) Not have direct or indirect financial interest that conflicts with, or appears to conflict with, their duties and responsibilities with the conservation district or AACD; or engage in directly or indirectly, a financial transaction based on information obtained through their association with the conservation district or AACD.

Whenever any situation comes to an Officer, Executive Board Member or Board Member's attention that appears to be covered by this policy, the individual should promptly disclose the matter to the Conservation District and/or AACD. Disclosure must be full and complete.

Violation of, or failure to comply, with these accepted standards or any component there shall be grounds for discipline, which may include the full range of options available, up to and including removal from office.

ATTACHMENT "A"

Rules and Participation Guidelines for Monroe R. Samuel Forestry Clinic

While we do not wish to seem overly protective or restrictive, there are some rules by which we must govern ourselves in order for everyone to get through the day's work smoothly and with a minimum of trouble. Some of these rules may be flexed at times for the good of the entire group, but none can be ignored or broken without consequence. What follows is a listing of the guidelines that the staff will use to manage the Clinic.

First and foremost, treat everyone like you would wish to be treated. You should, at all times and in all circumstances, act as a lady or a gentleman. In so doing, you will reflect well on our parents, hometowns, and on the Conservation District which sponsored you to attend.

- State laws regarding the use of tobacco, alcohol, and drugs will be strictly enforced. If you are under age 18, the use of tobacco will result in a call to your parents or guardians and the request that you leave the Clinic. The use of drugs or alcohol will result in your having to deal with state park security and all the potential problems that this could bring. You will be required to leave the Clinic immediately.
- Dress codes, while not expressed formally in these rules, require that you dress in appropriate attire for a public gathering. Clothing that is in poor taste, or has profane or explicit artwork or wording is not permitted. The staff reserves the right to ask you to change items of clothing that are not proper for the circumstances. We will give each participant a Clinic Tee-shirt.
- If you are required to take medications or if you have allergies that require a "Sting Kit" or "Epi-pen", or if you are diabetic, you **MUST** come prepared. Those are the types of items that we cannot provide. To arrive without these items will result in our request that you have these items delivered or that you leave the Clinic.
- Illness or injuries require that you report the problem to a staff member immediately or have someone do it for you. Our policy is that no one is ever left alone or unsupervised, so someone will always be near if you have a problem. Our entire staff is prepared to deal with almost any

emergency that might normally arise. *Local Urgent Care and the Emergency Room are all part of the contingency plan for health or safety problems.*

- While we truly hope that everyone has fun and enjoys the Clinic, the primary purpose is to learn about forestry and conservation.

Monroe R. Samuel Forestry Clinic

Code Of Conduct

I. In seeking uniformity in the conduct expected of all individuals participating in the AACD Forestry Clinic, the following guidelines have been developed.

- A. All rules and regulations governing this activity will be provided to and/or discussed with all individuals participating in the Forestry Clinic prior to the clinic.
- B. Participation in the activities of the AACD Forestry Clinic shall be limited to clinic participants (as outlined in the Forestry Clinic Rules), staff members, volunteers, and/or teachers.

II. Action up to and including expulsion from the Clinic may be taken if any individual is accused of the following offenses, including, but not limited to:

- A. Possession or use of illegal drugs, tobacco or alcoholic beverages.
- B. Theft, misuse or abuse of public or personal property.
- C. Sexual misconduct.
- D. Staff and volunteers are encouraged to avoid, where possible, being alone with a single youth, including sharing sleeping quarters with non-related youth.
- E. Staff and volunteers are encouraged not to socialize with program participants under the age of 18 outside of Arkansas Conservation Partnership Youth activities.
- F. Possession of weapons or fireworks.
- G. Assault or personal harm or threat of assault or personal harm.
- H. Staff and volunteers will not, under any circumstances, discipline program participants by use of physical punishment or by failing to provide the necessities of care, such as food or shelter.
- I. Staff and volunteers should be alert to the physical and emotional state of all program participants. They should be alert for indicators of abuse and report suspected abuse to local law enforcement officials.

III. Realizing these guidelines are not "all inclusive"; AACD reserves the right to make adjustments to these policies.

IV. NOTIFICATION PROCEDURES: If a Staff Member, Volunteer, Teacher or any individual participating this activity is found in violation of the Code. The person in charge of the event will notify the appropriate Authority and/or Conservation District Office if necessary.

V. AGREEMENT: As a condition of participation in the AACD Forestry Clinic, I agree to be bound by the terms of this Code of Conduct.

Signature_____

Date_____