Section 1. Introduction to the CAWV Program

Do you want to become a Certified Animal Waste Vendor (CAWV) in Alabama?
First ask yourself these questions:

Do I haul or transport animal waste (poultry litter, manure, compost, liquid sludge, etc.) for someone else?

Do I spread it on property other than property that I own, rent or control?

Do I get paid for performing the above services?

Do I wish to handle animal waste in a responsible manner that will assure protection of Alabama's surface and groundwater quality?

If the answer is "yes" to any of these questions, then you may wish to become certified?

What is a Certified Animal Waste Vendor?
Very simply, a Certified Animal Waste Vendor is a person who is in the business of transporting, storing, and spreading animal waste, has been through this training program, and has been certified by the Alabama Department of Agriculture and Industries (ADAI) and the Alabama Department of Environmental Management (ADEM)

Certification is strictly voluntary!
There is no "law" or regulation that requires certification in order to haul and spread animal waste in Alabama. However, being certified demonstrates that you have been trained and understand best management practices (BMPs) associated with animal waste management. Being certified may also give you a slight business advantage over those who are uncertified. However, anyone handling animal waste in Alabama is required to follow best management practices whether they are certified or not.

Why does Alabama have a CAWV program?
In order to protect water quality, Alabama was the very first state to begin a program of training and certifying those who are in the business of hauling and spreading animal waste for other producers. Most other states are in the process of starting some type of registration or certification program. Rather than wait on U S Environmental Protection
Agency to tell us what to do, Alabama was proactive in the animal waste management issue by enacting its own AFO/CAFO Rule in 1999. It was this rule, enforced by the ADEM, that established the CAWV program.

This rule was enacted in order for Alabama to be in compliance with the "National Pollution Discharge Elimination System" (NPDES) permit program. Simply stated, this is an effort to protect surface and groundwater from discharges from animal feeding operations (AFOs).

**Alabama's AFO/CAFO Rules**

Alabama's rules for Animal Feeding Operations (AFOs) and Concentrated Animal Feeding Operations (CAFOs) were adopted in 1999 and modified in 2000 and are over 71 pages long. Within this rule, the CAWV program was established. The entire AFO/CAFO Rule may be viewed at

[http://www.aces.edu/department/aawm/CAFORule12100.pdf](http://www.aces.edu/department/aawm/CAFORule12100.pdf)

**Responsibilities of a CAWV**

The following responsibilities are specifically mentioned in the AFO/CAFO Rules. Most CAWVs will not have to deal with all these responsibilities but those highlighted will be day-to-day responsibilities of every vendor and will be covered in more detail in this training.

- accept liability and responsibility for AFO waste
- obtain continuing education
- keep required records
- effectively manage, transport, store, and properly land apply AFO waste
- follow NRCS best management practices
- manage animal mortality
- prevent discharges
- ensure protection of groundwater and surface water
- follow AFO/CAFO rules and regulations
- ensure suitability of each site prior to applying waste
- proper timing of waste/wastewater application
- proper calibration of equipment
- waste/wastewater characterization (testing)
- soil testing
- ensure that required inspections are performed
- ensure that others receiving waste/wastewater are informed of AFO/CAFO rules
- keep accurate records
Section 2. Science behind the Rule and Alabama NRCS conservation practice standard Nutrient Management, Code 590

The “rule” that we are focusing on is Alabama’s 2000 AFO/CAFO Rule which set up the CAWV program by stating that a CAWV must ". . . effectively manage, handle, transport, store, and properly land apply AFO waste in a manner that meets or exceeds NRCS technical standards and guidelines . . . ".

However, this one statement in ADEM's AFO/CAFO Rule effectively make NRCS’s technical standards and guidelines “THE LAW”. You can find the NRCS Code 590 at your local Soil and Water Conservation District office or county Cooperative Extension office. An on-line source of this information is the Extension animal waste management web site.


Many of the management practices that you'll need to know are in Alabama NRCS Code 590. This code established BEST MANAGEMENT PRACTICES for " . . . managing the amount, source, placement, form and timing of application of nutrients and soil amendments ".

You can review the entire code or only part of it at this web site:

http://www.aces.edu/department/aawm/al590.pdf

The following BMPs were taken from the Alabama NRCS Code 590.
BMP: Consider Other Sources of Nutrients

Some of these BMPs are very practical and are just common sense practices such as the one for managing available nitrogen from legume cover crops.

BMP: Apply Nutrients Based on Soil Test

Another BMP recommends doing what we have always done, apply nutrients based on a soil test report for the intended land use. This also assures that the crop needs are considered.

BMP: Timely Fertilizer Application

In the past, animal manures have been spread whenever a lagoon needed pumping or whenever a poultry house needed cleaning. This was called "waste disposal". This is NOT a best management practice. A vendor could be in violation of ADEM regulations
If manures or poultry wastes are spread at the wrong time of the year for the crop to be grown, resulting in unpermitted discharges of pollutants.

For example, most producers realize that it is best to apply nitrogen fertilizers within 30 days of planting a crop. THIS IS A BMP! They may not realize that this also applies to manure sources of nitrogen. ALL ANIMAL MANURES MUST BE HANDLED JUST LIKE CHEMICAL FERTILIZERS. A corn producer would never spread his fertilizer nitrogen in the fall and expect it to still be there for his spring planting. But many times in the past vendors have applied poultry litter in the fall and winter for a spring-planted crop such as corn or cotton.

The pre-sidedress soil nitrate test has been used to determine if there is enough soil nitrogen present at sidedressing time to make a corn crop without additional fertilizer nitrogen. What was found in North Alabama is that you needed around 28 parts per million nitrate-nitrogen in the soil at sidedressing time in order to make 100% of the potential for corn grain yield. All of these sites in the above figure had been fertilized with poultry litter. If the litter was applied more than 30 days prior to planting, we were always below the 28 ppm level and still had to sidedress the crop with additional fertilizer N. If we applied it within 30 days of planting, there was adequate presidedress soil nitrate the soil and no more had to be added.

It makes economical sense to apply the nitrogen (e.g., animal manures) within 30 days of planting. So, what happened to all that nitrogen if it is applied at the wrong time? It ends up as nitrate in our groundwater or runs off into our streams, lakes, rivers, and ultimately, the Gulf of Mexico where it is considered a serious pollutant.

The pre-sidedress soil nitrate test has been used to determine if there is enough soil nitrogen present at sidedressing time to make a corn crop without additional fertilizer nitrogen. What was found in North Alabama is that you needed around 28 parts per million nitrate-nitrogen in the soil at sidedressing time.
This study at the Prattville Experiment Field shows how quickly nitrogen in the upper 2 feet of soil can be lost during two growing seasons.

One of the main reasons for this rapid loss of nitrate is our rainfall pattern. The above figure for the Birmingham, Alabama, area indicates a lot more rainfall (precipitation) from October through April than evaporation and plant uptake (evapotranspiration). This means a much higher risk for runoff and leaching during the cool months of the year.
Alabama NRCS Code 590 states that no animal manures should be applied between November 15 and February 15 in North Alabama, and contains a map delineating this region. In extreme cases winter manure applications may be made in north Alabama if the amount of N applied is no more than 30 pounds per acre and the application is to a winter annual. Even in south Alabama the recommendation is to apply only to an “actively growing crop making sufficient growth to utilize the nutrients that are applied.” Where plants are actively growing and are expected to be able to take up the nutrients applied, winter application may be permitted. However, this must be justified in a nutrient management plan.

As an example, note that fescue in North Alabama produced no harvestable dry matter yield in November through February in this study. There was a little growth in Central Alabama.

This chart from the book, Southern Forages, indicate very little forage availability in December through February for most cool-season forages.
When you consider that the winter months produce the highest average rainfall (precipitation) and the lowest average evapotranspiration or plant use plus evaporation, then there is a tremendous risk for nutrient loss during the winter months throughout Alabama. Nitrate leaching to groundwater and phosphorus runoff in surface water are the major reasons we are concerned about water quality in Alabama.

<table>
<thead>
<tr>
<th>WHAT SHOULD I DO?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What should I, as a CAVV, do when asked to spread for a customer in the winter?</td>
</tr>
<tr>
<td>Ask the following questions.</td>
</tr>
<tr>
<td>&quot;Do you have a nutrient management or conservation plan which specifies winter application?&quot; If so, follow that plan.</td>
</tr>
<tr>
<td>“Do you have an Auburn University Soil Testing Lab report with specific recommendations for application of nutrients?” If so, follow the recommendations.</td>
</tr>
<tr>
<td>&quot;Do you have an actively growing crop that can use the nutrients applied?” Rye, for example, can use about 30 pounds of N per acre or about 1/2 ton of broiler litter or 1 ton of wet breeder litter per acre.</td>
</tr>
<tr>
<td>&quot;Were any nutrients fall applied?” If so, chances are that you shouldn't be adding more.</td>
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</tbody>
</table>

Check out the link to the Alabama NRCS Code 590 in order to answer the following questions about best management practices:
http://www.aces.edu/department/aawm/al590.pdf
Module 3. Spreadable Acres

All fields have areas where fertilizers and manures cannot or should not be applied. These may be wooded areas, drainage areas, streams, marshes, and buffers and setbacks as required by Alabama NRCS Code 590. When these areas are subtracted from the total field acreage, the remainder of the acres is what is suitable for spreading litter. This is called the spreadable acres of the field. All producers who plan to use animal manure/poultry litter as a source of nutrients on crops or forages are suppose to have some type of nutrient management plan.

This plan should include an aerial photograph or map of all fields where manure or fertilizers are to be spread with the buffers and setbacks clearly marked and the SPREADABLE ACRES identified. Spreadable acres are always less than the actual field acreage. The following description goes through the "official way" the NRCS or a consultant would go about calculating the spreadable acres in a field.
Step 1 - Determine Field Features

- Field boundaries
- FSA acreage
- Features
- Topography

The first step is to determine the field features. You must have a map to start this process. An FSA (Farm Services Agency) map should have the field boundaries identified with the field acreage shown. Notice other features such as streams, ponds, houses, woods, etc. Topography (or the lay of the land) also is important. Topography can be obtained from a USGS topographic map.

Here is a typical FSA (Farm Services Agency) map for a field to receive litter. The field has a total of 19.5 acres. This is the FSA acres.
Be sure and know the scale of the map you are working with. The scale will be important to make calculations.

The second step is to determine where the runoff water leaves the field. This can be done by using a topographic map that shows the contour lines. Water always runs off downhill and perpendicular to the contour lines. It is important to do a drive around of the field to determine exactly how the runoff water leaves the field. Many smaller water features are not evident on the topographic maps due to the scale of the map.
The blue arrows on this map show how the runoff water flows from the field. 
NOTE: arrow in lower right-hand corner of map is POINTING THE WRONG WAY! 
This was drawn based on the topo map. The windshield survey showed that water RUNS 
DUE SOUTH (straight down on the map). We do not have to observe buffers on edges 
of the field where water does not run off the field.

Step 3 - Determine Buffers to be used and calculate acreages

The next step is to determine the buffers that apply for the field and to calculate the 
acreages associated with each buffer. These acreages will be deducted from the FSA 
acreage of the field. A summary of the ADEM and NRCS buffers is located at 
Here are the recommended buffer distances from the Alabama NRCS Code 590 standard. Notice the buffer for the public road.

Roads are next to the NW corner of the field. A total of 600 linear feet of 50 ft buffer is needed. This equates to 0.7 acres.

600 ft. x 50 ft. = 30,000 square feet
30,000 sq. ft. ÷ 43,560 sq. ft./acre = 0.688 acres or about 0.7 acre

<table>
<thead>
<tr>
<th>Object, Site</th>
<th>Situation</th>
<th>Application Distance (ft.) from Object, Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well</td>
<td>Located up-gradient of application site</td>
<td>200</td>
</tr>
<tr>
<td>Well</td>
<td>Located down-gradient of application site</td>
<td>300</td>
</tr>
<tr>
<td>Waterbody or Stream</td>
<td>Waste applied to pasture, hayland, or cultivated land</td>
<td>50</td>
</tr>
<tr>
<td>Public Road</td>
<td>Aerial irrigated wastewater</td>
<td>100</td>
</tr>
<tr>
<td>Public Road</td>
<td>Waste applied with spreader truck</td>
<td>50</td>
</tr>
<tr>
<td>Public Use Area</td>
<td>Dry waste</td>
<td>100</td>
</tr>
<tr>
<td>Public Use Area</td>
<td>Liquid waste</td>
<td>200</td>
</tr>
<tr>
<td>Public Use Area</td>
<td>Aerial Irrigated wastewater</td>
<td>500</td>
</tr>
<tr>
<td>Property Line</td>
<td>All</td>
<td>25</td>
</tr>
</tbody>
</table>
Remember:
43,560 square feet / acre;

Rule of Thumb:
It takes about 900 ft of 50 ft buffer to equal 1 acre.

Remember that it takes 43,560 square feet to equal one acre.

Rule of Thumb
For 50 ft wide buffers, it takes about 900 linear feet to equal 1 acre.

<table>
<thead>
<tr>
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<th>Situation</th>
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</thead>
<tbody>
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</tr>
<tr>
<td>Public Road</td>
<td>Aerial irrigated wastewater</td>
<td>100</td>
</tr>
<tr>
<td>Public Road 50</td>
<td>Waste applied with spreader truck</td>
<td></td>
</tr>
<tr>
<td>Public Use Area</td>
<td>Dry waste</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Liquid waste</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>Aerial Irrigated wastewater</td>
<td>500</td>
</tr>
<tr>
<td>Property Line</td>
<td>All</td>
<td>25</td>
</tr>
</tbody>
</table>

A well is located near the property line and is “up-gradient” from the application of litter so the application buffer width is 200 feet.
**Remember:**

- A circle with a 200 ft radius is approximately 2.9 acres.
- A circle with a 300 ft radius is approximately 6.5 acres.

A circle with a 200 ft radius is 2.9 acres while a circle with a 300 ft radius is 6.5 acres.

A buffer with a 200 ft radius should be drawn on the map. The buffer is estimated to be approximately 1 acre since it is less than ½ of the circle.
Recommended Application Distances For Animal Manure and Organic By-Product Application

<table>
<thead>
<tr>
<th>Object, Site</th>
<th>Situation</th>
<th>Application Distance (ft.) from Object, Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well</td>
<td>Located up-gradient of application site</td>
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<td>500</td>
</tr>
<tr>
<td>Property Line</td>
<td>All</td>
<td>25</td>
</tr>
</tbody>
</table>

The spring creek in the field should have a buffer also.

The streamside buffer should be at least 50 feet on each side of the stream (100 ft total). This buffer should be a grass filter strip. We measure the length to be 510 ft and the acreage to be 1.2 ac.

100 ft. x 50 ft. = 50,000 square feet
50,000 ÷ 43,560 = 1.15 acres or approx. 1.2 acres
Remember:

Approx. 450 Ft Of 100 Ft Buffer Is 1 Ac

It takes about 450 feet of 100 ft buffer to equal 1 ac.

1/ Waterbody includes pond, lake, wetland, or sinkhole. Stream includes both perennial and intermittent streams.
2/ On edges of the application field where runoff occurs to environmentally sensitive areas and to non-vegetated concentrated flow areas within the field, application distances must include a vegetated filter at least 50 feet wide that is established to permanent grasses (filter strip) with a stem density of at least 1 per square inch. If the filter incorporates a riparian forest buffer in accordance with NRCS Conservation Practice Standard, Riparian Forest Buffer – Code 391A, the permanent grass filter strip may be 20 feet wide. The vegetated width must be located adjacent to the application field or concentrated flow area and be shaped so that flow from runoff is uniform (sheet flow) and does not concentrate.
3/ If good grazing management (i.e. rotational grazing) is not used on pasture land, the vegetative filter must be protected from over grazing with a fence.
4/ Cultivated land for waste application must have adequate erosion control practices in place.
5/ Public use areas include a dwelling (other than producer), church, hospital, school, park, etc.

Remember, where runoff leaves a field it must pass through either a 50 ft grass filter strip or 20 feet of grass filter associated with a riparian forest buffer. A "riparian forest buffer" is simply an area of undisturbed trees or shrubs that serve as a filter strip around streams.
The 20 ft of grass associated with the riparian buffer is estimated to be 1,150 feet long. This equals 0.5 ac.

1,150 ft. x 20 ft. = 23,000 square feet
23,000 ÷ 43,560 = 0.53 acres or approximately 0.5 acres.

**Remember:**

**Approx. 2,200 Ft Of 20 Ft Wide Buffer Is 1 Ac**

It takes approximately 2,200 feet of 20 ft buffer to equal 1 ac.
Here are all the buffers we have so far.

Another feature of the field is some woods that are within the boundaries of the field. This area can be estimated by using an average length and width.
Rule Of Thumb For Woods: Measure, Count Dots, Compare With A Similar Known Acreage, Overestimate

Woods: Measured 0.6 Ac

Buffer Summary

<table>
<thead>
<tr>
<th>Buffer Type</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Open Acres</td>
<td>19.5 Ac</td>
</tr>
<tr>
<td>Road Buffer</td>
<td>-0.7 Ac</td>
</tr>
<tr>
<td>Well Buffer</td>
<td>-1.0 Ac</td>
</tr>
<tr>
<td>Stream Buffer</td>
<td>-1.2 Ac</td>
</tr>
<tr>
<td>Riparian Buffer</td>
<td>-0.5 Ac</td>
</tr>
<tr>
<td>Woods</td>
<td>-0.6 Ac</td>
</tr>
<tr>
<td>Spreadable Acres</td>
<td>15.5 Ac</td>
</tr>
</tbody>
</table>

Step 4 is to deduct the buffer and exclusion acreage from the FSA acreage to determine the SPREADABLE ACRES for the field.
Only 15.5 acres of the 19.5 acre field are suitable for spreading.
Section 4. Shortcuts and Record Keeping

In this section, we will discuss the shortcuts that you can take and still meet the 590 standard. We will also discuss your record keeping responsibilities.

“Skeleton Plan” Rules

- Apply at a N Rate and stay at least 200 ft. from water.
  
  Or

- Use a reduced rate (3 X P removal) and stay at least 50 ft. from water.

- Must have a filter strip where water runs off the field

When you are spreading litter on a field that does not have an NRCS-approved nutrient management plan, you have 2 options. Use these options to create a "Skeleton Plan": (1) You can spread at a higher nitrogen-based rate and stay at least 200 feet from any water, or (2) you can spread within 50 feet from any water but it must be a reduced 3xP rate. The term "3xP" refers to three times the estimated crop removal of phosphorus (P). In either case, where water leaves the field, it must pass through a grass filter strip or riparian forest buffer. The use of a skeleton plan should be limited to the initial land application of waste on a field. If the field is to be utilized in a continuous manner then the land owner/operator should have a nutrient management plan prepared and implemented.
Here are estimated tons of broiler litter per acre that can be applied based upon the recommended N rates for the crop. Since we are not considering the P or K that is applied, we must stay at least 200 ft from any water. For example, the recommended fertilizer N rate for hybrid bermudagrass hay is 100 lb. N per cutting (from NRCS Code 590 Table 5 and Auburn University's recommendations). A ton of broiler litter surface applied will result in 47-58-45 pounds N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O per ton. Therefore,

100 lb. N/acre recommended ÷ 47 lb. N/ton of litter = 2.1 ton litter per cutting

<table>
<thead>
<tr>
<th>Crop Type</th>
<th>Litter Tons/Cutting or Planting Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid bermuda hay</td>
<td>2.1 tons/cutting</td>
</tr>
<tr>
<td>Corn, no-till</td>
<td>3.1 tons @ planting</td>
</tr>
<tr>
<td>Corn, conv.</td>
<td>2.6 tons @ planting</td>
</tr>
<tr>
<td>Cotton South, conv.</td>
<td>1.9 tons @ planting</td>
</tr>
<tr>
<td>Pasture, bahia &amp; bermuda</td>
<td>1.25 tons/grazing period</td>
</tr>
<tr>
<td>Cool season grazing</td>
<td>3.3 tons - split application fall &amp; spring</td>
</tr>
</tbody>
</table>
Here are the 3 x P rates that can be applied within 50 ft of water. The term "3xP" refers to three times the estimated phosphorus (as P$_2$O$_5$) removal by the crop. These values are found in NRCS Code 590 Table 6. For example, a ton of bermudagrass hay will remove 50-12-43 pounds N-P$_2$O$_5$-K$_2$O (from NRCS Code 590 Table 6). If you expect to get 2 tons of hay per cutting then three times the total P removal will be

\[
3 \times 12 \text{ pounds P}_2\text{O}_5/\text{ton} \times 2 \text{ tons/acre} = 72 \text{ pounds P}_2\text{O}_5
\]

Recalling from the previous image or from NRCS Code 590 Table 1 that a ton of broiler litter surface applied contains 58 pounds P$_2$O$_5$, then

\[
72 \text{ pounds P}_2\text{O}_5 \div 58 \text{ pounds P}_2\text{O}_5/\text{ton} = 1.2 \text{ tons litter per cutting}
\]

Notice the rates for pasture. Grazing cattle just doesn't remove many nutrients. Most nutrients are recycled back onto the pasture. From Table 6 in NRCS Code 590, we see that 300 pounds beef would remove about 9-7-1 pounds N-P$_2$O$_5$-K$_2$O. Three times P removal is still only 21 pounds P$_2$O$_5$.

\[
21 \text{ pounds P}_2\text{O}_5 \div 58 \text{ lb. P}_2\text{O}_5/\text{ton litter} = 0.4 \text{ tons litter per acre}
\]
Can I estimate “spreadable acres”

• **YES !!**
• **N RATE** - Multiply FSA acres by 0.6  
  (200 ft from water)
• **3XP Rate** - Multiply FSA acres by 0.7  
  (50 ft from water)

Remember the detailed spreadable acres determination we made earlier in Module 3. You can also estimate the spreadable acres for a field. If you use the N rate, multiply the FSA acreage by 0.6. If you use the 3 x P rate, multiply the FSA acreage by 0.7.

\[ \text{N Rate} \rightarrow 19.5 \times 0.6 = 11.7 \text{ ac.} \]
\[ \text{3XP Rate} \rightarrow 19.5 \times 0.7 = 13.7 \text{ac.} \]

“Real” spreadable acres = **15.5 AC.**

Here is how our 19.5-acre field would have worked out using the spreadable acre shortcut. Therefore, it is really to everyone’s advantage to have an "official" plan in place before you attempt to spread animal wastes.
“Skeleton plan” procedures

- Get a map (from the FSA, NRCS, etc)
- Mark wells, open ditches, springs, creeks, rivers, public use areas, etc, on the map
- Make sure buffers and filter strips are OK and mark them on the map.
- Estimate and apply litter only to spreadable acres (0.6 or 0.7)

So, with no existing plan, here are the procedures we have discussed to make a "Skeleton Plan". First, get a map. The landowner may be able to provide this map, or you can obtain it from the FSA office. The landowner should mark all the features such as wells, ditches, springs, creeks, rivers, public use areas, etc. on the map. You should look over the field to make sure the buffers and filter strips are OK and mark them on the map. Use the spreadable-acres shortcut (0.6 or 0.7) to determine the spreadable acres and apply only to those acres. Remember, if you choose to apply at the higher N rate the 200 foot buffer distance from water still applies in every case where water is present.
Record keeping is an important responsibility of the CAWV. Records are the only evidence you have to show that you are handling animal wastes in an environmentally responsible manner. Without these records, inspectors from the Alabama Department of Agriculture and Industries (ADAI) and the Alabama Department of Environmental Management (ADEM) have no evidence that you are following any type of plan.

How you keep your records is up to you. You can use a notebook in your truck, a laptop computer, or an elaborate filing system. You can use a GPS system or just a field map. Regardless, the basic information presented above must be kept. As a CAWV, keeping these types of records is also just a good business practice.

Examples of forms that may be used are available for downloading and copying from the Alabama Cooperative Extension System Animal Waste Management web site at this address:

www.aces.edu/dept/aawm/RecordKeeping.htm
Here is an example of a transfer record document that is available and acceptable to use.
Here is an example of an application records document that is available and acceptable to use.

```markdown
<table>
<thead>
<tr>
<th>Date</th>
<th>72 HOUR WEATHER FORECAST</th>
<th>Nutrient Source</th>
<th>no. Loads Per Field</th>
<th>Weight Per Load (lbs)</th>
<th>Total Weight (lbs)</th>
<th>Weight Per Acre (lbs/acre)</th>
<th>Nutrient Applied (lbs/acre)</th>
<th>Nutrient Balance (lbs/acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
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Notes:
- Nutrient Source: manure, compost, fertilizer, etc.
- Calibrate manure spreader at least once/year and record.
- Approved book value or SAMPLE as required.
- Nutrient balance calculated by subtracting column (9) from (8). Continue subtracting column (9) from column (10) following each application event.

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Section 5. Understanding the Forecast and Farmers Map

Animal Feeding Operation (AFO) and Concentrated Animal Feeding Operation (CAFO) owner/operators, Certified Animal Waste Vendors (CAWVs), or anyone else land applying waste/nutrients must ensure that nutrient/pollution runoff is prevented, so that stormwater runoff sampling from land application fields and instream monitoring does not have to be conducted. Land application must be accomplished in a manner that meets or exceeds Natural Resources Conservation Service (NRCS) technical standards and guidelines, and comply fully with ADEM requirements.

The FORECAST and FARMERS MAP are designed to assist farmers with implementation of the NRCS Nutrient Management Code 590 Standard http://efotg.nrcs.usda.gov/references/public/AL/590_11-02.pdf as updated, which is a requirement of the ADEM AFO/CAFO program (ADEM administrative Code Chapter 335-6-7). There is no requirement that the FARMERS MAP be used to time land application activities, provided land application is based upon a valid NWS FORECAST. The FARMERS MAP is simply a secondary tool that can be utilized to evaluate whether land application activities can be conducted in compliance with ADEM requirements.

Farmers can land apply animal waste/nutrients provided that up to 72-hours out from the land application activity, the weather information from the NWS is used appropriately by following the steps below:

<table>
<thead>
<tr>
<th>Step</th>
<th>% Chance</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Less Than 50% Rain Chance for each of the next 3 days (Do Not Need To View Farmers Map)</td>
<td><strong><a href="http://nsstc.uah.edu/alclimate/graphicalFest/index.php">http://nsstc.uah.edu/alclimate/graphicalFest/index.php</a></strong> or <strong><a href="http://www.srh.noaa.gov/bmx/">http://www.srh.noaa.gov/bmx/</a></strong> Land application allowed if FORECAST less than 50% chance of rain for each of the next 3 days, regardless of the potential rain amount. This information can be obtained from NWS radio or website and you do not need to consult the Farmers map.</td>
</tr>
<tr>
<td>2 (if needed)</td>
<td>50% or Greater Rain Chance on one of the next 3 days</td>
<td><strong><a href="http://www.srh.noaa.gov/media/bmx/adem/farmers_map.php">http://www.srh.noaa.gov/media/bmx/adem/farmers_map.php</a></strong> Land apply only if FARMERS MAP shows that the area in which the application will take place is white (not RED)</td>
</tr>
</tbody>
</table>

However, there may be times that using the FARMERS MAP may allow for land application when the FORECAST alone would not.
Section 6. Calibrating Spreader Trucks

A CAWV must keep records of his spreading equipment calibration. The following Cooperative Extension Circular gives a good overview of spreader truck calibration.

www.aces.edu/department/aawm/anr-898.pdf

This website has the same information with more color photographs of actual spreader truck calibration.

www.usr.sonet.net/usr/ke4rop/litter/index.htm

Once you have viewed either or both of the above sites, answer these questions. If you feel comfortable with your knowledge of the information presented, you may proceed to the final exam.
Section 7. Common Problems

The Alabama Department of Environmental Management (ADEM) is responsible for enforcing the Alabama AFO/CAFO Rules that we have already discussed. ADEM inspectors, along with those from the Alabama Department of Agriculture and Industries (ADAI), are located throughout Alabama.

The following are examples of the types of problems these inspectors routinely see. Some are the direct responsibility of CAWVs and others are owner/operator problems.

Litter or Manure Exposed to Weather/Rainfall

All litter must be covered to prevent stormwater from contacting waste. This problem is clearly the responsibility of the owner/operator and not the CAWV but it is this sort of problem that will catch the attention of inspectors.
This type of temporary storage of dry manure or litter is OK. It protects the litter and will not draw the attention of an inspector. However, keep in mind that temporary storage needs to be located away from sensitive areas and in an area that has a good stand of grass to buffer runoff. The cover on top of this pile needs to be secured in a way that will prevent tearing in heavy wind, and the bottom edges secured to prevent runoff water from contacting the pile.

This CAWV had started spreading one day and did not finish (possibly because the rain chance had increased for the next day, which happened to be when an ADEM inspector dropped by!). But…
the litter pile was uncovered completely when the job was started. When the CAWV stopped for the day the pile was not re-covered. A good practice is to only uncover the amount to be used for that day's job and re-cover the pile at the end of the day. An uncovered pile on a rainy day is sure to get attention.

The *type* of spreader truck does not matter as long as it works and is properly calibrated!!!
This situation would lead ADEM to ask for calibration records and the amount of waste specified in the nutrient management plan for this field.

Big clumps indicate poor nutrient distribution.
It is early December in North Alabama. If an ADEM inspector drives by and sees this activity, the inspector is likely to stop and ask the vendor for the nutrient or waste management plan that is being followed. Why?

Because this fescue and bermudagrass pasture is not actively growing at this time of year and will not be able to use the nutrients being applied until the following spring.

*The application of animal manure at this time of year to fescue in North Alabama is NOT a best management practice according to the Alabama NRCS Code 590.*

NRCS Code 590([http://www.aces.edu/department/aawm/al590.pdf](http://www.aces.edu/department/aawm/al590.pdf)), on page 4 under "Nutrient Application and Timing" reads: "Animal manure, related organic by-products, or wastewater will not be applied in the fall or winter unless applied to an actively growing crop making sufficient growth to utilize the nutrients that are applied. Cold temperatures and reduced photoperiod contribute to a severe reduction and, in most cases, a halt of significant growth and production of dry mass crucial to nutrient uptake. In North Alabama (see Fig. 1) from approximately November 15 to February 15, apply no more than 30 pounds of nitrogen per acre to the crops as indicated in Table 5 if the crop meets the minimum grazing height requirements of the Alabama NRCS conservation practice standard, "Prescribed Grazing – Code 528".

Portions of NRCS 590, Table 5 are shown below.
Note particularly footnote 12 stating that no more than 30 pounds of nitrogen per acre should be applied to Small Grains or Cool Season Annuals BETWEEN NOVEMBER 15 AND FEBRUARY 15. *This is about one ton of breeder litter or about 1/2 ton of broiler litter.*
Alabama Department of Agriculture and Industries (ADAI) Inspectors must inspect composted poultry mortalities before they can be moved off the farm of origin.

The CAWV should make sure that composting is complete and the product is of good quality.

If you pull up to a composter and buzzards are sitting overhead, perhaps this is a clue that the composter is not being managed properly.
The compost (above) should not be spread. Parts and pieces of birds should be completely cooked in the composting period and should not be visible. Do not spread this or you will be liable.

If you can identify a whole bird in a secondary compost bin, it should not be spread!!!!

**Incomplete Litter/Manure Transfer Records or No Records at All!**

The Alabama AFO/CAFO Rule, Section 335-6-7-.20 gives clear guidance on keeping records on litter/manure transfers.
335-6-7-.20

- (20) Unless the AFO owner/operator contracts in writing with a valid CAWV for all waste generated, or the owner/operator properly sells or gives away in good faith the waste to another person, the comprehensive waste management system BMPs for the entire farm, facility, or operation must include written agreements for use of all land application sites with documentation that adequate land application area is readily available. If the waste is sold or given away in good faith, the owner/operator or CAWV shall retain detailed, complete records of the transaction and provide the receiver of the waste information explaining the requirements of this Chapter. AFO waste management system BMPs must meet or exceed NRCS technical standards and guidelines. A CAFO WMSP must be prepared by a QCP and must meet or exceed NRCS technical standards and guidelines. The Department may require proof of land ownership, contractual agreements, or written permission for use of land as a land application site.

This section of the AFO/CAFO Rule says both AFOs and CAFOs should have a written plan to handle/land apply litter/manure. The AFO should be following Alabama NRCS Code 590 that calls for written records of where the litter/manure goes and when/where it is land applied.

The owner/operator or the CAWV should keep detailed, complete records of the litter/manure transaction. Also the Alabama Department of Environmental Management may require proof of land ownership, contractual agreements, or written permission for use of land as a land application site. You may keep records on your own forms as long as the required information is recorded. To comply with ADEM regulations, records must be kept for 3 years documenting what actions and activities were undertaken at the time of land application or transport of animal waste.

Examples of up-to-date forms that ADEM will accept are available on the Records Page of the Extension Animal Waste Management website

http://www.aces.edu/dept/aawm/RecordKeeping.html
There may be times when you, as a CAWV, are asked by your customer to only deliver the litter to a particular location for later land application or animal feeding by the customer or another CAWV. ADEM has approved a way of allowing a CAWV to transfer legal responsibility/liability to another person in that situation. A copy of this "POULTRY LITTER/ANIMAL MANURE BY-PRODUCT Responsibility/Liability TRANSFER FORM (revised June 2006) " can be found on the internet at this address: http://www.aces.edu/dept/aawm/Waiver.pdf