

**11.1. Fertilization Plan.** You have been asked to help develop a fertilization plan for the Daniel Pickett forest. In the next year's plan of action, the managers of the forest may consider fertilizing some timber stands. However, the managers need to know how much area of forest could be fertilized, and what cost to anticipate. After a short discussion with the Daniel Pickett forest managers, the following criteria for identifying potential fertilization was determined:

- Only stands  $\geq 45$  years old and  $\leq 55$  years old should be considered.
- Only stands on soil types leading to a high fertilization response should be considered.
- Only stands outside of a 200 foot stream buffer (around all types of streams) should be considered.

The forest managers want to know the following:

a. How many acres of land could be fertilized, given the criteria noted above?

Result: 76.1.

b. Assuming the forest will develop a contract for the fertilization project, and assuming the contractor will use a helicopter to spread the fertilizer, how many acres would you recommend, and why? Consider the following in your recommendation: (1) Are some of the stands of the appropriate age bisected by two or more soil types? (2) Would it be possible for the helicopter pilot to recognize these changes from the air? (3) Are some of the areas suggested by the GIS analysis for fertilization too small to be worth the effort? (4) Is there a minimum size assumption would you make regarding potential fertilization areas?

Result: depends on the logic you use, but 60.1 acres is a good number.

c. If the cost of fertilization was \$100 per acre, what might be the total cost of the project?

Result: depends on the answer to part *b* above, using 60.1 acres, \$6,010

d. How many tons of fertilizer are needed if you expect to use 400 pounds of fertilizer per acre (there are 2000 pounds per ton).

Result: depends on the answer to part *b* above, using 60.1 acres, 12.02 tons

e. Please provide the staff with a map of the potential areas that you are recommending to be fertilized (from part *b* above). Include on the map the Daniel Pickett roads and streams.

We'll leave this up to you.