

Estimating Future Forest Cover in the Green River Watershed using the Leaf-Out Analysis

Step 1: Identify Group Reporter

Identify one person from your group to record your group's results and report them to the rest of the group at the end of the exercise.

Step 2: Read the Green River Watershed Scenario

Your group comprises the staff of the Oak City, New Hampshire Department of Planning. Your department has recently conducted a Leaf-Out Analysis to estimate future forest cover with full buildout in the Green River Watershed. Leaf-Out Analysis highlights and additional information are provided below:

- Current forest cover in the watershed is 1,963 acres or 39% of the watershed area
- Oak City currently does not have any regulations to protect forests from being cleared during development
- 200 acres of forest are currently protected through privately held conservation easements
- Current forest cover on developed parcels is 639 acres; the Leaf-Out Analysis assumes that this will remain as forest with future buildout
- The Leaf-Out Analysis used a forest cover coefficient of 0.05 for all land use categories to reflect the common practice by grading contractors in Oak City of clearing the majority of development parcels (on average, only 5% of each site remains forested)
- The Leaf-Out Analysis estimates that only 62 acres of forest on buildable land will be protected from clearing during development; the remaining 1,062 acres will be cleared
- The results of the Leaf-Out Analysis show that based on the City's zoning, future forest cover in the Green River Watershed will be 701 acres or 14% of the watershed area. This equates to a **loss of 64% of forest resources in the watershed** if completely built out

The community is very concerned about this potential loss of forest cover, and as a result, Oak City is in the process of establishing an Urban Watershed Forestry Program to protect forest resources in the City's watersheds. The budget for this program is \$200,000. **Your task is to select a combination of urban watershed forestry techniques to implement in the Green River Watershed in order to reduce forest loss.** Instructions are provided below. You have 20 minutes to complete the exercise. At the end of the exercise, your selected techniques will be input to the Leaf-Out Analysis spreadsheet to see how they affect future forest cover.

Step 3: Select A Combination of Urban Watershed Forestry Techniques to Implement in the Green River Watershed

There are many urban watershed forestry techniques that can be used to maintain or increase forest cover in a watershed. Several techniques are listed in Table 1 along with associated costs for implementation.

Select a combination of urban watershed forestry techniques from Table 1 to implement in the Green River Watershed. Remember, you have a budget of \$200,000. Your goal is to select techniques that will have the greatest impact on reducing future forest loss in the watershed. Circle the number of each technique you select in Table 1. If you choose to acquire priority forests for conservation or reforest public land, use the watershed map provided to identify potential sites for conservation and reforestation and record the total acreage conserved or reforested in the table below.

Table 1			
#	Urban Watershed Forestry Technique	Cost	Notes
1	Acquire priority forest parcels for permanent conservation - Select specific sites from map and record total acres conserved:	\$5,000/acre Total cost:	Very expensive but permanently protects land from development
2	Provide incentives for landowners to place their forest land in conservation easements- Select specific sites from map and record total acres conserved:	\$800/acre Total cost:	Reduces property tax on voluntarily conserved forest by half
3	Adopt stream buffer ordinance that requires protection of a 100-foot forested stream buffer	\$12,000	Removes stream buffers from buildable portion of individual lots
4	Adopt forest conservation regulations that require the following forest conservation thresholds: <ul style="list-style-type: none"> • Open Urban land: 40% • Medium Density and Multifamily Residential: 25% • Commercial and Industrial land: 15% 	\$15,000	Significantly increases percentage of forest retained on development sites but requires site inspections and enforcement
5	Actively reforest public lands - Select specific sites from map and record total acres reforested:	\$250/acre Total cost:	Can be costly and labor-intensive but can significantly increase forest cover
6	Provide incentives for planting trees on private land (e.g., free seedlings, technical assistance)	\$8,000	Moderate cost and effectiveness
7	Educate watershed residents about the benefits of planting trees	\$4,000	Fairly low cost, but typically less than 10% of target population is responsive

Step 4: Report Your Results to the Entire Group

When you are finished, your group reporter should tell the entire group which techniques you selected and why. CWP staff will input each group's results to the Leaf-Out Analysis spreadsheet to see how the selected combination of techniques impact future forest cover. The group with the highest amount of future forest cover will get a prize!

Developed by the Center for Watershed Protection, 8390 Main Street, 2nd Floor, Ellicott City,
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