

**Users Manual**  
**for the**  
**Minnesota Harvest Residue Estimation Model**

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April 2007

**STAFF PAPER SERIES NUMBER 190**

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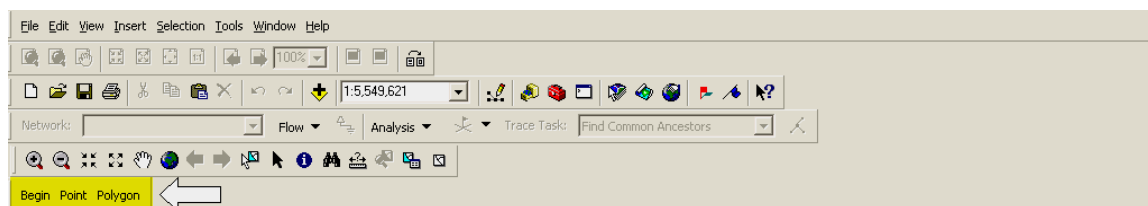
## Starting the Model

ArcMap 9.1 is required to run the model. Load the file entitled “HarvEst” to the C:\Documents and Settings directory.<sup>1</sup> Once the model has been downloaded onto the computer, double click the .mxd file entitled “Biomass Project” to initiate the model. The model will open within ArcMap 9.1 and is ready to use.

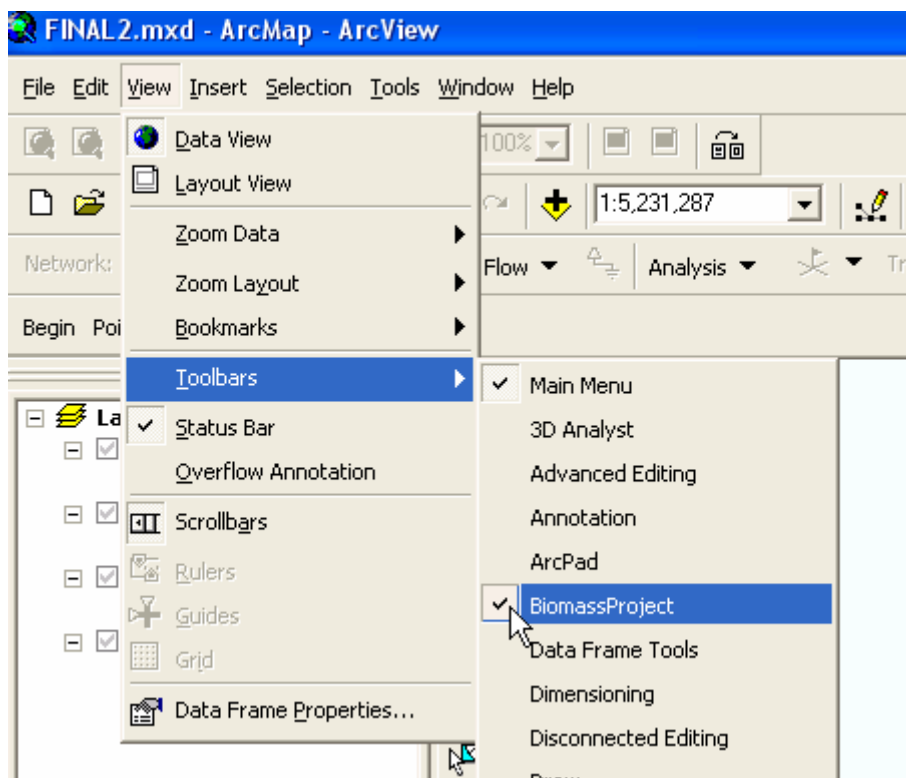
## Toolbar

Upon opening the model a new toolbar, titled “Biomass Project” will become available, see Figure 1. If the toolbar is not displayed upon opening the model you must manually make it visible. To manually insert the toolbar go to the View dropdown tab. Select the Toolbars option, see Figure 2. Click on the Biomass Project toolbar. The Biomass Project toolbar contains three buttons; Begin, Point, and Polygon.

**Figure 1. Biomass Project Toolbar.**



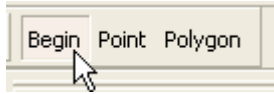
**Figure 2. Manual Toolbar Install.**



<sup>1</sup> A copy of the Biomass Project model may be obtained from the Department of Forest Resources at the University of Minnesota.

To initiate the model click the Begin button located on the Biomass Project toolbar, see Figure 3.

**Figure 3. Begin Button.**

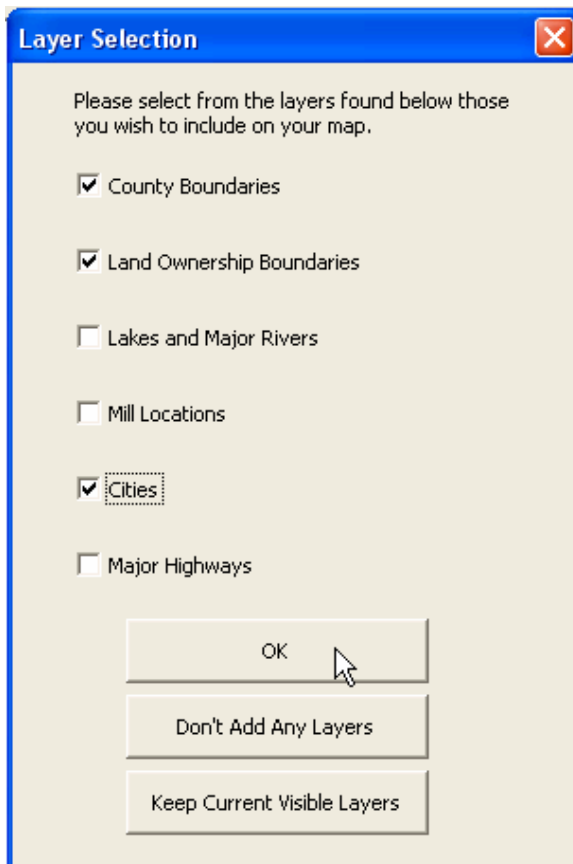


### Selecting Base Layers

Select which base layers to add to the map from the Layer Selection form, Figure 4. These base layers will aid in locating an area of interest. If the program was not exited, base layers from prior runs will be visible. Three options exist for selecting base layers:

1. Clicking on the “Don’t Add Any Layers” button will clear all base layers.
2. Clicking on the “Keep Current Visible Layers” button will display only those layers visible prior to running the model.
3. To change those layers visible prior to running the model, check the layers of interest and click the “OK” button. The original layers are cleared and the new layers are now visible.

**Figure 4. Layer Selection Form.**

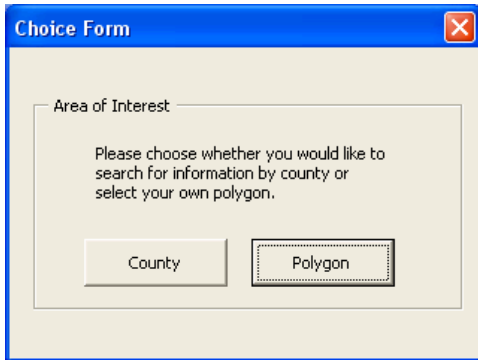


## Identifying an Area of Interest

### *By County*

An area of interest can be identified in two ways; by selecting one or more counties or by digitizing a polygon. Select which method to proceed with from the Choice form, Figure 5.

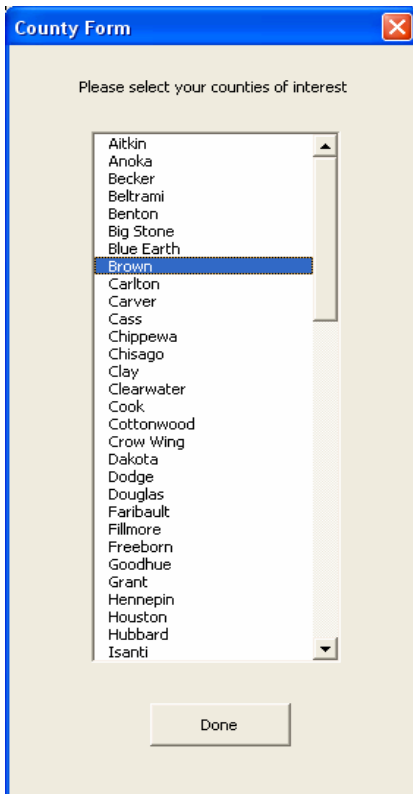
**Figure 5. Choice Form.**



The image shows a dialog box titled "Choice Form" with a blue title bar and a close button (X) in the top right corner. The main area is light beige and contains the text "Area of Interest" followed by "Please choose whether you would like to search for information by county or select your own polygon." Below this text are two buttons: "County" and "Polygon". The "Polygon" button is highlighted with a dashed border.

If the County button on the Choice form is selected, the County form will be displayed, Figure 6. Select one or more counties by clicking on the name of the county. Once a county is selected it will remain highlighted until unselected. Click the Done button when all counties of interest have been selected.

**Figure 6. County Form.**

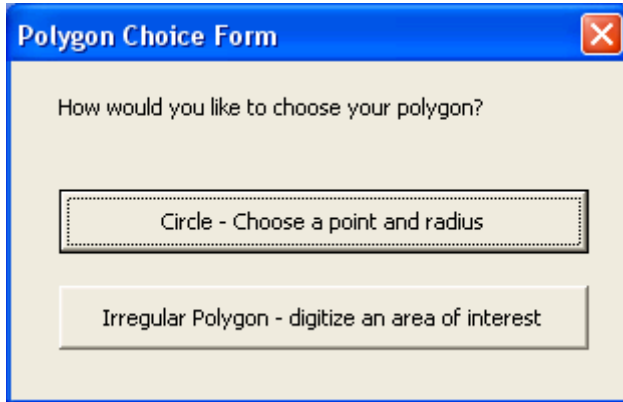


The image shows a dialog box titled "County Form" with a blue title bar and a close button (X) in the top right corner. The main area is light beige and contains the text "Please select your counties of interest". Below this text is a list box containing the names of 25 Minnesota counties: Aitkin, Anoka, Becker, Beltrami, Benton, Big Stone, Blue Earth, Brown, Carlton, Carver, Cass, Chippewa, Chisago, Clay, Clearwater, Cook, Cottonwood, Crow Wing, Dakota, Dodge, Douglas, Faribault, Fillmore, Freeborn, Goodhue, Grant, Hennepin, Houston, Hubbard, and Isanti. The "Brown" county name is highlighted in blue. Below the list box is a "Done" button.

### *By Polygon*

If the Polygon button on the Choice form is selected, the Polygon Choice form will be displayed, Figure 7. A polygon can be digitized using two different methods: by identifying a point and a radius, or by digitizing a polygon. Click on the method of choice.

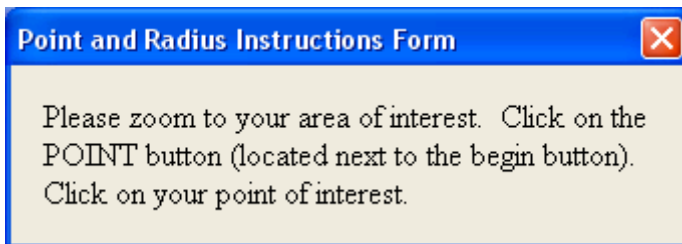
**Figure 7. Polygon Choice Form.**



### *Point and Radius*

When identifying the area of interest using a point and a radius, Point and Radius Instructions will be displayed on the screen, Figure 8. Use the zoom and pan tools located on the Tools toolbar to zoom into your area of interest, Figure 9. Click the Point button located on the Biomass Project toolbar, Figure 10 and then click on your point of interest located on the map.

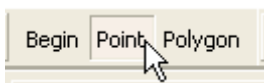
**Figure 8. Point and Radius Instructions Form.**



**Figure 9. Tools Toolbar.**



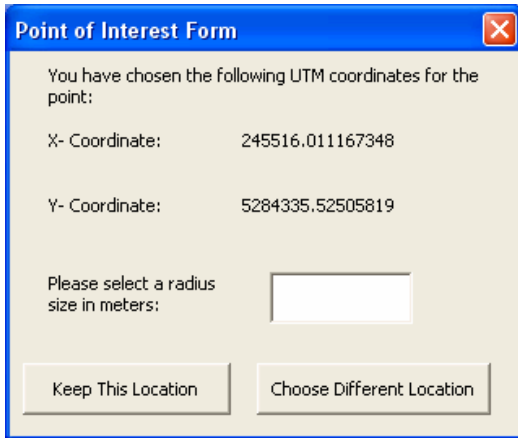
**Figure 10. Point Button.**





After the point has been selected a large black dot will be shown on screen at that location. The Point of Interest form will display the coordinates of the point, Figure 11. If this is the correct location, enter a radius in the empty textbox and click on “Keep This Location”. If this is not the correct location, click on “Choose Different Location”.

**Figure 11. Point of Interest Form.**

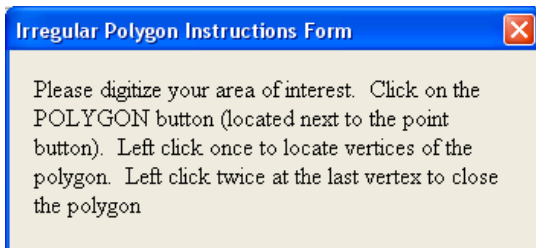


The screenshot shows a dialog box titled "Point of Interest Form" with a close button (X) in the top right corner. The text inside reads: "You have chosen the following UTM coordinates for the point:". Below this, it lists "X- Coordinate: 245516.011167348" and "Y- Coordinate: 5284335.52505819". There is a label "Please select a radius size in meters:" followed by an empty text input field. At the bottom, there are two buttons: "Keep This Location" and "Choose Different Location".

### *Irregular Polygon*

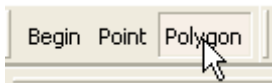
When identifying the area of interest using a polygon, Irregular Polygon Instructions will be displayed on the screen, Figure 12. Use the tools located on the Tools toolbar to zoom into your area of interest. Click the Polygon button located on the Biomass Project toolbar, Figure 13.

**Figure 12. Irregular Polygon Instructions Form.**



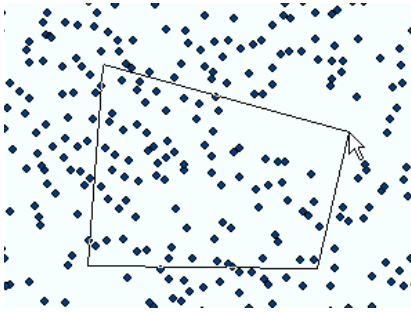
The screenshot shows a dialog box titled "Irregular Polygon Instructions Form" with a close button (X) in the top right corner. The text inside reads: "Please digitize your area of interest. Click on the POLYGON button (located next to the point button). Left click once to locate vertices of the polygon. Left click twice at the last vertex to close the polygon".

**Figure 13. Polygon Button.**



To digitize your polygon locate the first vertex with one left mouse click. Locate each additional vertex with one left click. At the last vertex left click twice to close the polygon, Figure 14.

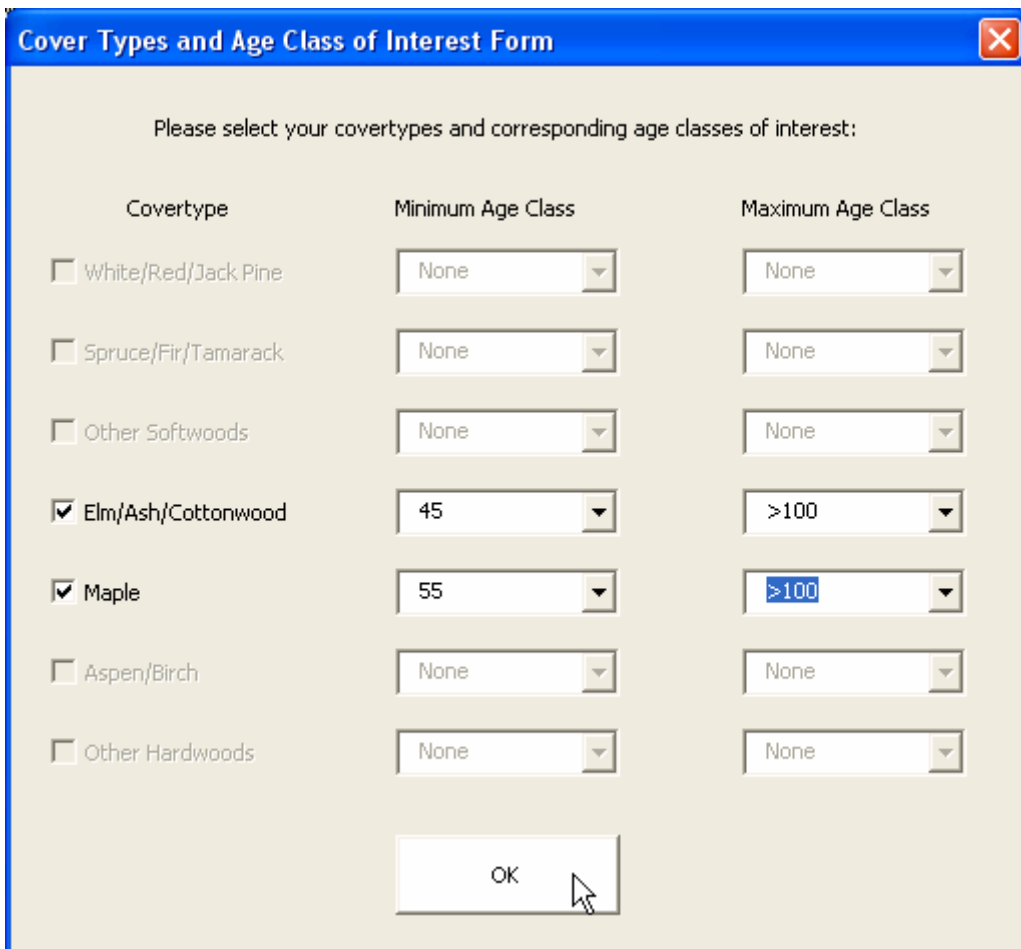
**Figure 14. Polygon Digitizing.**



### Identifying Cover Types and Age Classes

After the area of interest has been identified the Cover Types and Age Class of Interest Form is displayed. Only those cover types present within your area of interest will be available for you to select from. Check the box next to the cover types of interest. Select the minimum and maximum age classes from the drop down tabs. Click on OK to submit the request. See Figure 15.

**Figure 15. Covertypes and Age Class of Interest Form.**



Please select your covertypes and corresponding age classes of interest:

Covertypes	Minimum Age Class	Maximum Age Class
<input type="checkbox"/> White/Red/Jack Pine	None	None
<input type="checkbox"/> Spruce/Fir/Tamarack	None	None
<input type="checkbox"/> Other Softwoods	None	None
<input checked="" type="checkbox"/> Elm/Ash/Cottonwood	45	>100
<input checked="" type="checkbox"/> Maple	55	>100
<input type="checkbox"/> Aspen/Birch	None	None
<input type="checkbox"/> Other Hardwoods	None	None

OK

## Selecting the Amount of Acreage to Harvest

The Volume and Area form will display both the volume and area for the identified cover types and age classes with the area of interest. This information is provided separately for public and private lands. Enter the amount of acreage to be harvested within the appropriate textbox, Figure 16.

Figure 16. Volume and Area Form.

Volume and Area Form

Available Acreage and Volume created from user identified covertypes and age-classes.  
Please enter the acreage to be harvested for both Public and Private Lands.  
Enter 0 if no acreage is to be harvested.

Covertype	Ages of Interest	Available Public Volume (cubic feet)	Available Public Acreage	Public Acreage to Be Harvested	Available Private Volume	Available Private Acreage	Private Acreage to Be Harvested
White/Red/Jack Pine	0 to 0	0	0	0	0	0	0
Spruce/Fir/Tamarack	0 to 0	0	0	0	0	0	0
Other Softwoods	0 to 0	0	0	0	0	0	0
Elm/Ash/Cottonwood	45 to 1000	0	0	0	1175016	2432	2432
Maple	55 to 1000	0	0	0	6547974	3242	3242
Aspen/Birch	0 to 0	0	0	0	0	0	0
Other Hardwoods	0 to 0	0	0	0	0	0	0

OK

## Selecting Harvest Methods

1. If only public acreage was selected for harvest, the Public Harvest Methods form will be displayed.
2. If only private acreage was selected for harvest, the Private Harvest Methods form will be displayed.
3. If acreage was selected from both public and private acreage the Public Harvest Methods form will be displayed and when completed, the Private Harvest Methods form will be displayed.

Within both forms enter the percentage of acreage to be harvested within 6 different combinations of harvest type and processing methods.

Note: the total percentage within a single row must add to 100%. See Figure 17.

**Figure 17. Harvest Methods Forms.**

The screenshot shows a window titled "Private Harvest Methods Form" with a close button in the top right corner. The main content area contains the instruction: "Please enter the percent of each harvest method you will use on Private lands:". Below this is a table with 8 columns and 8 rows. The columns are: "Covertypes", "Private Acreage to Be Harvested", "Clearcut w/ Shortwood Processing", "Clearcut w/ Tree-length Processing", "Clearcut w/ Full-tree Processing", "Partial Cut w/ Shortwood Processing", "Partial Cut w/ Tree-length Processing", and "Partial Cut w/ Full-tree Processing". The rows represent different cover types: "White/Red/ Jack Pine", "Spruce/Fir/ Tamarack", "Other Softwoods", "Elm/Ash/ Cottonwood", "Maple", "Aspen/Birch", and "Other Hardwoods". Each cell in the table contains a text input field. The "Private Acreage to Be Harvested" column has values: None, None, None, 2432, 3242, None, None. The "Elm/Ash/ Cottonwood" row has values: 0, 0, 0, 50, 50, 0. The "Maple" row has values: 0, 0, 0, 25, 75, 0. An "OK" button is located at the bottom center of the form, with a mouse cursor pointing to it.

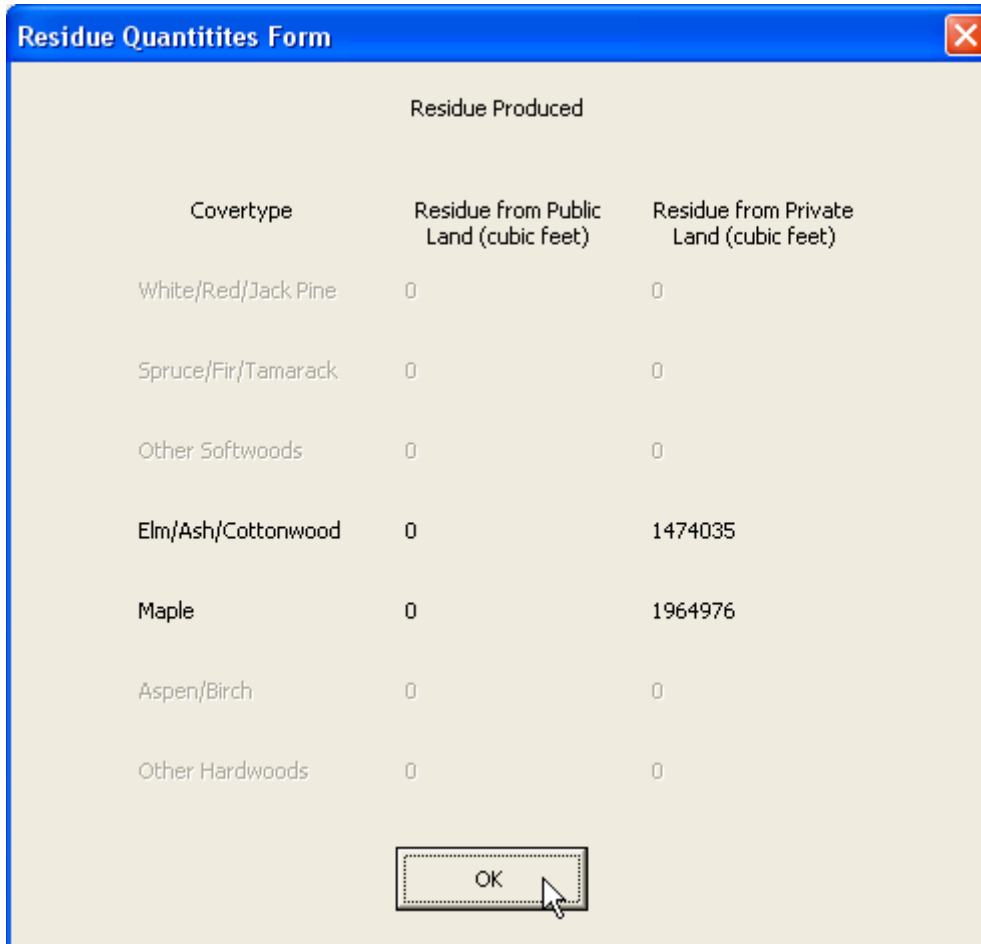
Covertypes	Private Acreage to Be Harvested	Clearcut w/ Shortwood Processing	Clearcut w/ Tree-length Processing	Clearcut w/ Full-tree Processing	Partial Cut w/ Shortwood Processing	Partial Cut w/ Tree-length Processing	Partial Cut w/ Full-tree Processing
White/Red/ Jack Pine	None	0	0	0	0	0	0
Spruce/Fir/ Tamarack	None	0	0	0	0	0	0
Other Softwoods	None	0	0	0	0	0	0
Elm/Ash/ Cottonwood	2432	0	0	0	50	50	0
Maple	3242	0	0	0	25	75	0
Aspen/Birch	None	0	0	0	0	0	0
Other Hardwoods	None	0	0	0	0	0	0

OK

## Estimates of Residue

Estimate of residue quantities will be displayed within the Residue Quantities form, Figure 18. The estimates are categorized using the user-defined cover types of interest within public and private lands.

Figure 18. Residue Quantities Form.



The screenshot shows a window titled "Residue Quantities Form" with a close button in the top right corner. The window contains a table with the following data:

Covertype	Residue Produced	
	Residue from Public Land (cubic feet)	Residue from Private Land (cubic feet)
White/Red/Jack Pine	0	0
Spruce/Fir/Tamarack	0	0
Other Softwoods	0	0
Elm/Ash/Cottonwood	0	1474035
Maple	0	1964976
Aspen/Birch	0	0
Other Hardwoods	0	0

At the bottom center of the window is an "OK" button with a mouse cursor pointing to it.