Fundamental Training and Applications of the Landscape Management System

For NRCS and Conservation District Forestry Personnel

February 10th, 2009 – Pack Forest, Eatonville, WA
February 12th, 2009 – Spokane, WA

Advanced Capabilities

- LMS Portfolio Configuration
- Creating a LMS Portfolio
- Landscape Visualization
- Growing Landscapes
- Scenarios
- Financial Analysis

Portfolio Configuration

- Learning Objective:
  - Demonstrate Portfolio Configuration features of LMS 3.1

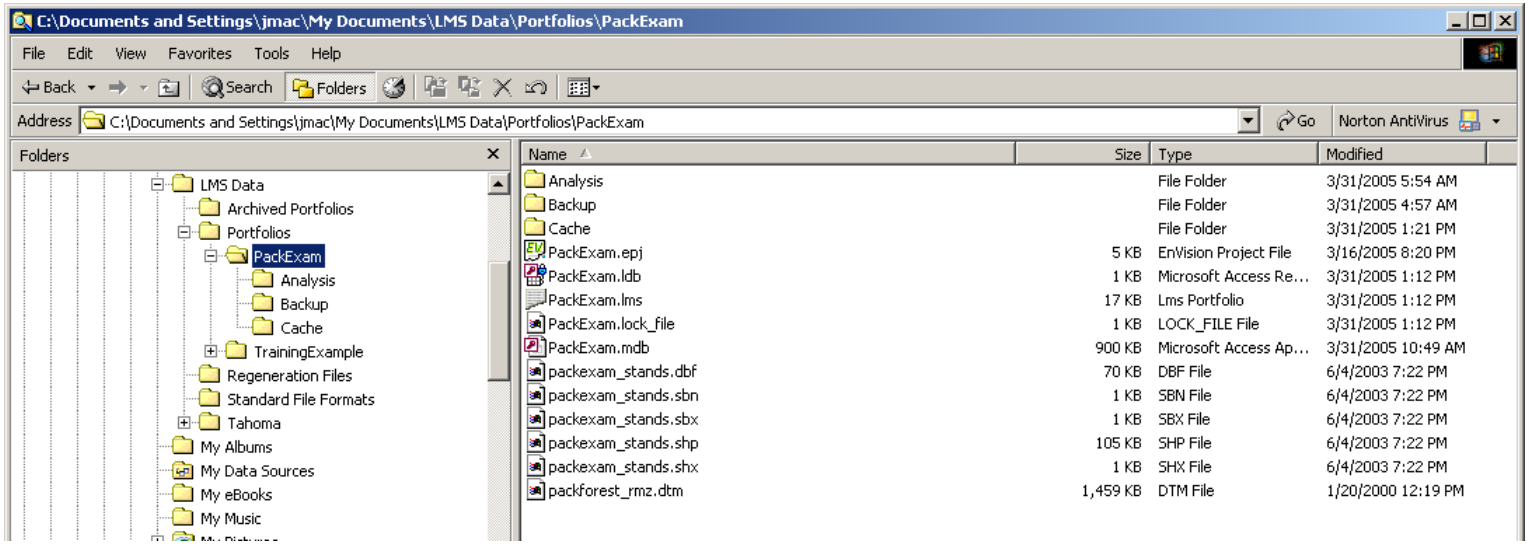
Portfolio Configuration

Roadmap

- Introduction to LMS 3.1 portfolios
- Changing configuration for portfolios
- Archiving portfolios (Backup and Restore)
- Editing portfolios

Anatomy of an LMS 3.1 Portfolio

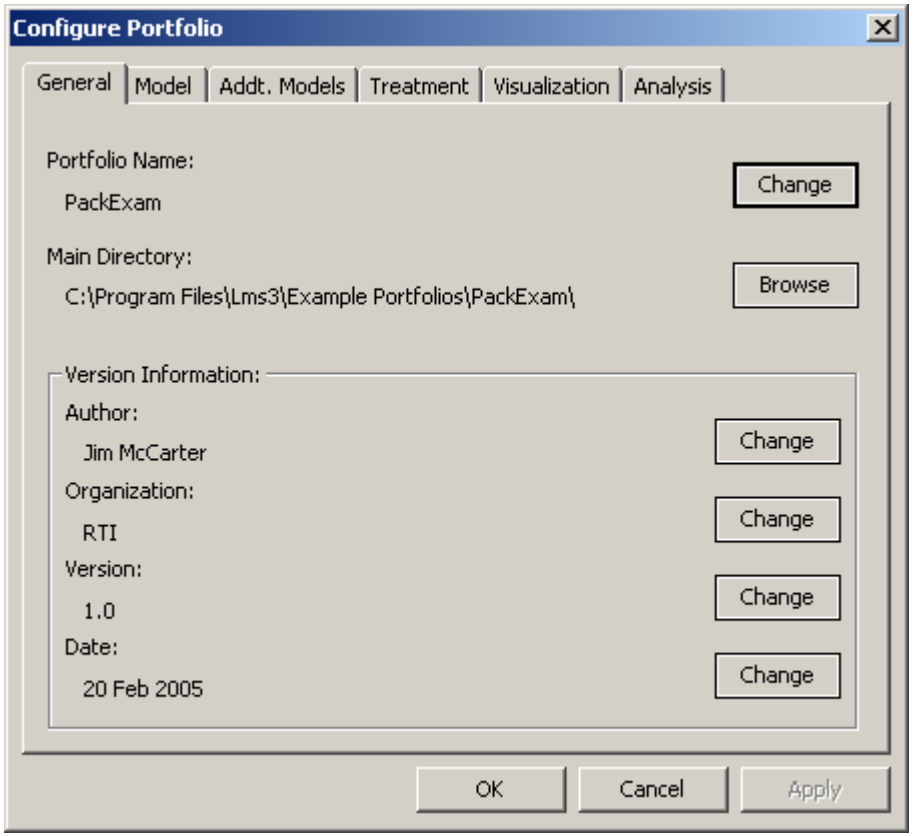
Each LMS portfolio exists in its own subdirectory that contains all the files that comprise the portfolio. The minimum required for a valid portfolio is the portfolio configuration file (.lms) and the portfolio database file (.mdb). All files within an LMS Portfolio are now binary files and cannot be read or modified using a text editor.



Portfolio Configuration

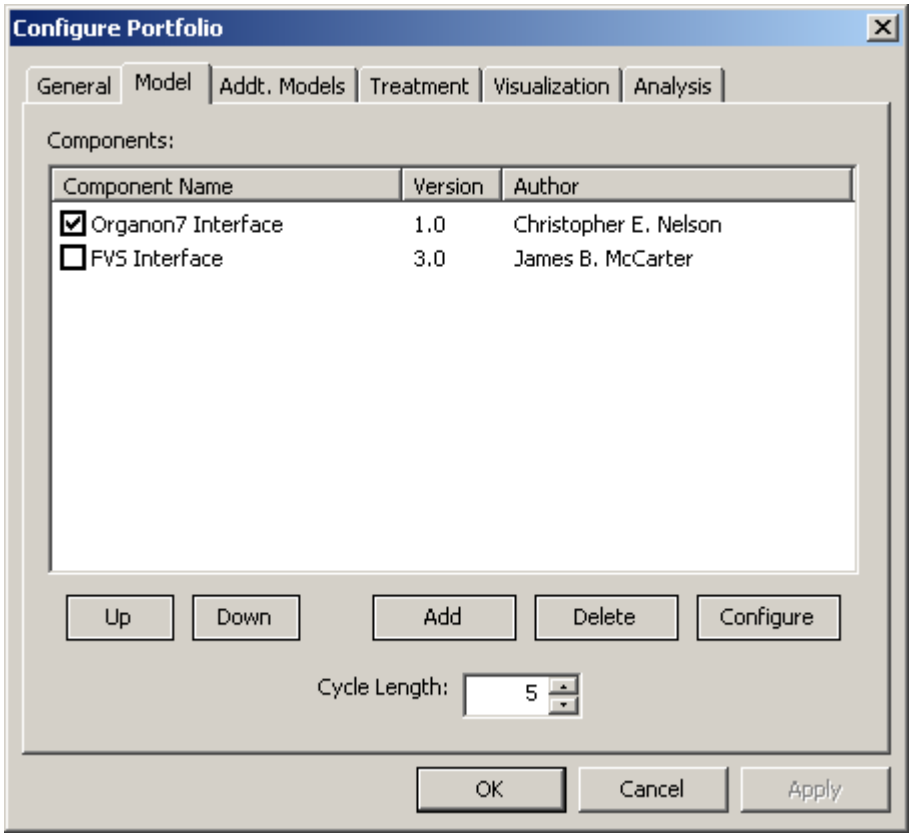
LMS portfolios include inventory information. They also include information about what tools to use for various functions in LMS.

The General configuration tab includes some basic information about the portfolio.



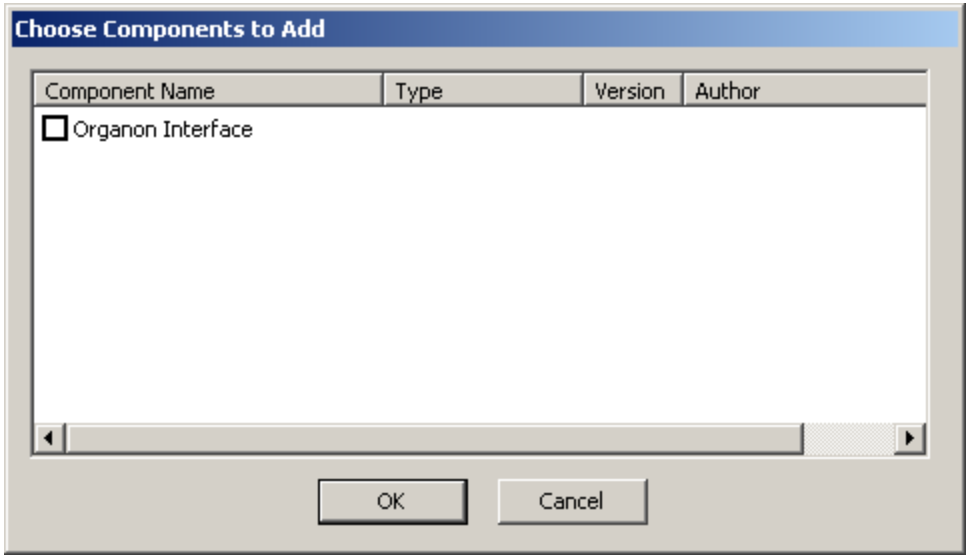
Portfolio Configuration Model

The Model configuration tab determines what growth models are available for the portfolio. You can switch between growth models by checking the desired model. Additional configuration may be necessary for each growth model. Use the Configure button to configure a specific model.



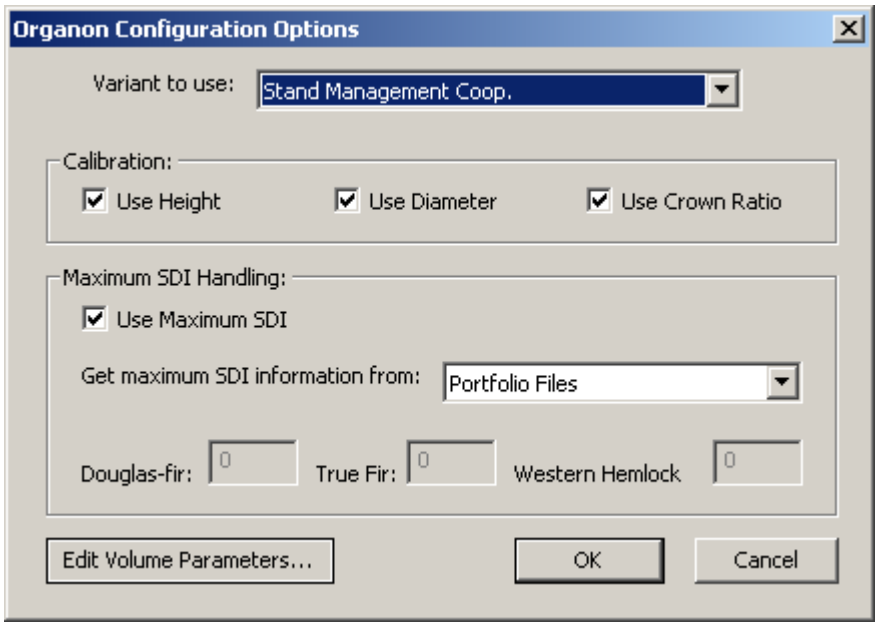
Portfolio Configuration
Add Model

Additional models can be added to the portfolio using the Add button. Only the appropriate type of component is available in this dialog.



Portfolio Configuration
Organon Specific

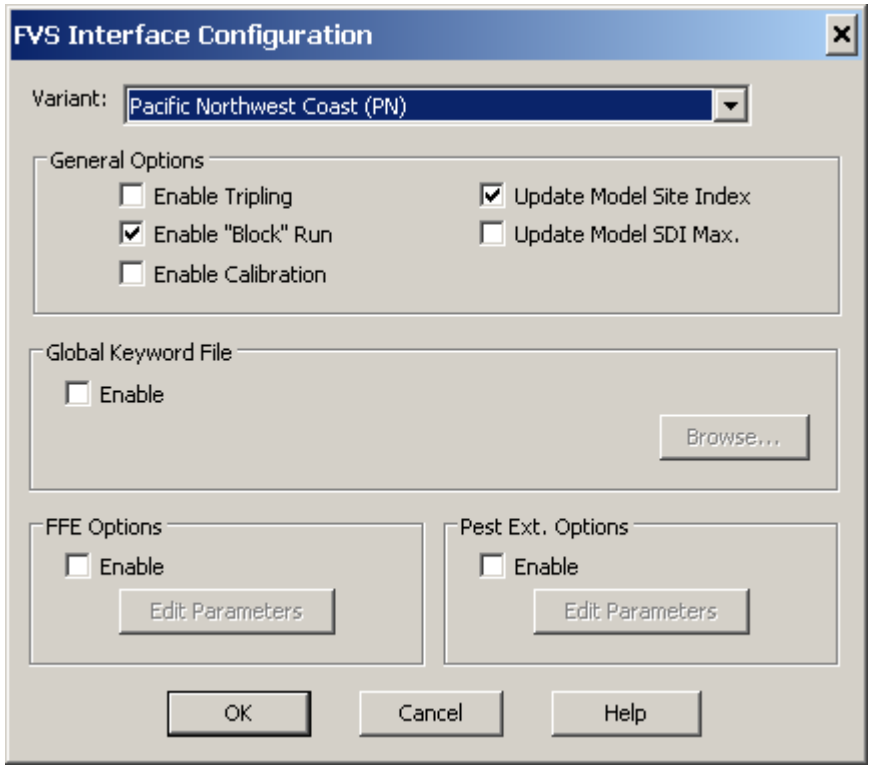
A number of parameters can be controlled for the Organon growth model, including the model variant, calibration data, maximum density, etc.



Portfolio Configuration
FVS Specific

A number of parameters are also available for the FVS growth model. You can control how the model is run by selecting options or providing a FVS keyword file.

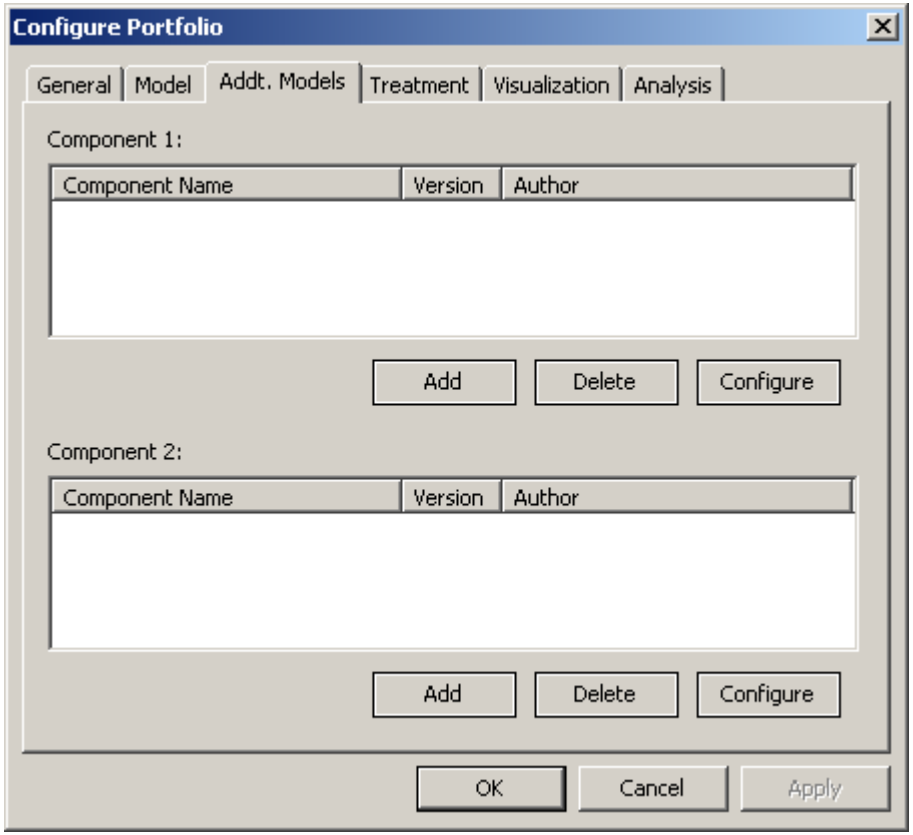
The FFE and Pest Ext. options will be come available in the next several months.



Portfolio Configuration

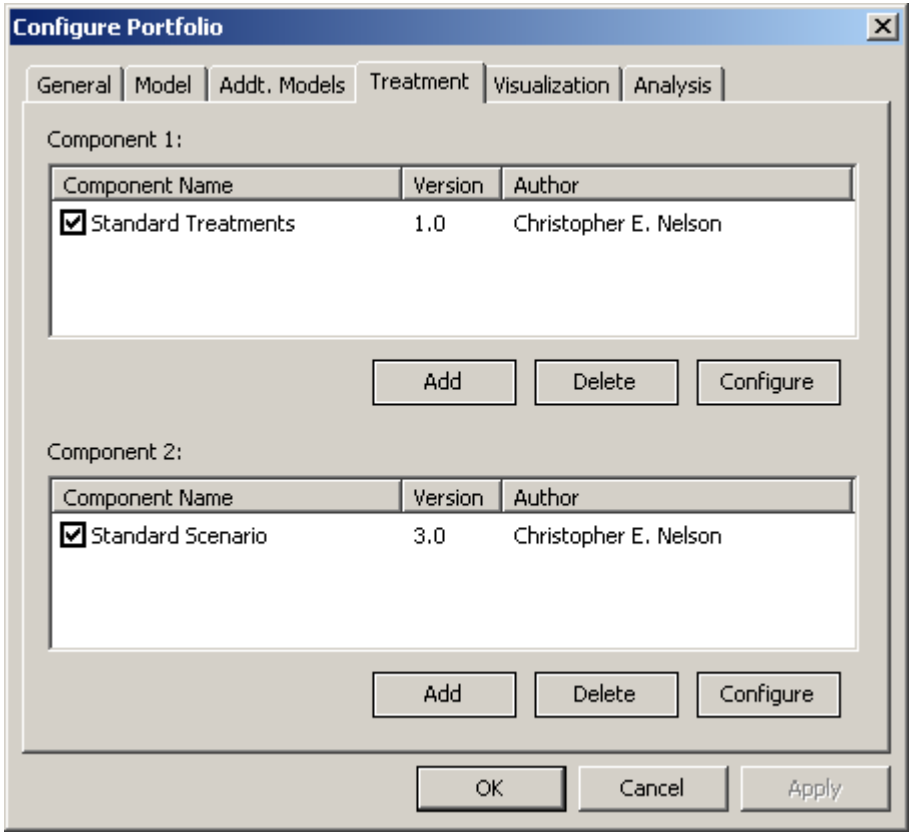
Additional models can also be run with LMS 3.1.

NOTE: No additional models are available yet.



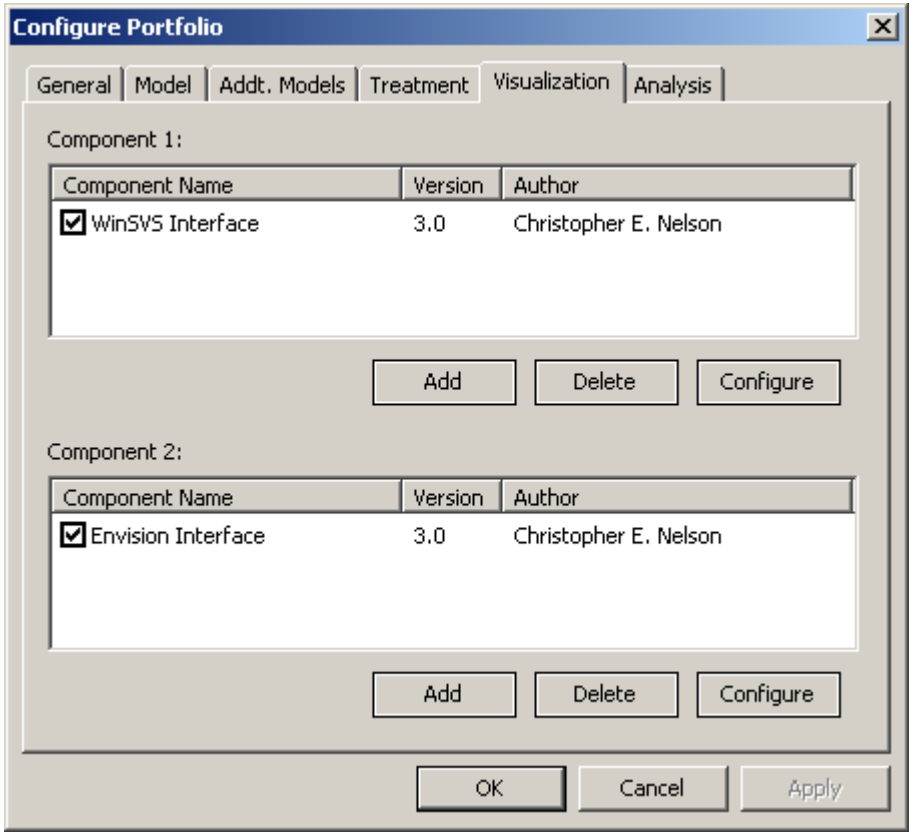
Portfolio Configuration

The treatment tools setup is available on the Treatment tab. The defaults are Standard Treatments and Standard Scenarios.



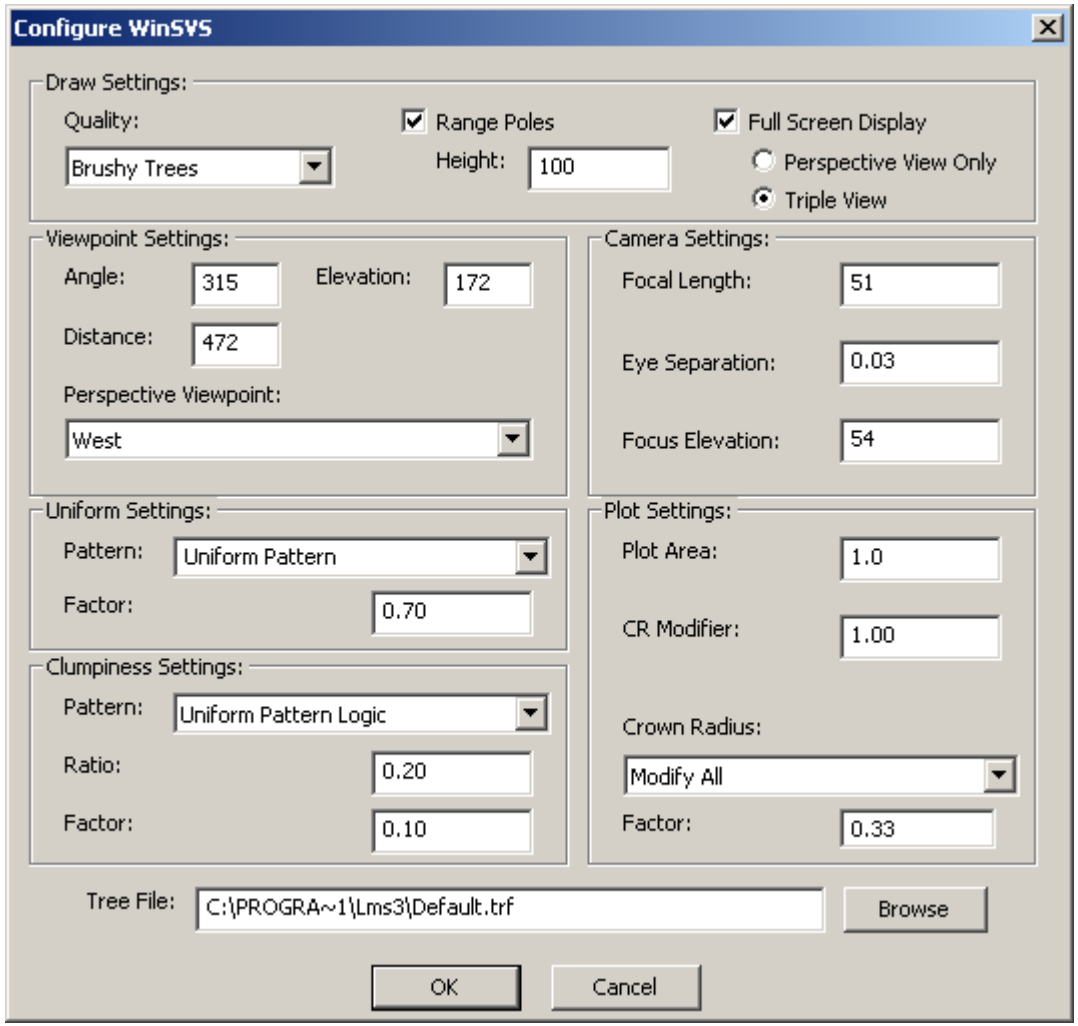
Portfolio Configuration

The visualization tab allows you to configure stand and landscape visualization tools.



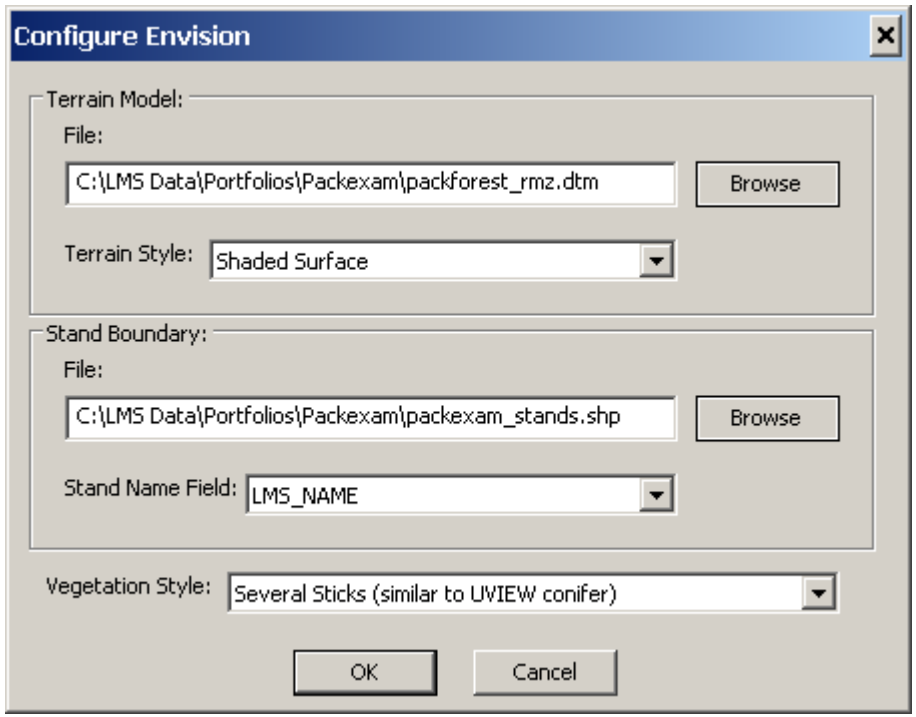
Portfolio Configuration

The WinSVS configuration can be controlled in a variety of ways. Viewpoints can be set, spatial patterns selected, camera settings controlled, etc.



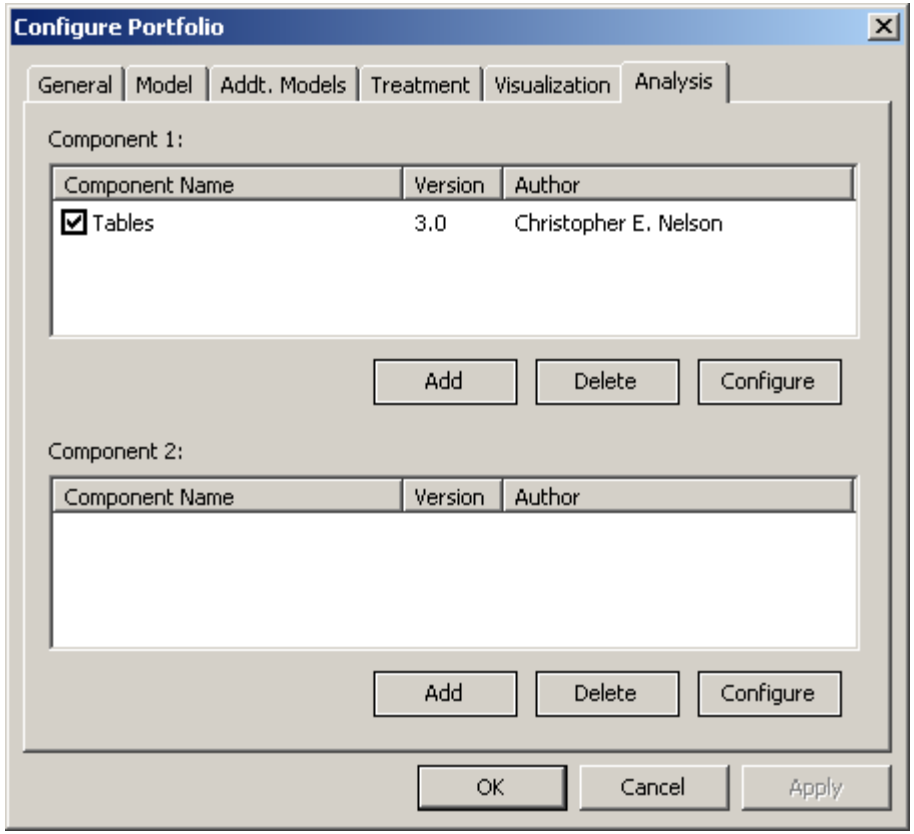
Portfolio Configuration

The EnVision configuration dialog allows you to set what files are used for landscape visualization.



Portfolio Configuration

The Analysis tab configures what analysis tools are available for the portfolio.



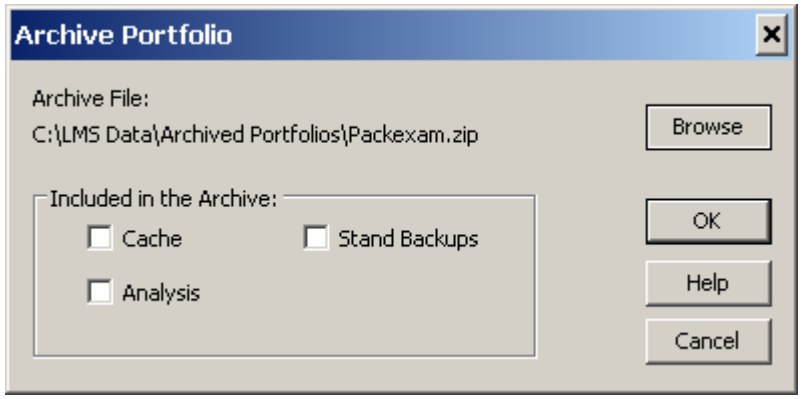
Archiving Portfolios

LMS 3.1 comes with the ability to store portfolios in archive format to make it easier to more the portfolios from one computer to another. The portfolio archives are also a single file, instead of the myriad files that comprise a portfolio.

You back Backup or Restore portfolio archives.

Archiving Portfolios Backup…

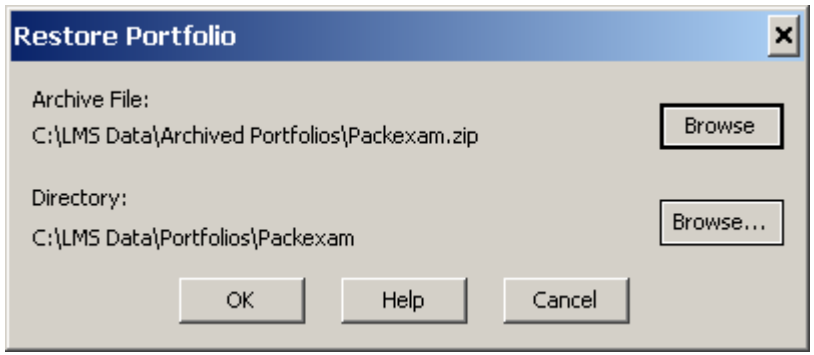
Use Archiving/Backup to store a copy of portfolio files into the Archives Portfolio subdirectory in your C:\LMS Data directory. You can specify the actual location for the file, you can also include the Cache, Analysis, and/or Backup directories.



Archiving Portfolios
Restore…

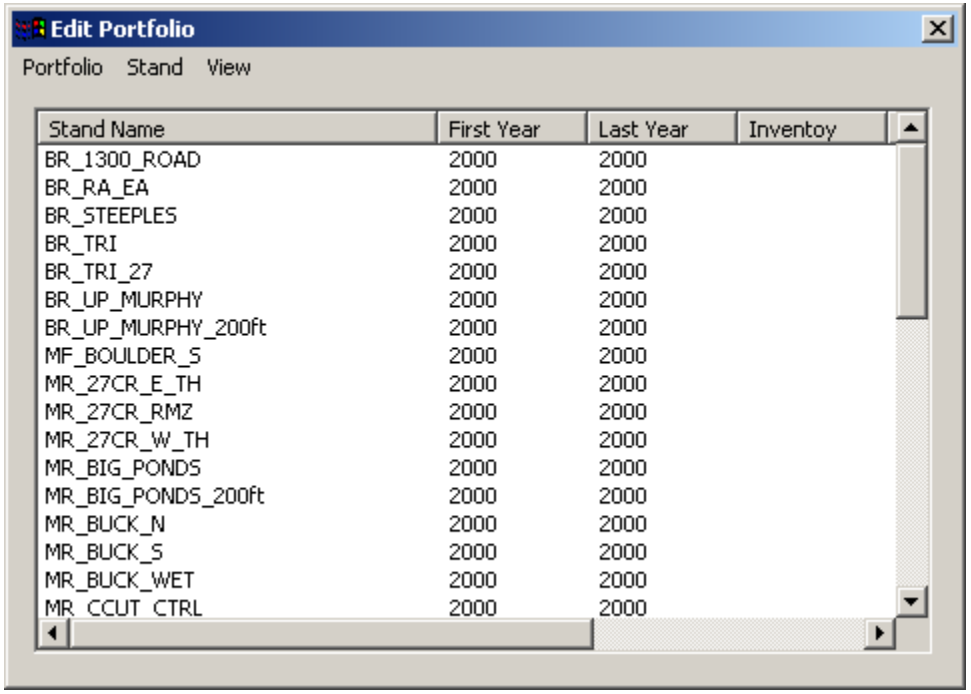
Use Archive/Restore… to un-archive a previously archived portfolio. Select the portfolio archive and the destination directory.

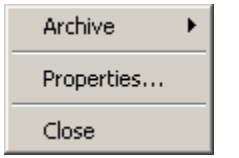
This is also a good way to make copies of an existing portfolio so that you work on a copy instead of the original data.

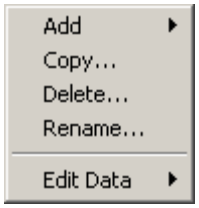


Edit Portfolio

Edit portfolio allows you to make some additional changes to the portfolio.

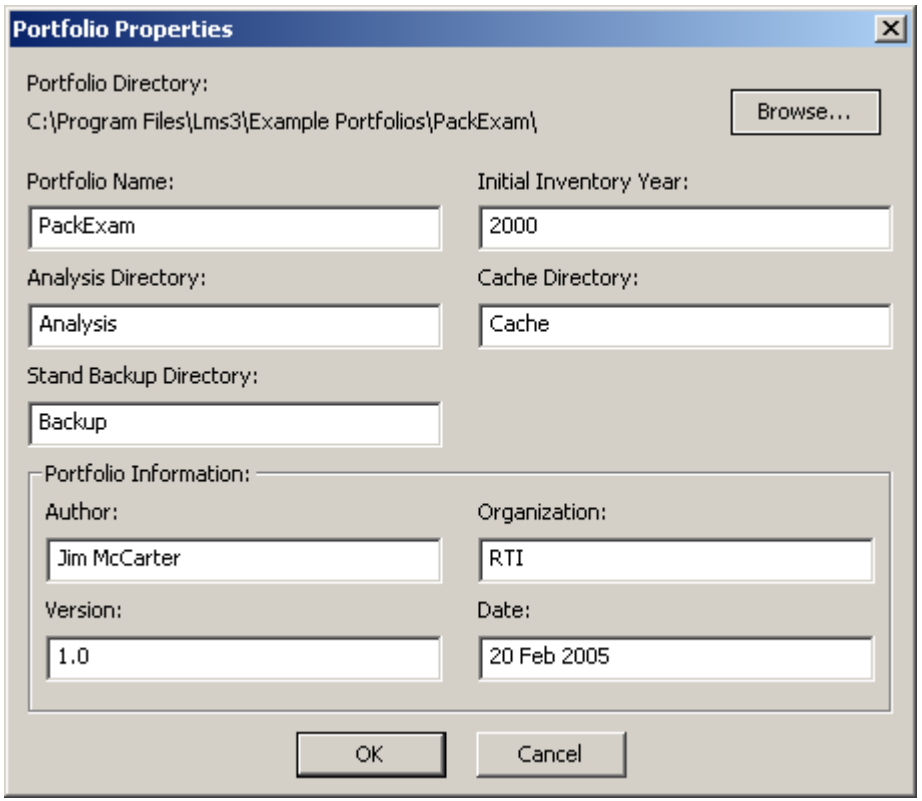






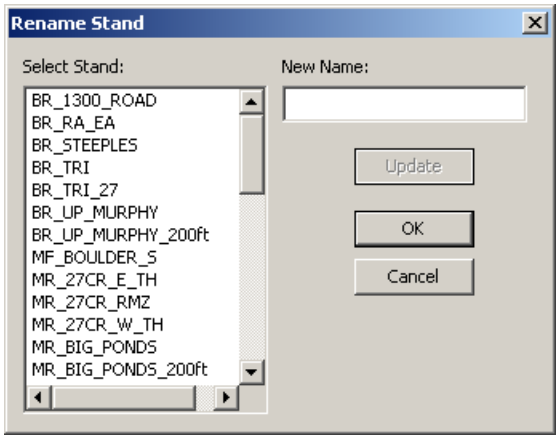
Edit Portfolio/Portfolio Properties

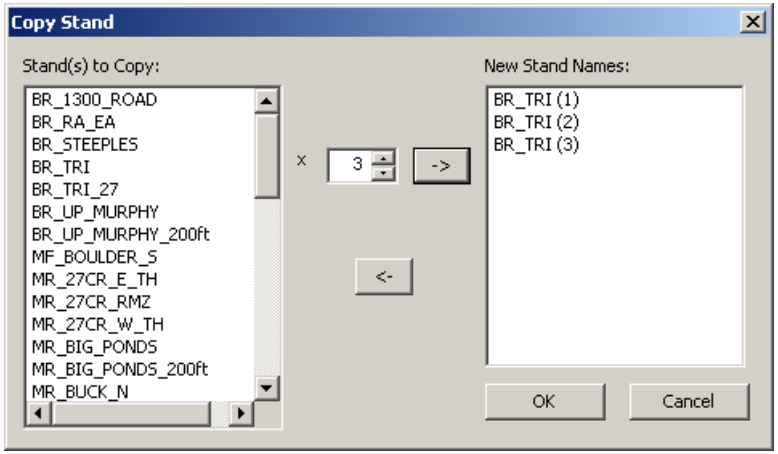
Portfolio properties allows you to change the values in the dialog.

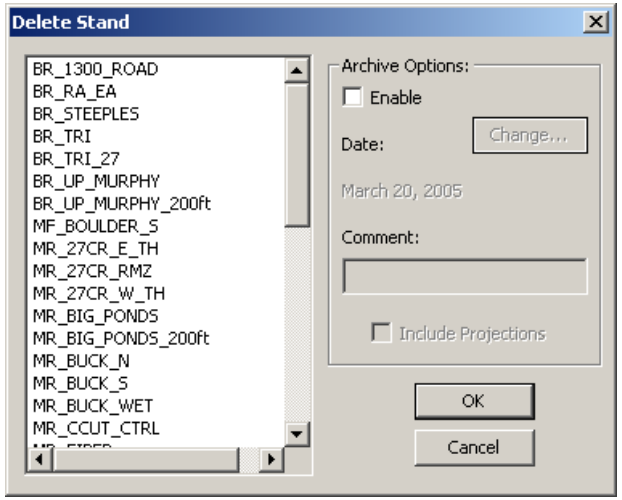


Edit Portfolio
Add, Copy, Delete, Rename Stands

Stands can be copied, renamed, and deleted in the portfolio.







Edit Portfolio
Edit Data

Edit data will eventually allow you to modify individual inventory records in the portfolio.

NOTE: This feature is not available yet.

Creating a LMS Portfolio

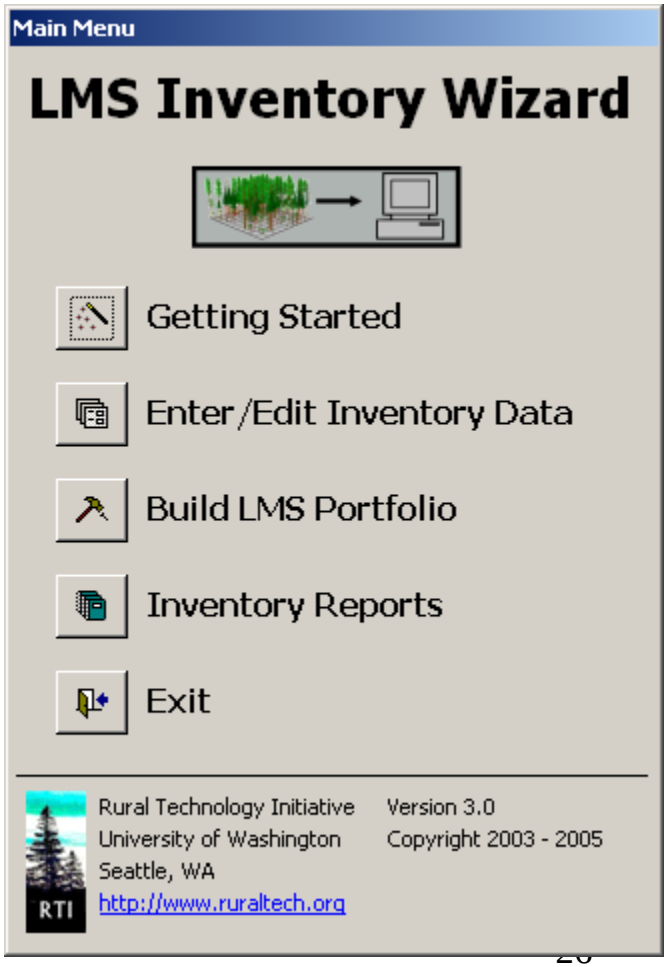
LMS 3.x Inventory Wizard

This section presents the Inventory Wizard – a tool for entering plot level forest inventory information and creating LMS 3.1 portfolios.

LMS 3.x Inventory Wizard

The LMS Inventory Wizard provides a simple interface to enter plot level tree inventory data for use with LMS.

- Microsoft Access database
- Includes growth model specific codes
- Context sensitive help and tutorial
- Includes field data forms
- Creates and intermediate database that is used with the Large Portfolio Builder to import the data into LMS.

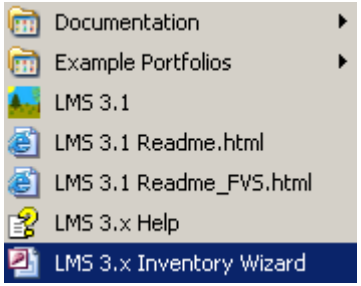


LMS 3.x Inventory Wizard Requirements

The LMS 3.x Inventory Wizard requires Windows 2000 or later. The LMS Inventory Wizard is a Microsoft Access database, thus Microsoft Access 2000 or later is required. For systems that do not have Access 2000 or later, runtime components will be installed that will enable the full functionality of the Inventory Wizard.

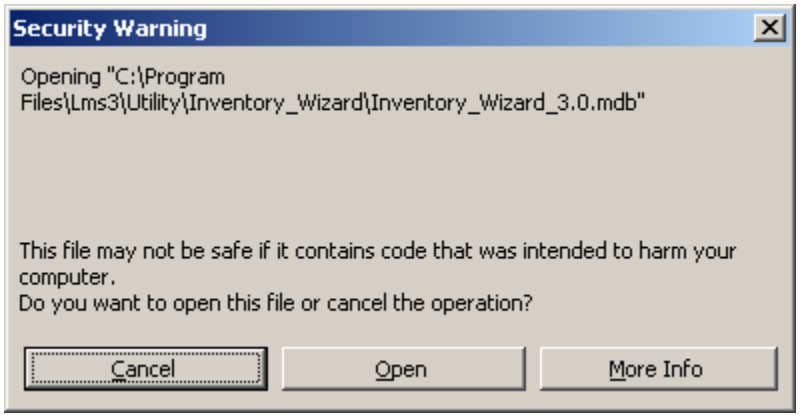
LMS 3.x Inventory Wizard Starting

Start the LMS 3.1 Inventory Wizard using the Start Menu and Landscape Management System Program Group. Select LMS 3.x Inventory Wizard to load the database application.



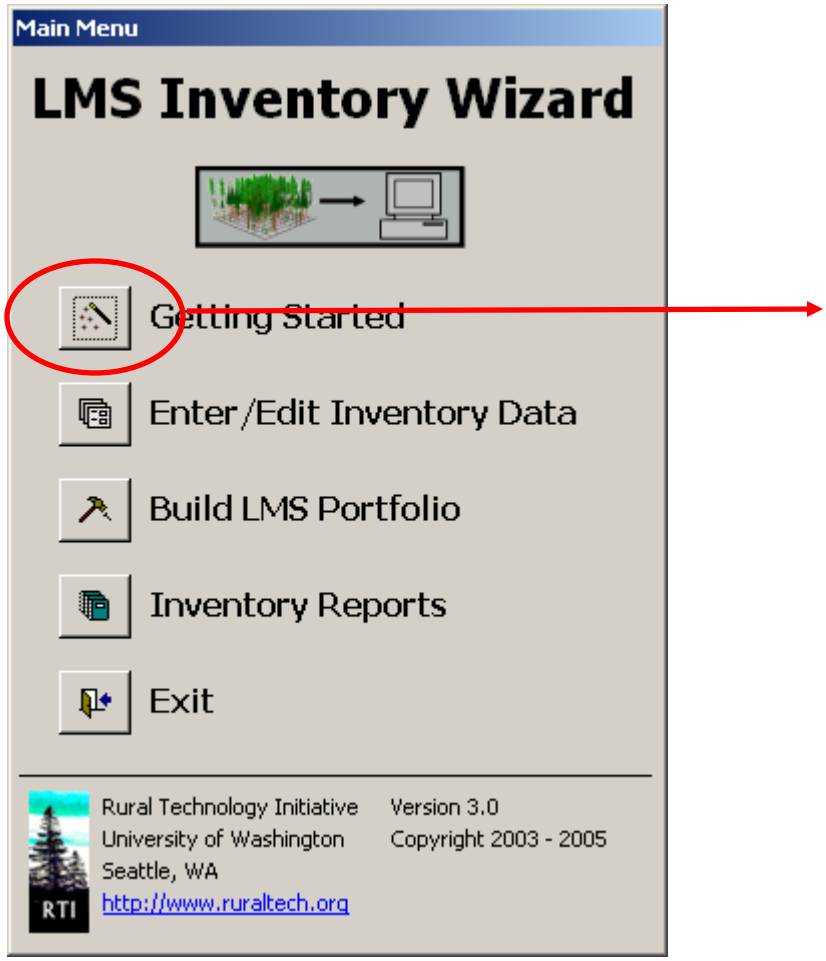
LMS 3.x Inventory Wizard Security Warning

Depending on the version of Microsoft Office (Access) you are running you may see a warning that the Inventory_Wizard_3.0.mdb file may contain unsafe code that could harm your computer. This is currently limited to Access 2003.



Select Open to begin using the Inventory Wizard.

LMS 3.x Inventory Wizard
Getting Started



LMS 3.x Inventory Wizard
Getting Started

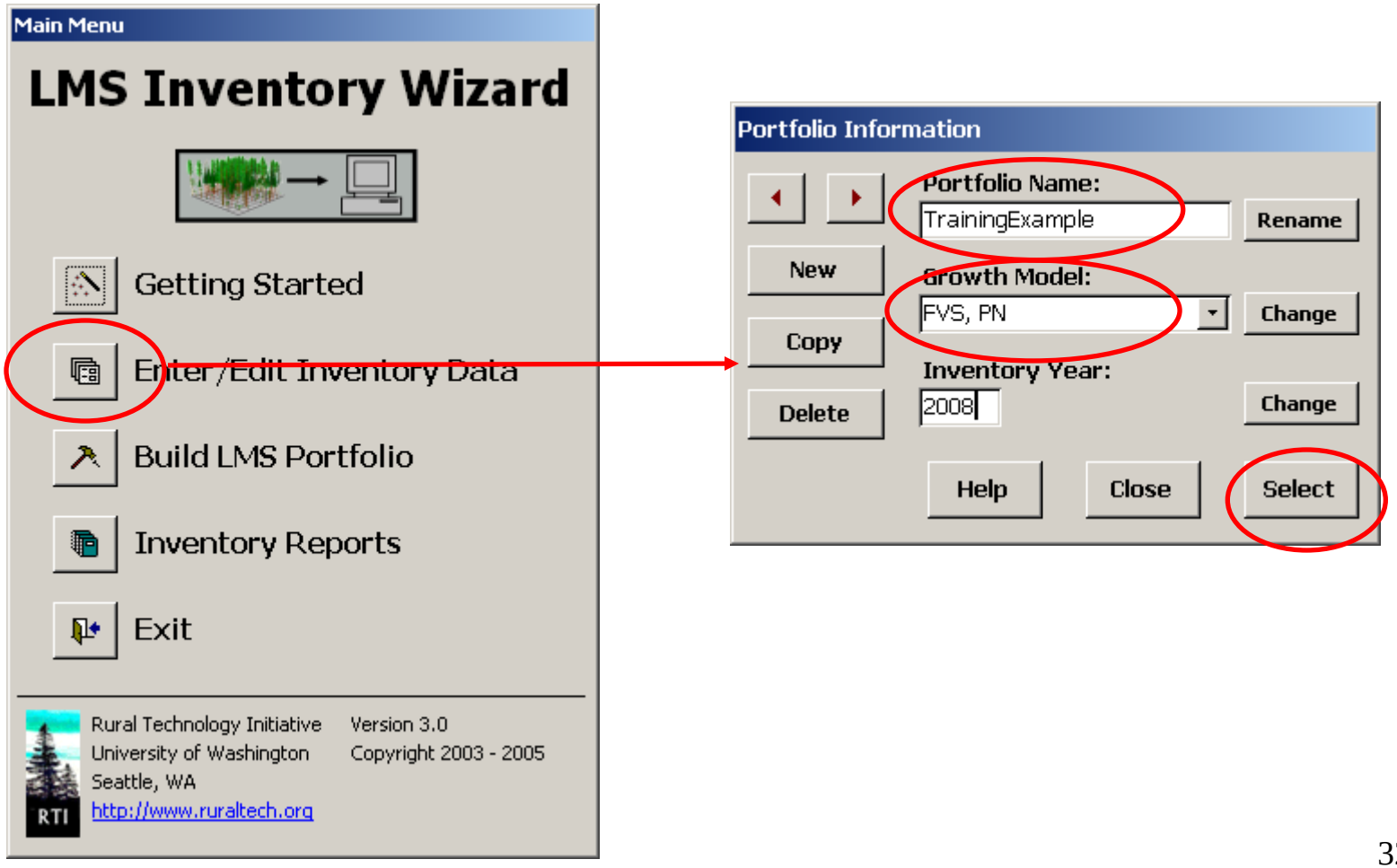
A. **Read the Tutorial** – The first option on this menu will bring you to the beginning of this tutorial. You should be familiar with this entire tutorial before proceeding with the Inventory Wizard.

B. **Growth Model Selection Guide** – You will need to know which of the growth models included with LMS that you will be using *before you begin*. If you are not sure which growth model you should use, this guide will give you suggestions of appropriate models based on the location of your forest.

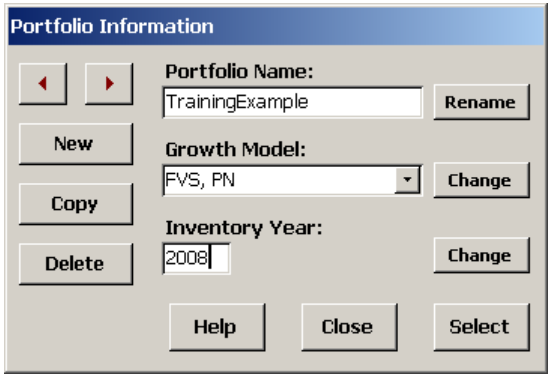
C. **Field Inventory Forms** – These forms can be printed (on waterproof paper if desired) and used to gather the necessary inventory data in the field. Both plot data and stand data are needed. The plot data form is common to all growth models, whereas the stand data forms are growth model specific. Also included is an example of how to fill out the forms.

D. **Import From Another Inventory Wizard** – This option will bring up a dialog box where you can browse to the copy of Inventory Wizard that you wish to import from and click **Import**. Any imported portfolio will have "_imported" appended to its name. This can be changed using the portfolio rename function on the Enter/Edit Inventory Data menu. Note that the import function is only for data to be imported from other copies of the Inventory Wizard (version 2.0 or later). It will not import from Excel spreadsheets, other data sources, or versions of Inventory Wizard earlier than 2.0.

LMS 3.x Inventory Wizard
Entering Data

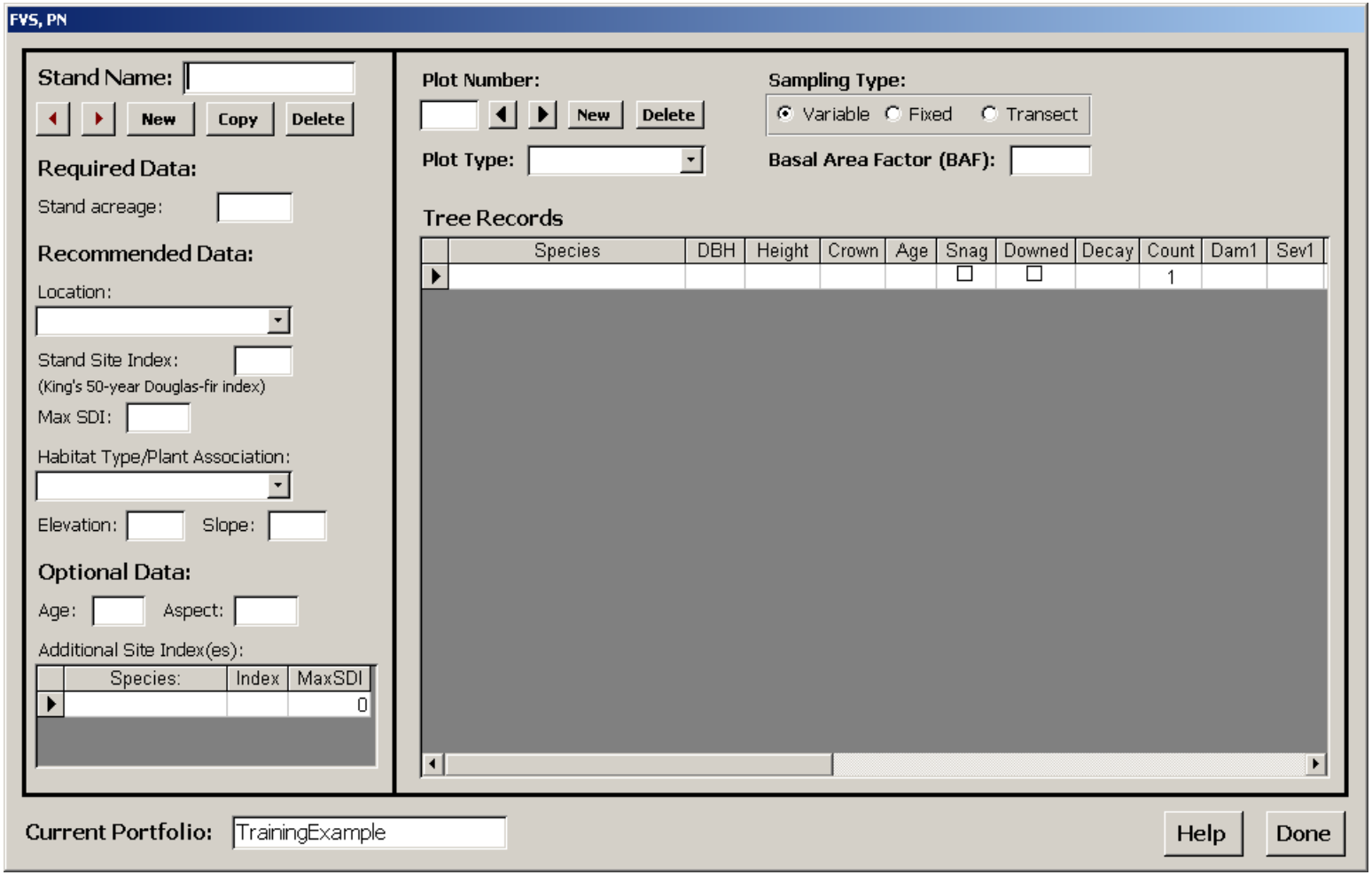


LMS 3.x Inventory Wizard
Enter/Edit Inventory Data



1. **Browse** – Use the red arrow buttons to browse between existing portfolios.
2. **New** – To create a new portfolio, click **New** and enter a **portfolio name**. Note that the portfolio name cannot contain spaces or characters other than letters or numbers (hyphens and underscores are OK). Next select the **growth model** you will be using from the drop-down list (for help with choosing a growth model, see Growth Model Selection Guide).
3. **Copy** – To create a copy of an existing portfolio, browse to the portfolio you wish to copy and click **Copy**. The copied portfolio will have "_Copy" appended to the portfolio name, which can be changed using the Rename function (see below).
4. **Delete** – To delete a portfolio, browse to the portfolio you wish to delete and click **Delete**. Note that portfolio deletion is permanent and none of the information associated with a deleted portfolio will be recoverable.
5. **Making Changes** – Click **Rename** to change a portfolio name or **Change** to select a different growth model. Note that changing the growth model should be done with caution as the change may invalidate existing data, such as site index, for the portfolio.
6. **Select** – Once you have created or browsed to the portfolio you wish to work with, click **Select** to select this portfolio and proceed to enter stand, plot, and tree data.

LMS 3.x Inventory Wizard
Entering Data



LMS 3.x Inventory Wizard
Stand Name

1. **Stand Name** – The first step is to enter the **stand name**. Note: as with portfolio name, stand name is limited to letters and numbers—it cannot contain spaces or any special characters except hyphens or underscores.

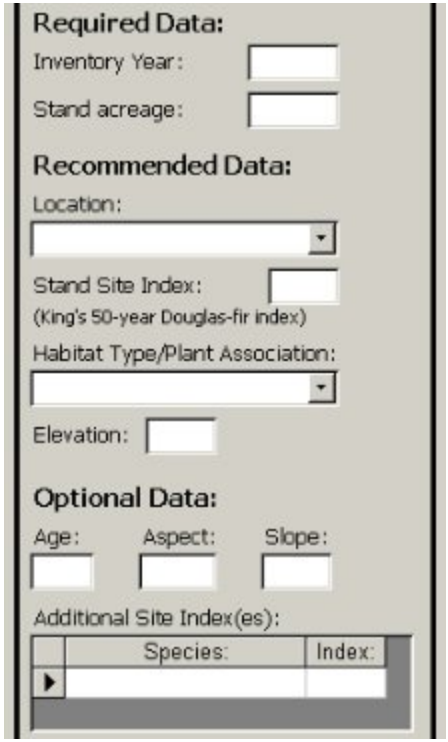
a. **Browse –** Use the red arrow buttons to browse between stands in a portfolio.

b. **New** – To create a new stand, click **New**.

c. **Copy** – To create a copy of an existing stand, browse to the stand you wish to copy and click **Copy**. The copied stand will have "_Copy" appended to the stand name, which can be renamed by selecting the **Stand Name** field and entering a new name.

d. **Delete –** To delete a stand, browse to the stand you wish to delete and click **Delete**. Note that stand deletion is permanent and none of the information associated with a deleted stand will be recoverable.

LMS 3.x Inventory Wizard
Stand Level Information



2. **Required Information –** This is the minimum information required to run LMS using the growth model you have selected.
3. **Recommended Information** – While not required to run LMS, this information is necessary to achieve realistic results from the growth model. Enter as much of this information as possible, but leave fields blank where you don't know or are unsure of the appropriate value.
4. **Optional Information**: This information can be used to further calibrate the growth model for optimal results. Enter any of this information that is available.

LMS 3.x Inventory Wizard
Plot Level Information

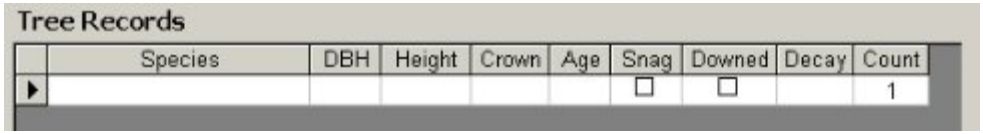
1. **Plot Number** – Enter the plot number first. Main plots should be entered as 1.0, 2.0, 3.0, etc. Nested subplots can be entered as decimals. For instance, nested subplots for main plot 1.0 would be 1.1, 1.2, 1.3, etc.

2. **Plot Type –** Select the plot type from the drop-down list. For inventory designs that do not have nested subplots, **Main Plot** should be selected. Otherwise assign Main Plot to the primary sampling point (usually the overstory plot) and assign **subplot types 1-4** to nested subplots (understory, regeneration, etc.).

3. **Sampling Type** – select the appropriate option for variable radius plots, fixed radius plots, or transect (line intercept) samples.

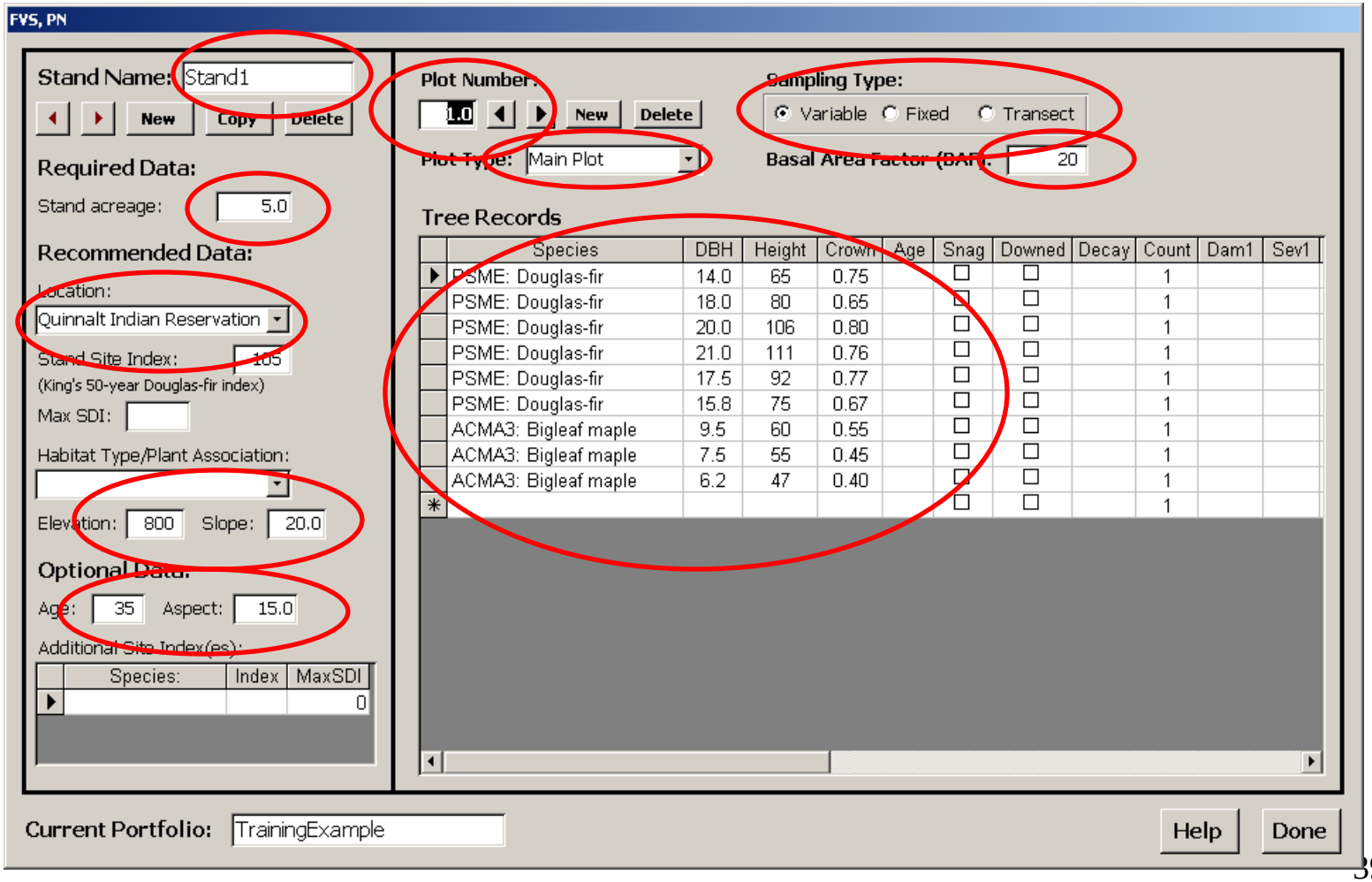
4. **Plot Factor** – Depending on the Sampling Type, you will need to enter the appropriate plot factor. The caption for this field will change accordingly to match the selected Sampling Type.

LMS 3.x Inventory Wizard
Tree Information

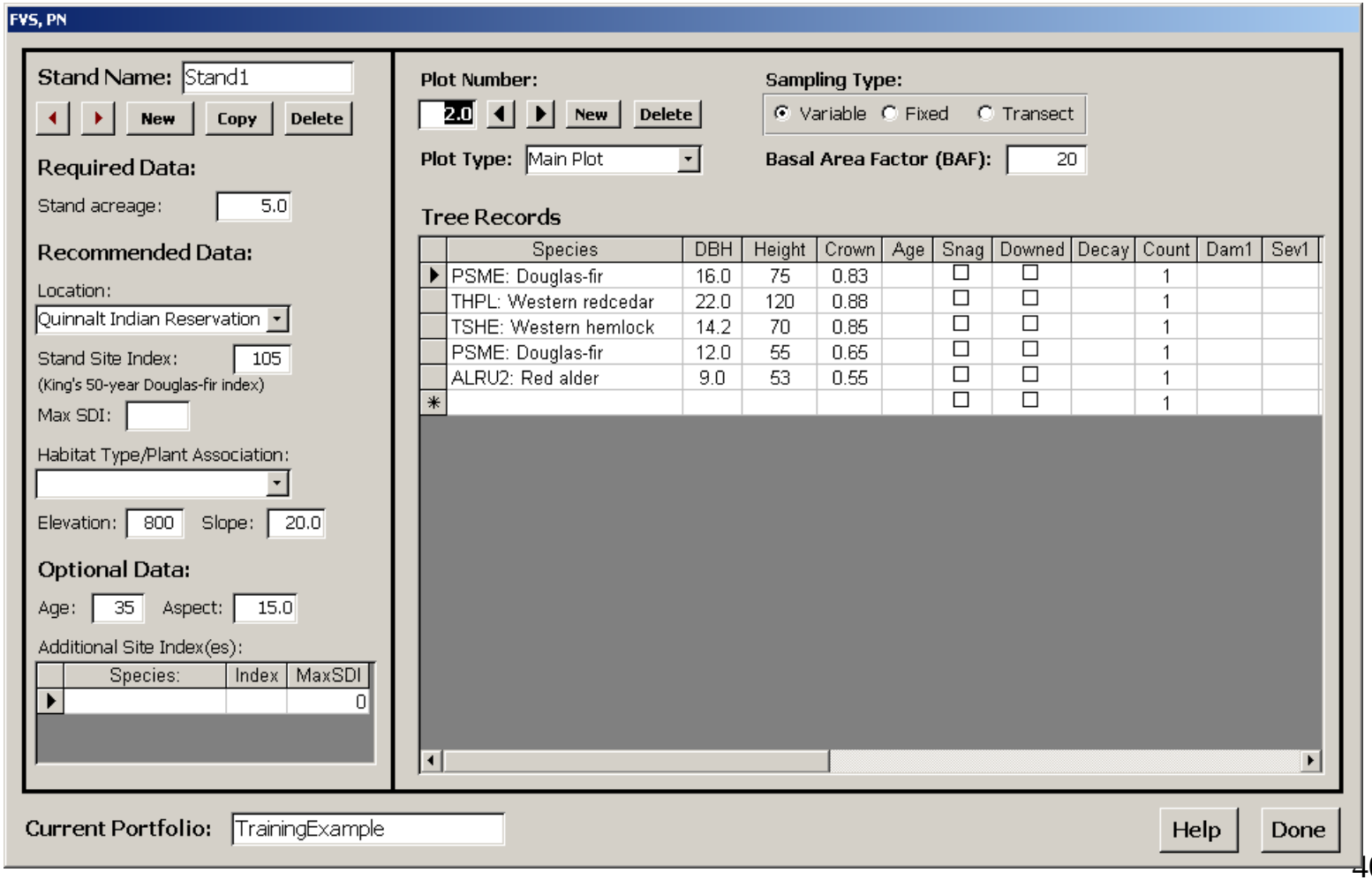


1. **Species** – Select from the drop-down list (or type 2-letter code) of species recognized by the selected growth model (*Required*).
2. **DBH** – Enter the diameter at breast height (DBH) to the nearest 1/10th inch (*Required*).
3. **Height/Length** – Enter the total tree height or log length in feet (*Required for downed logs; otherwise recommended*).
4. **Crown** – Enter the proportion of live crown as a decimal (*Recommended*).
5. **Age** – Enter the age for live trees (Optional).
6. **Snag** – Check this box if the record represents a snag.
7. **Downed** – Check this box if the record represents a downed log.
8. **Decay** – Enter the decay class from 1 (least decayed) to 5 (most decayed) for snag or downed log entries (*Recommended*).
9. **Count** – Enter the number of trees in the plot represented by this record (*Required*).
10. **Deleting a Tree** – If you need to delete a tree record, click the species field for that tree and then go to **Edit: Delete Record**.

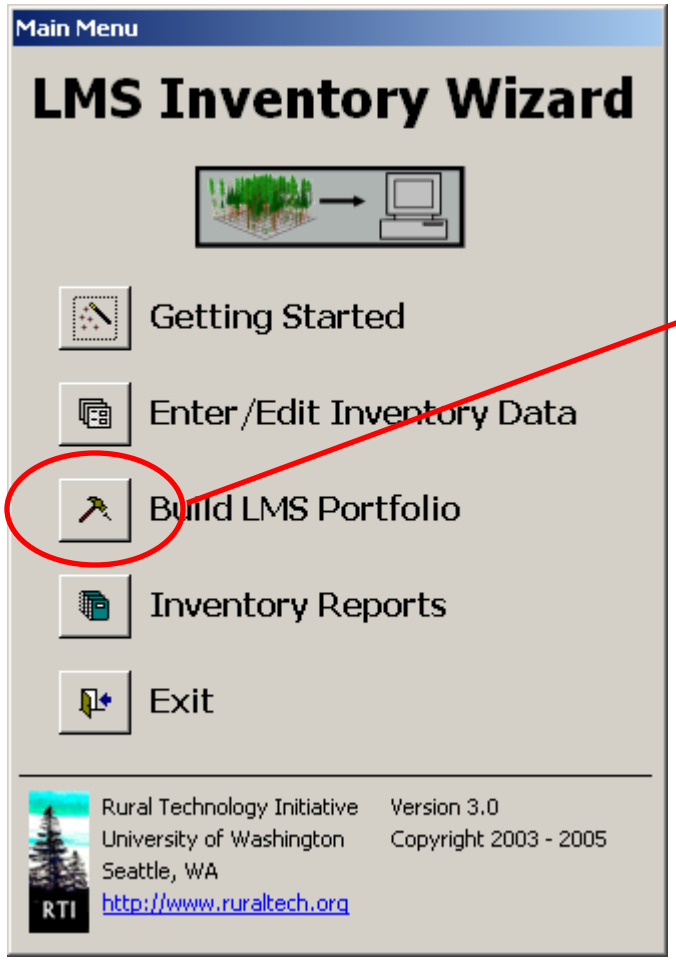
LMS 3.x Inventory Wizard
Entering Data

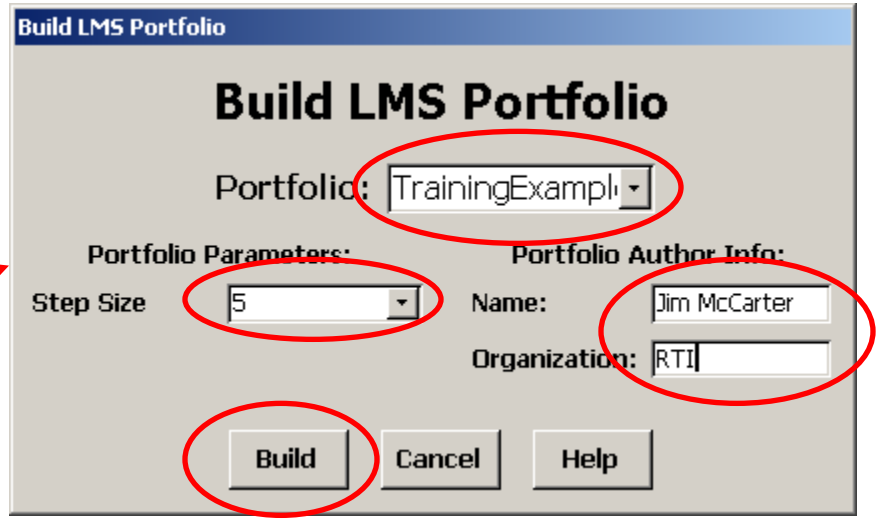


LMS 3.x Inventory Wizard
Entering Data



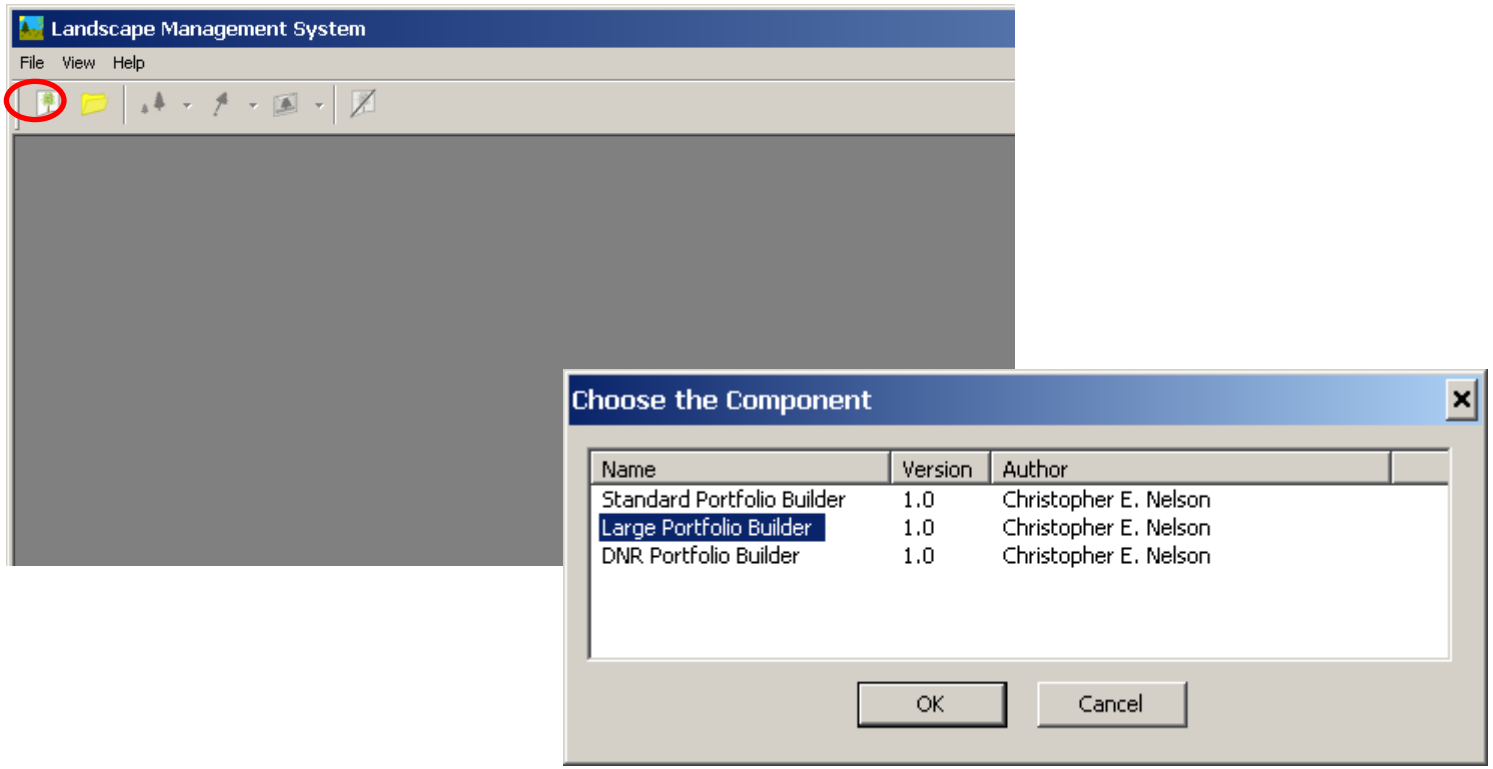
LMS 3.x Inventory Wizard
Build Portfolio





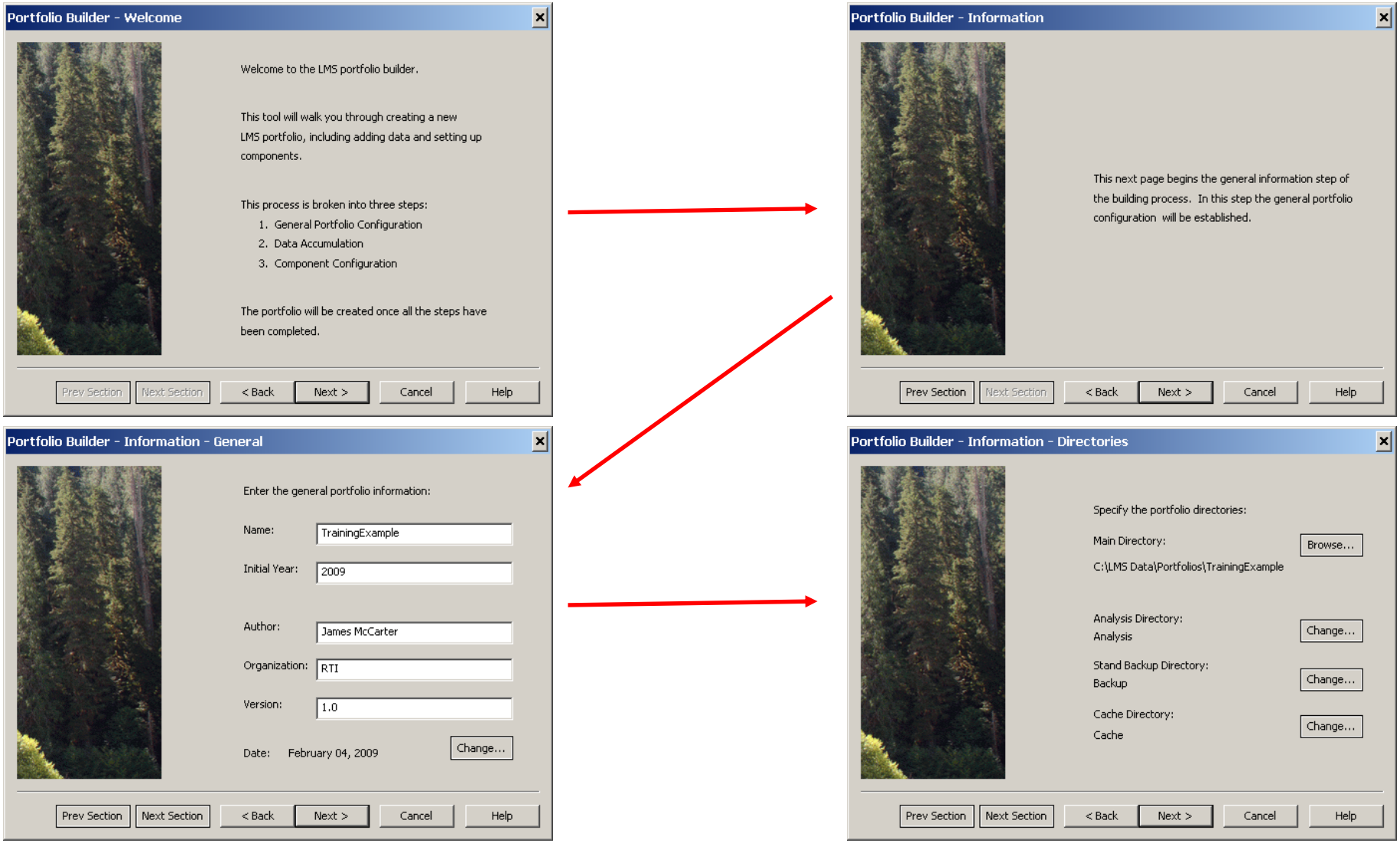
This step does the plot summarization and prepares the data for import into LMS 3.1

Import Inventory Wizard Data into LMS 3.1

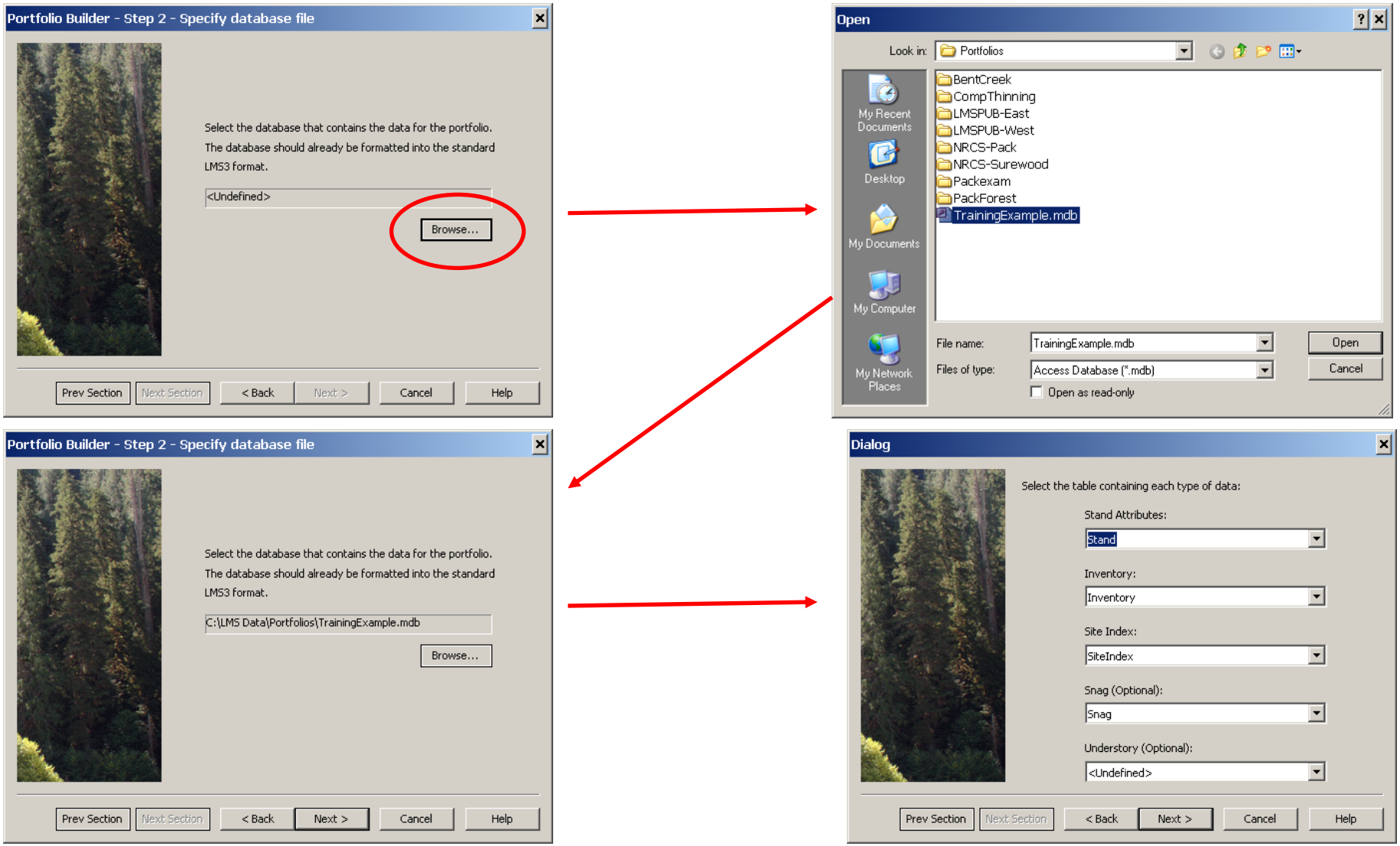


Select the Portfolio Builder and then select the Large Portfolio Builder from the options shown.

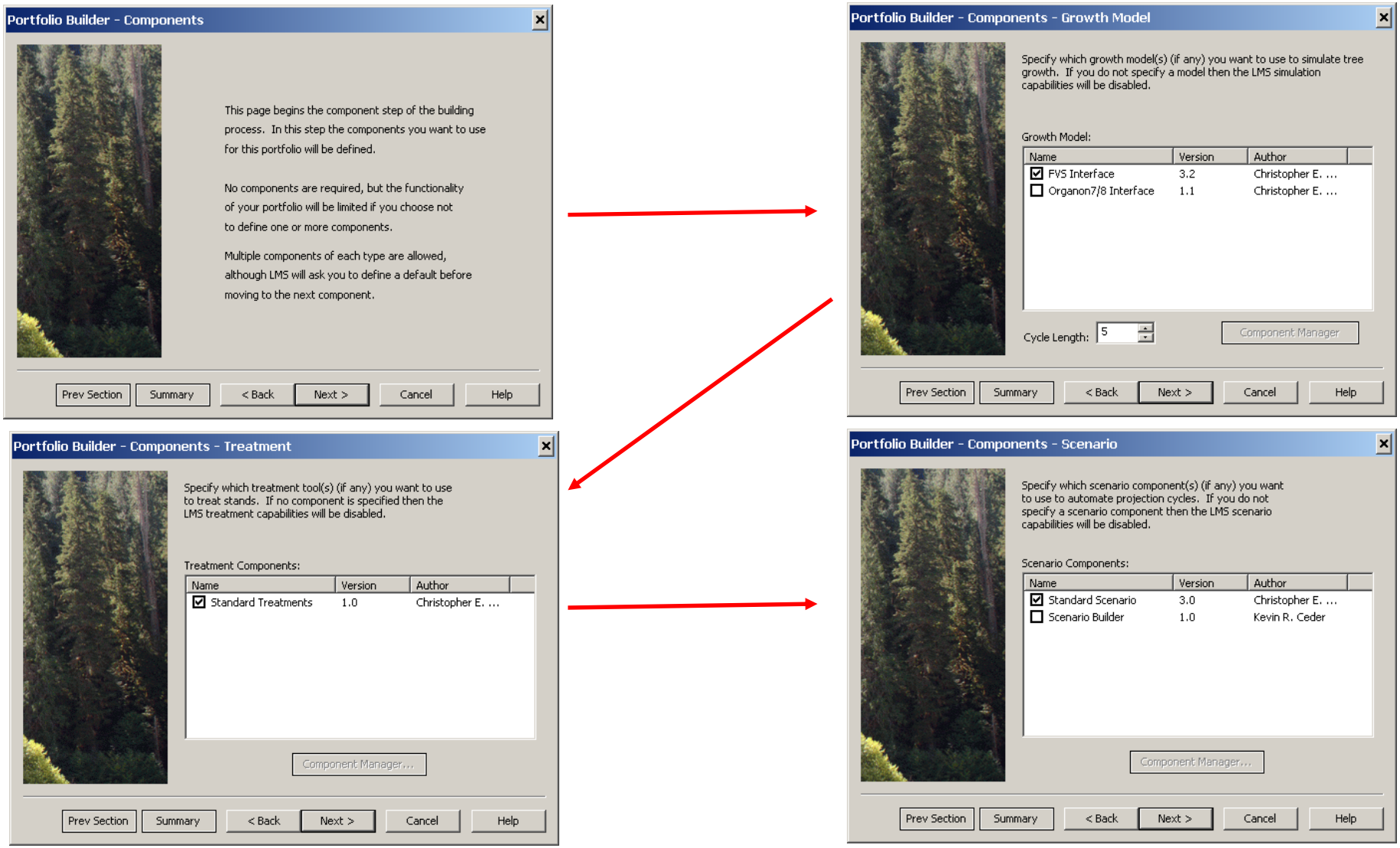
Import Inventory Wizard Data into LMS 3.1



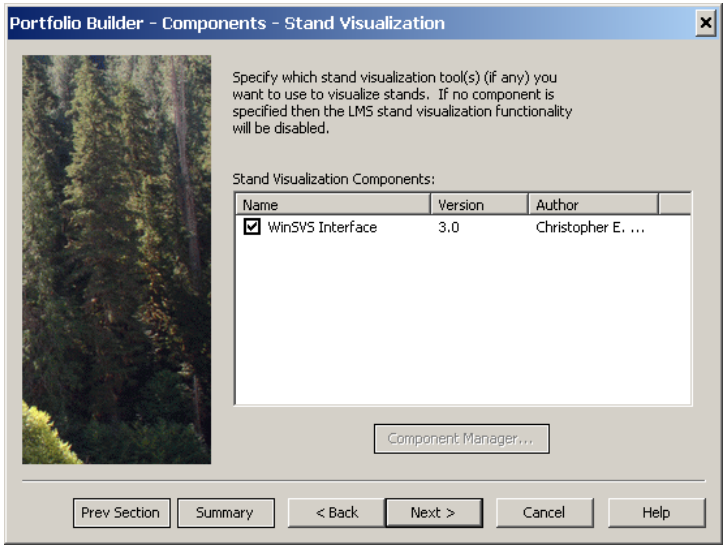
Import Inventory Wizard Data into LMS 3.1

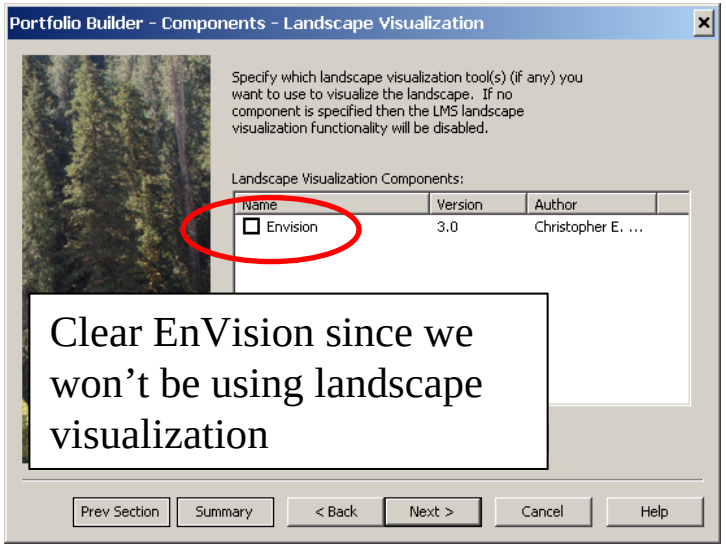


Import Inventory Wizard Data into LMS 3.1

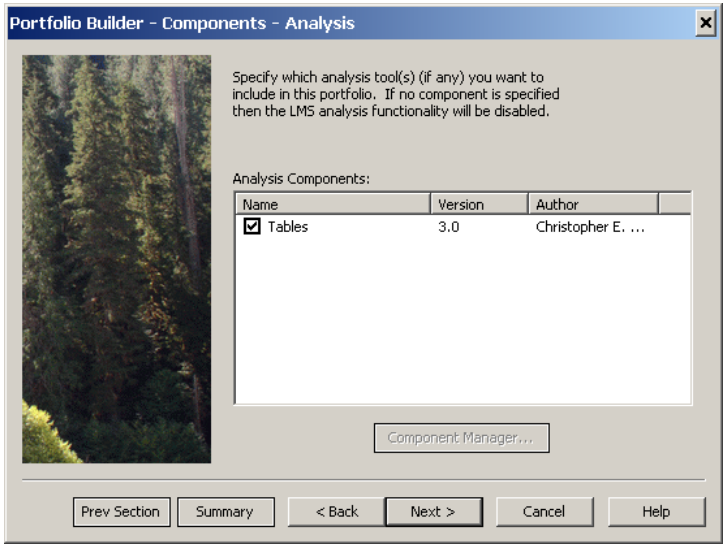


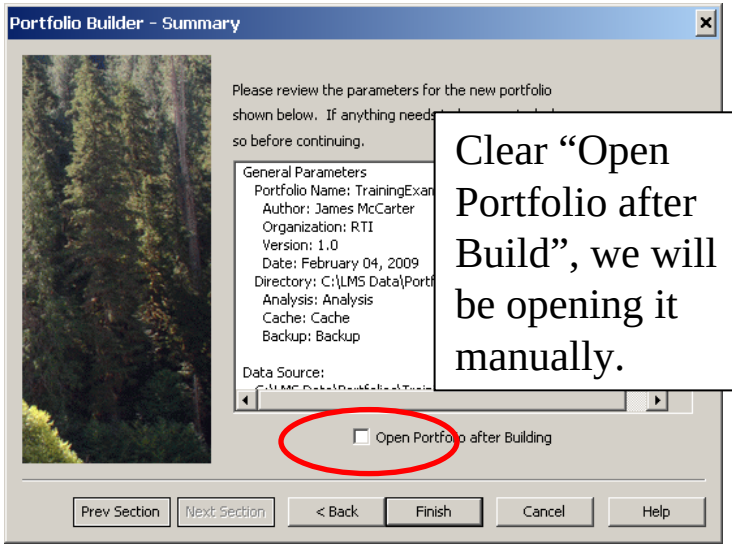
Import Inventory Wizard Data into LMS 3.1





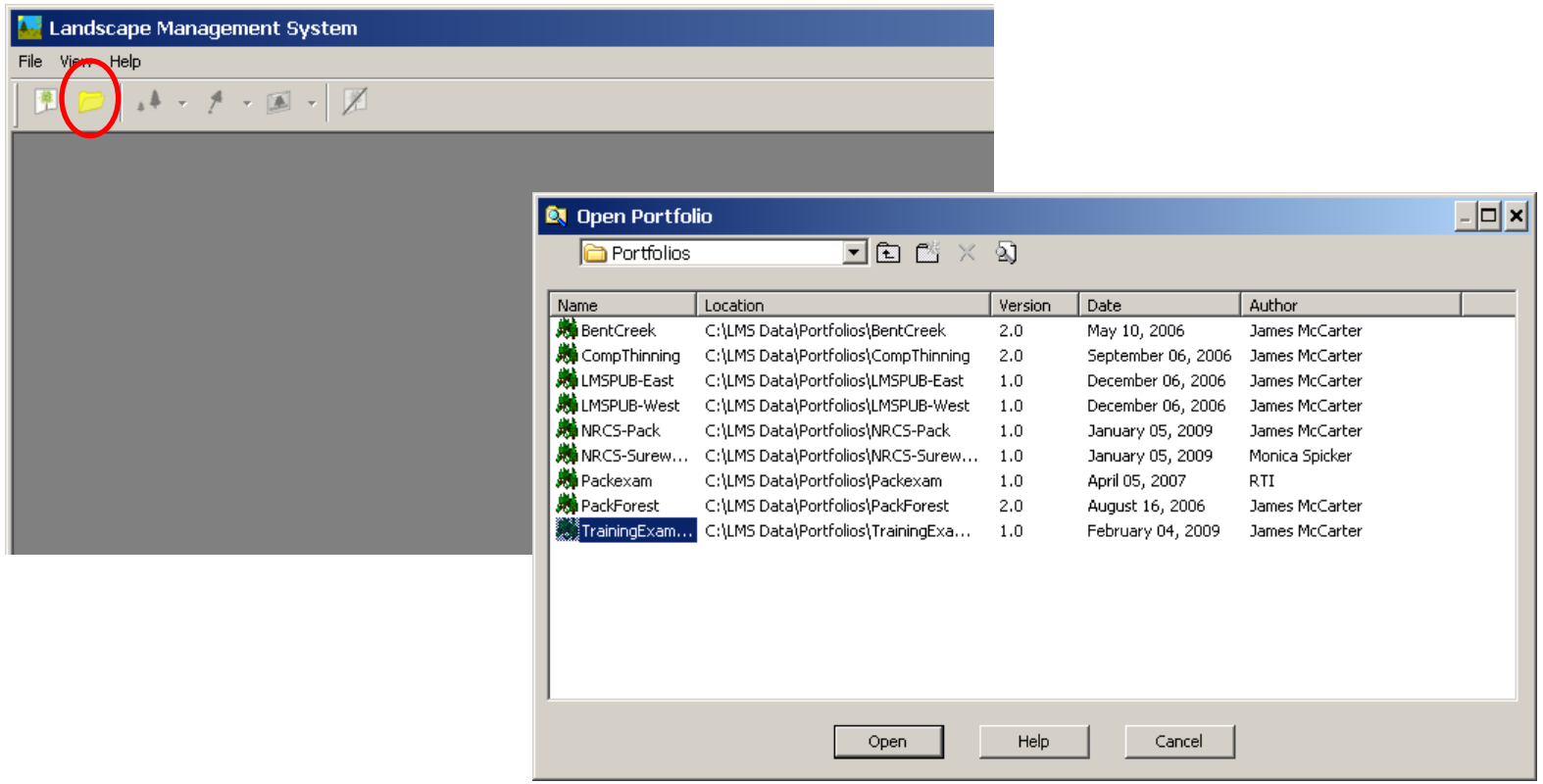
Clear EnVision since we won't be using landscape visualization





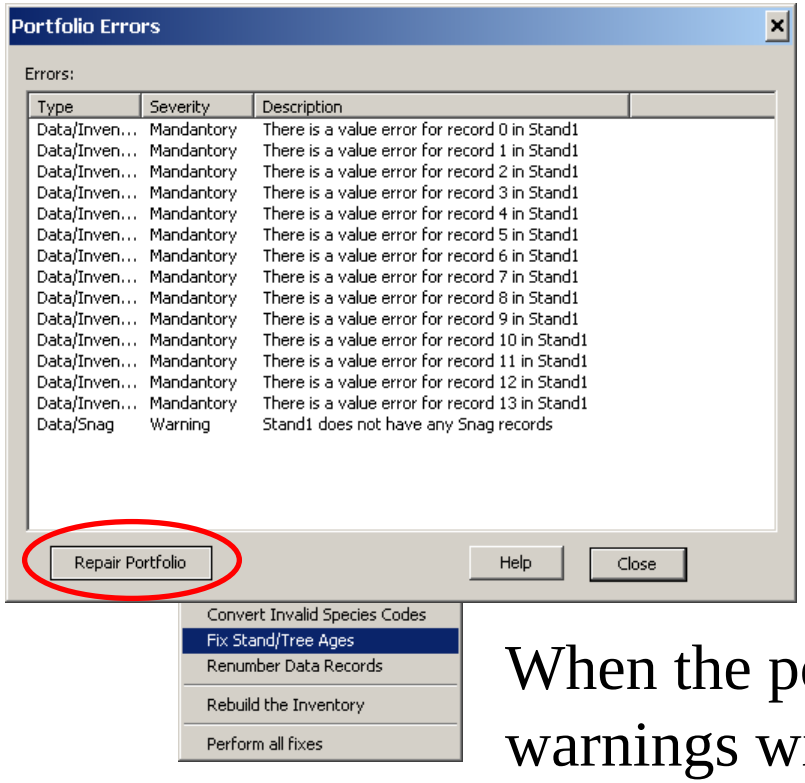
Clear "Open Portfolio after Build", we will be opening it manually.

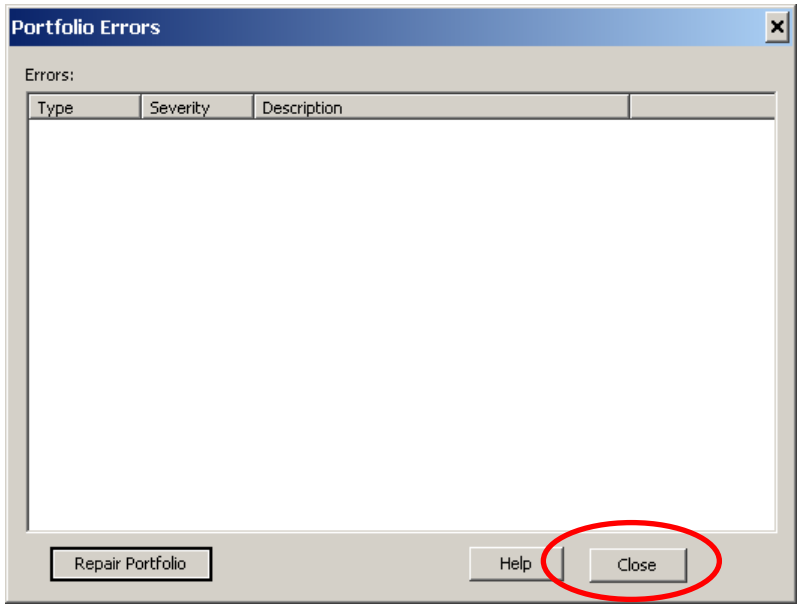
Import Inventory Wizard Data into LMS 3.1



Select Open Portfolio and notice there is a Thinning Example portfolio available now.

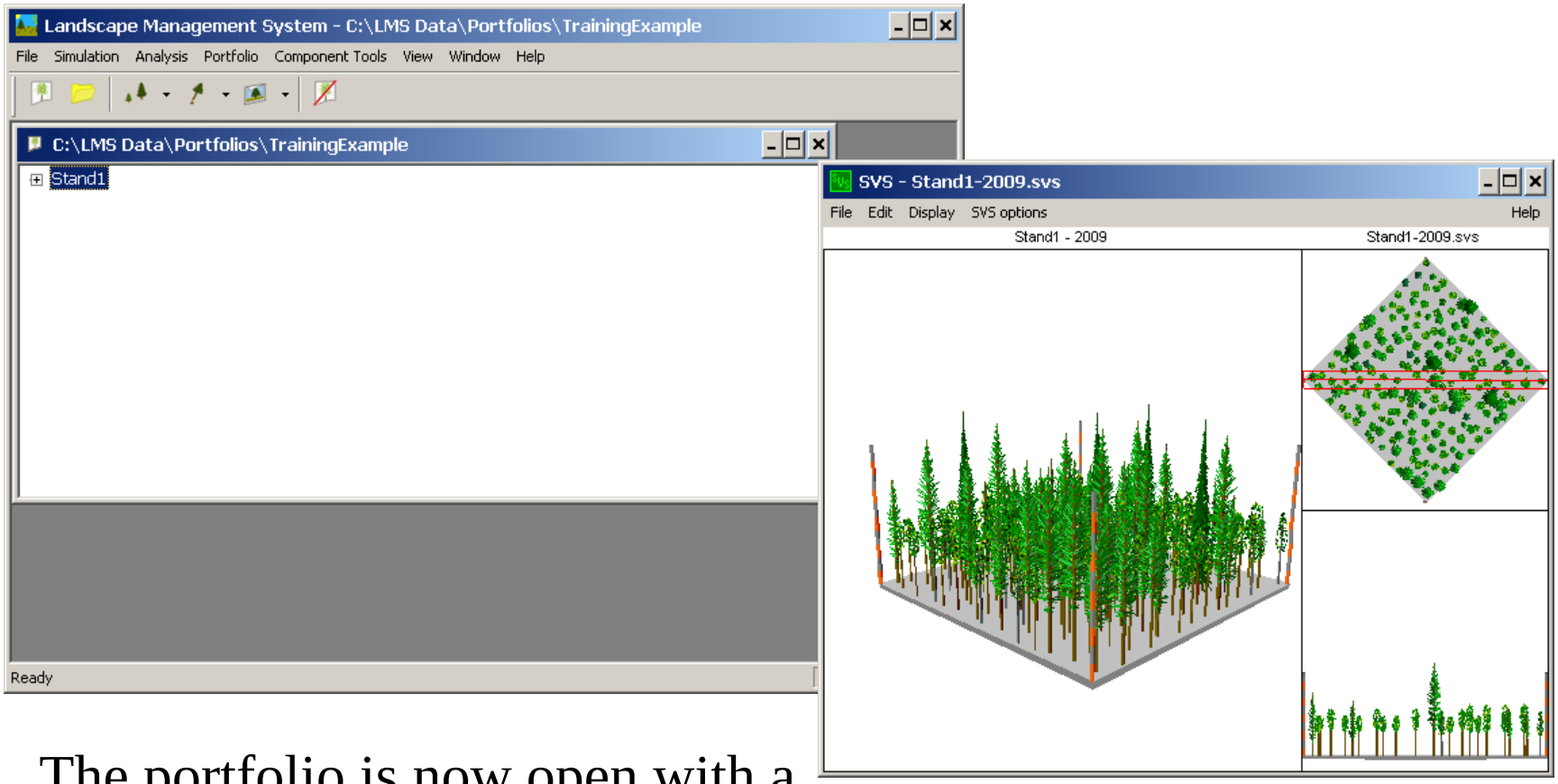
Import Inventory Wizard Data into LMS 3.1





When the portfolio initially opens several warnings will be displayed. Select Fix Stand/Tree Ages and the warnings go away. Click Close to finish opening the portfolio.

Import Inventory Wizard Data into LMS 3.1



The portfolio is now open with a single stand shown at the right.

LMS 3.x Inventory Wizard
Inventory Reports

Click the **Inventory Reports** button on the Main Menu to open the Inventory Reports Menu from which three different reports can be generated. Upon opening a report, you can click in the report window to toggle between full size and a size that will fit in the window. Go to **File: Print** to print the report.

- **A. Portfolio –** Use the red arrow buttons to browse to the portfolio you would like to generate a report for.
- **B. Inventory Report –** This report will provide a list of all the tree records by plot and stand for the selected portfolio. Plot characteristics and calculated per acre expansion factors for each tree are included with this report.
- **C. Site Index Report –** This report summarizes all the tree records that have age and height information. Use this report for organizing data to do site index calculations.
- **D. Stand Report –** This report summarizes the characteristics of each stand, including total trees per acre. Only stands that have live tree records associated with them will be included in this report.

Landscape Visualization

Landscape Analysis

- Learning Objective:
  - Demonstrate Landscape Analysis using Landscape Visualization (EnVision) and Tables

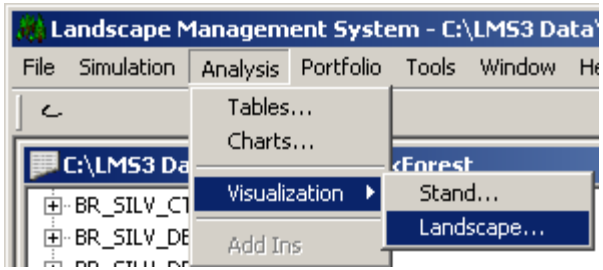
Landscape Analysis

Roadmap

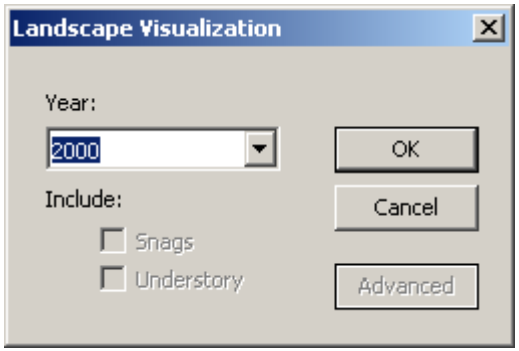
- Introduction to Landscape Visualization
- Viewpoints in EnVision
- Overlays in EnVision
- Viewshed Analysis

Landscape Analysis

Landscape visualization is done using the Analysis/Visualization/Landscape… menu command in LMS.



The Landscape Visualization dialog will appear, allowing you to confirm the year for the visualization and if you want snags or understory if applicable.

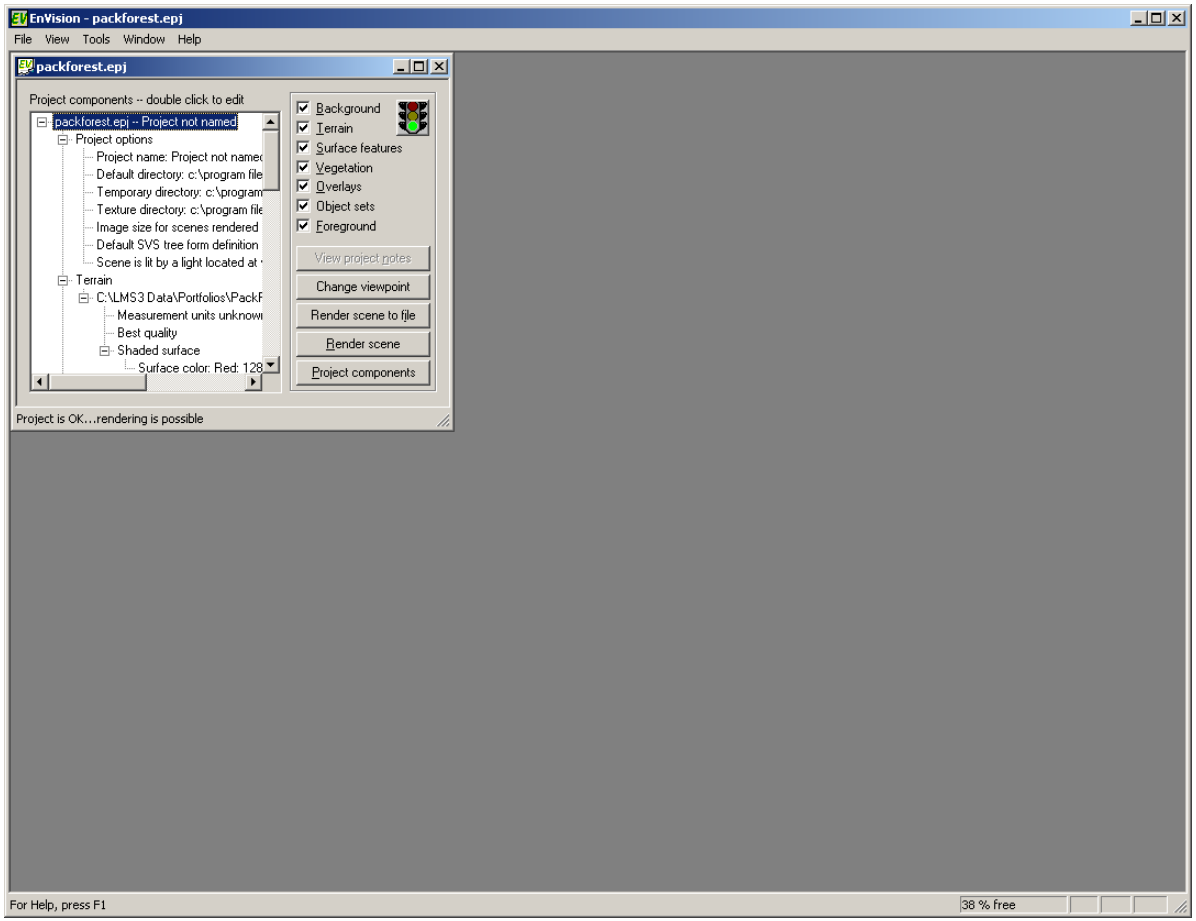


LMS currently uses EnVision for its Landscape Visualization tool.

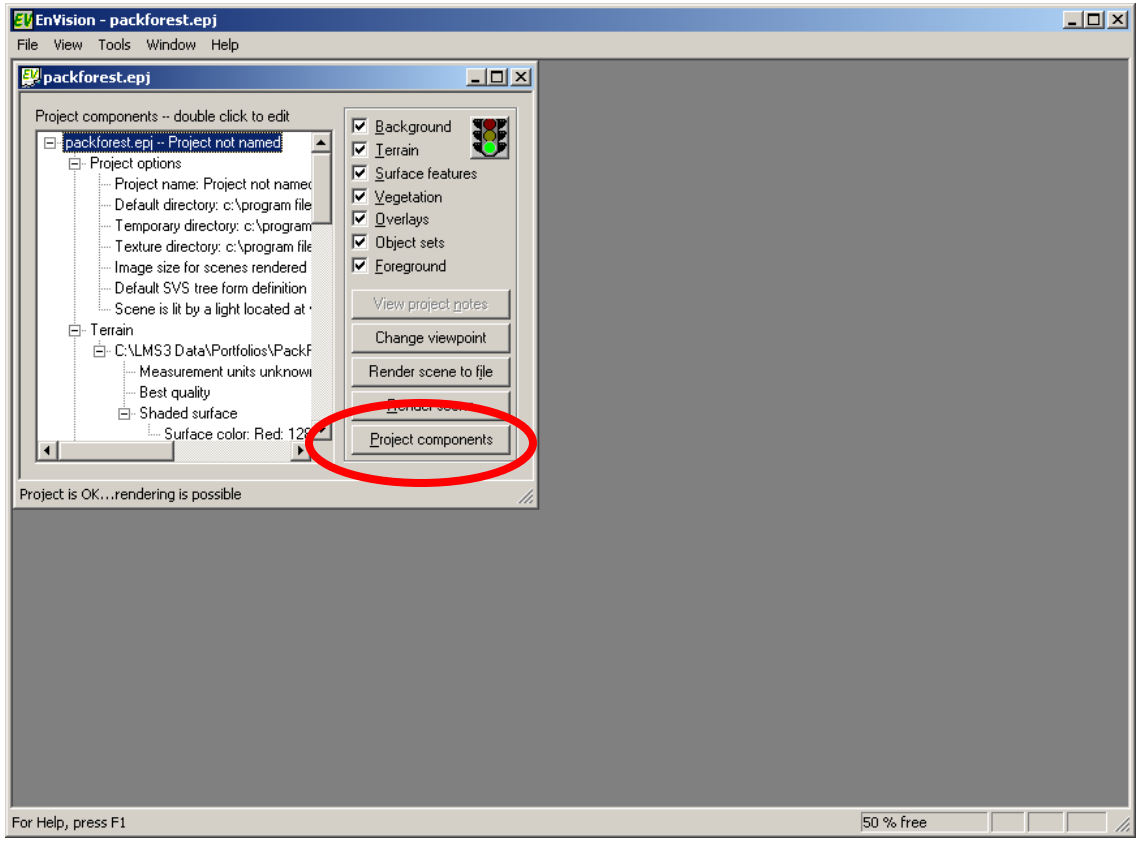
EnVision

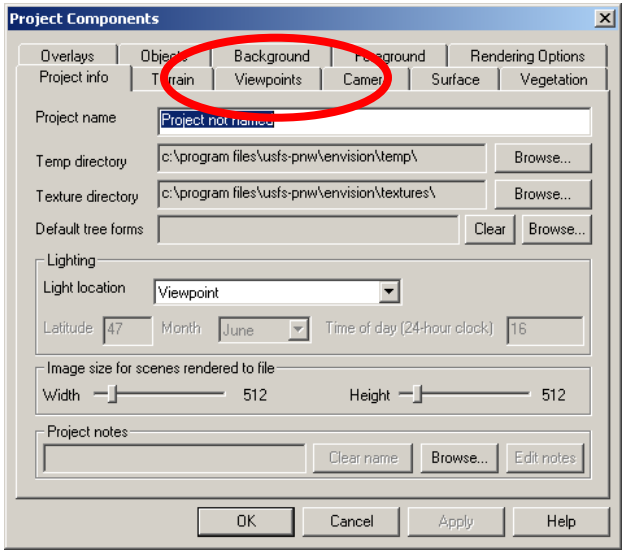
EnVision opens with the Project Components Dialog. The first time EnVision is run for a portfolio, a default viewpoint must be established.

Click Project Components to setup a default viewpoint.



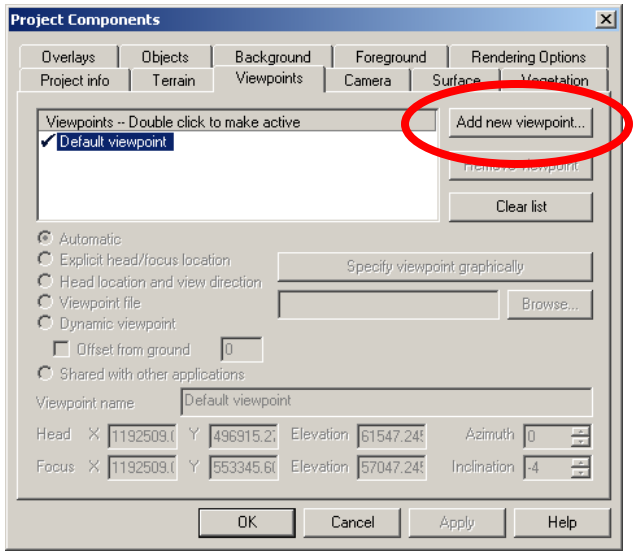
EnVision – Set Viewpoint

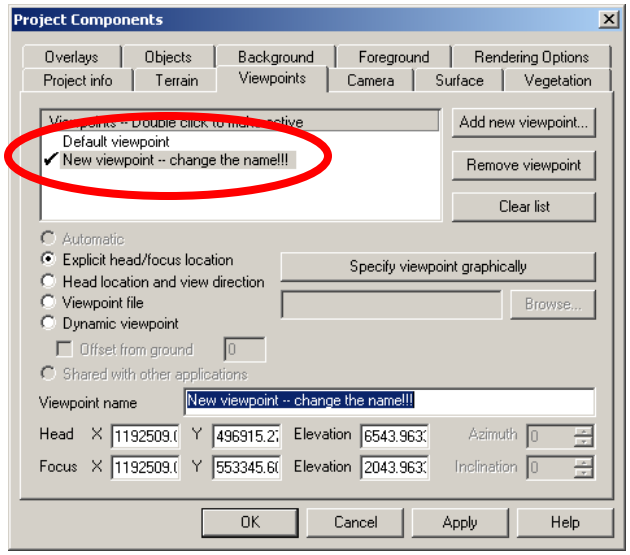




Click the Viewpoints tab in the Project Components dialog.

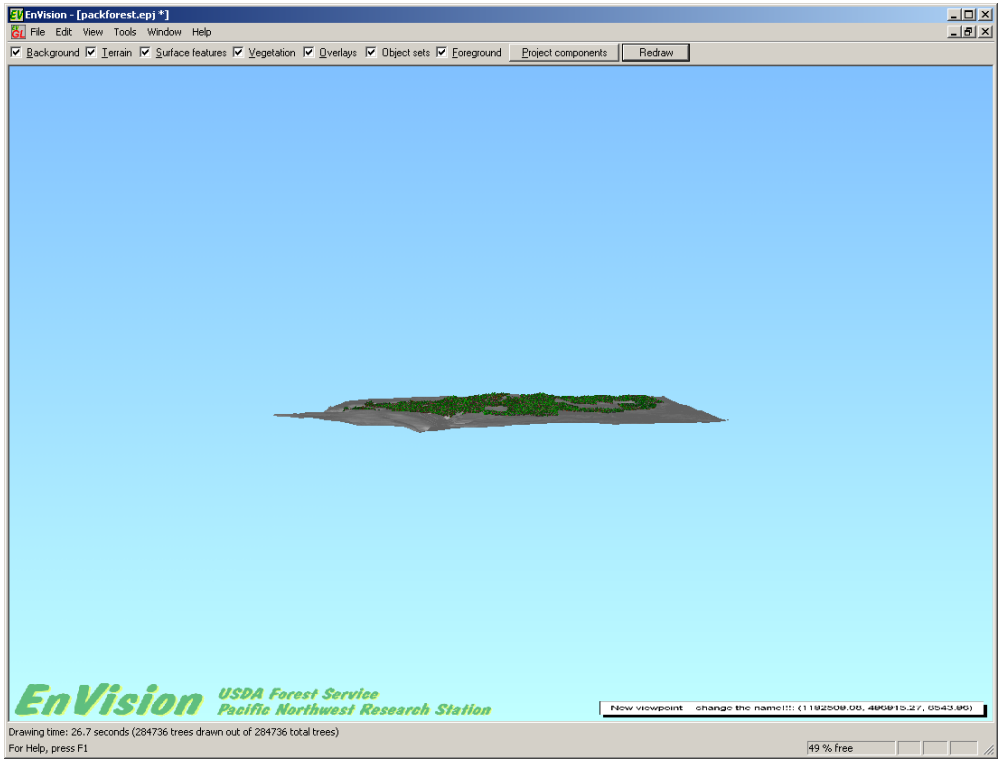
EnVision – Add new viewpoint





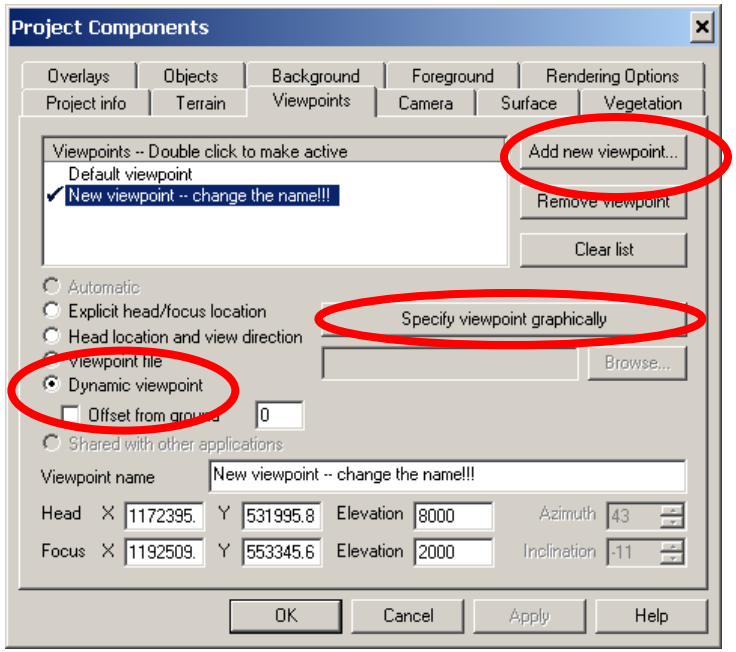
From the Viewpoints tab click Add new viewpoint. You will notice that a new viewpoint is entered in the list of viewpoints and that it us now marked as the default (check mark). Click OK to return to the main EnVision window.

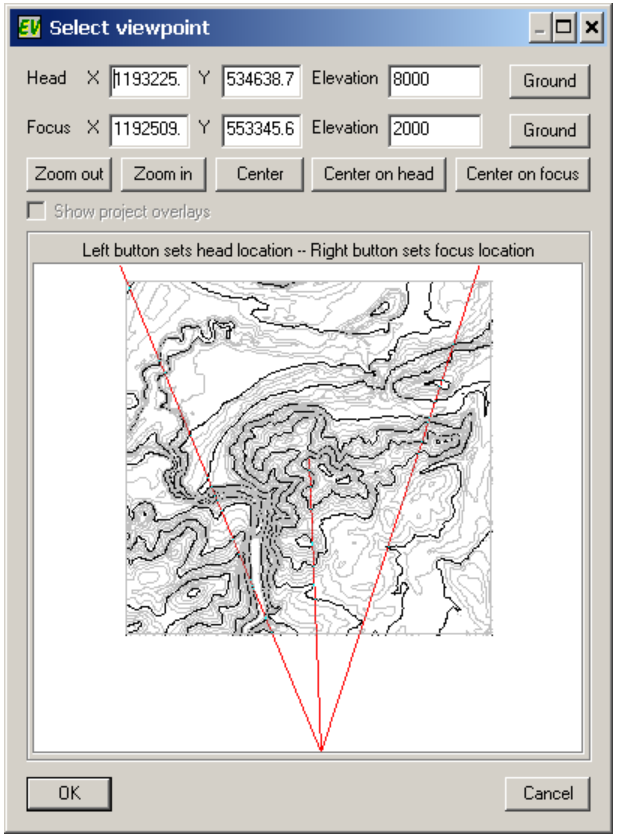
EnVision – Render scene



Click Render scene and EnVision will begin to create the visualization. Because of the size of the area and the number of trees drawn this can take some time. You will also notice that the default view point is from quite a distance.

EnVision – Add new viewpoint

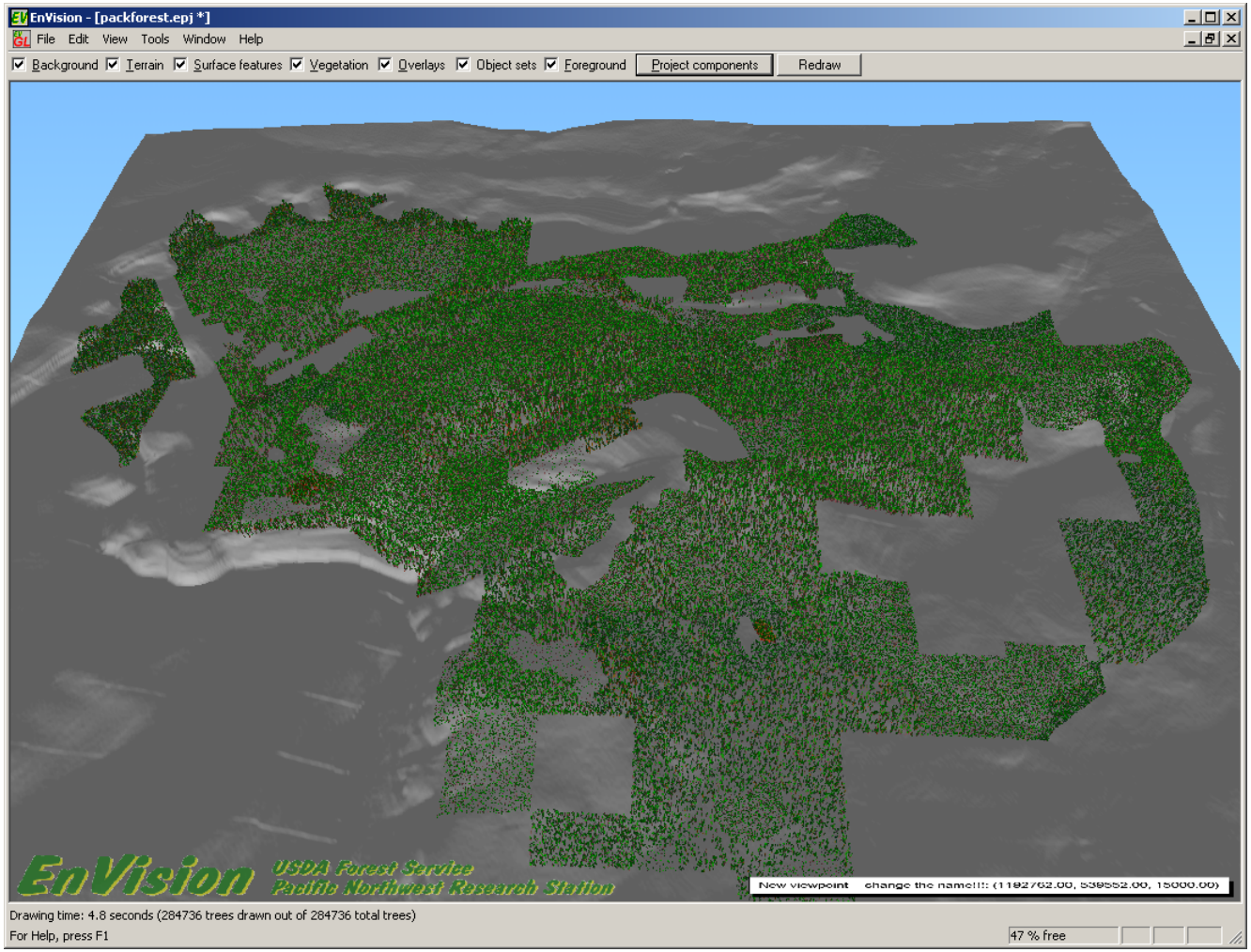




Click “Add new viewpoint”, select “Dynamic viewpoint”, then select “Specify viewpoint graphically”.

Move the “head” location (left mouse button) to the south of the landscape area.

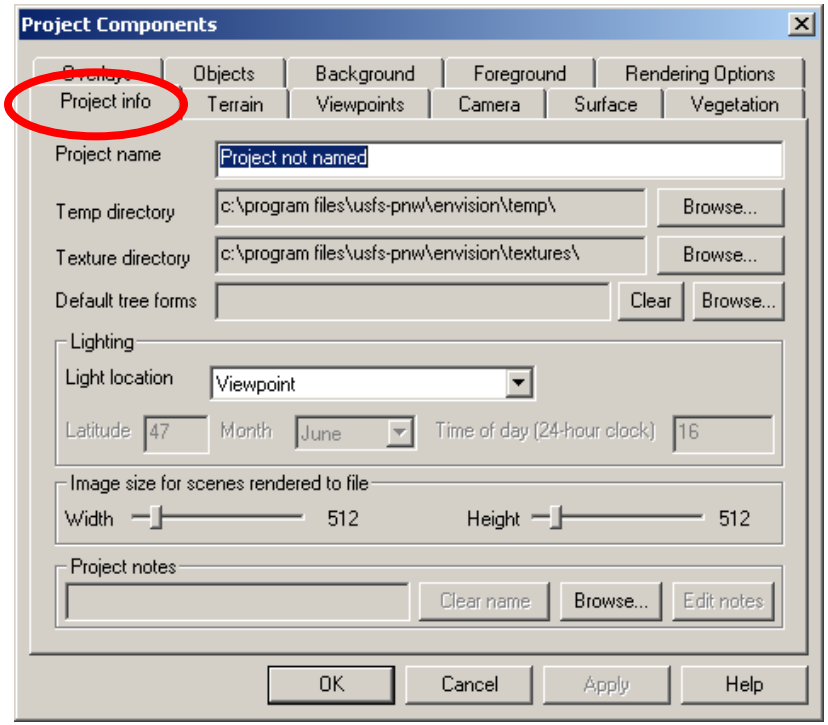
Pack Forest from South

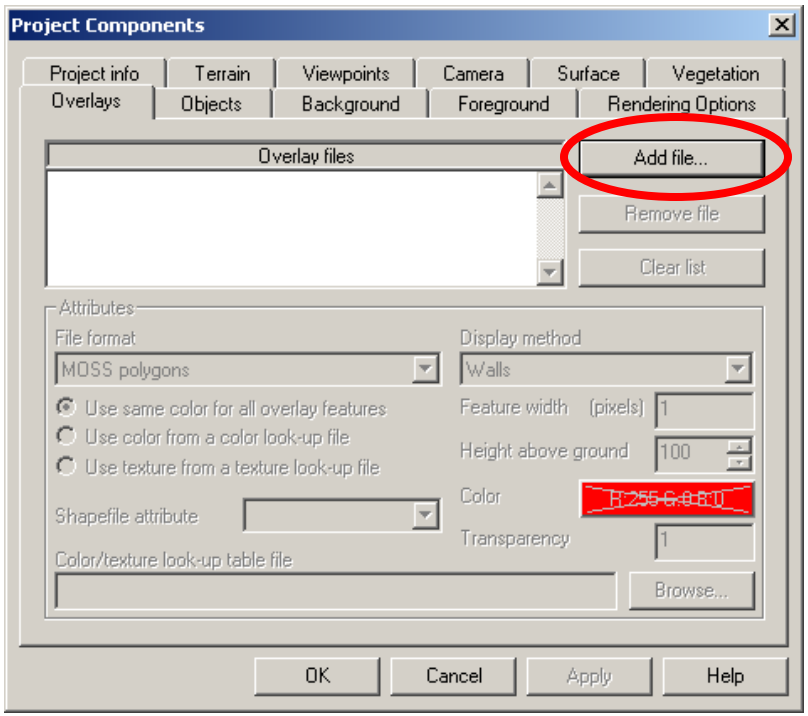


After a few minutes the scene should be drawn similar to above.

EnVision - Overlays

EnVision can display other spatial features using what it calls overlays. These can be polygon, line, or point features.



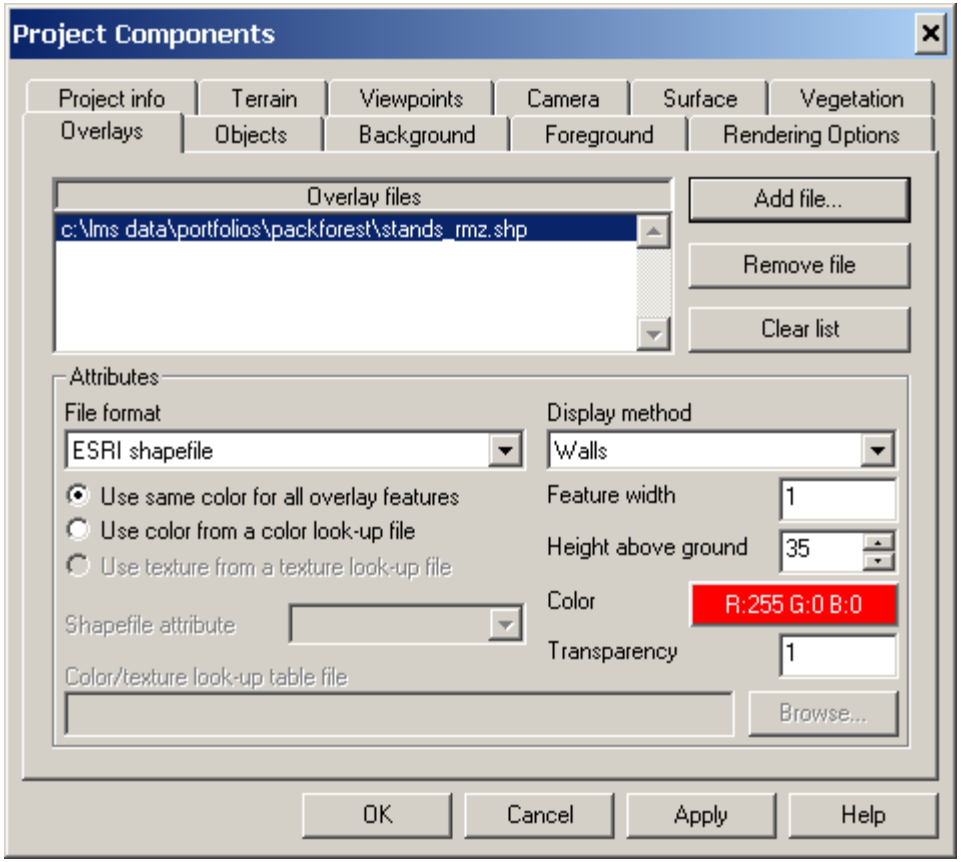


To add Overlays, Click Project Components and then select the Overlays tab.

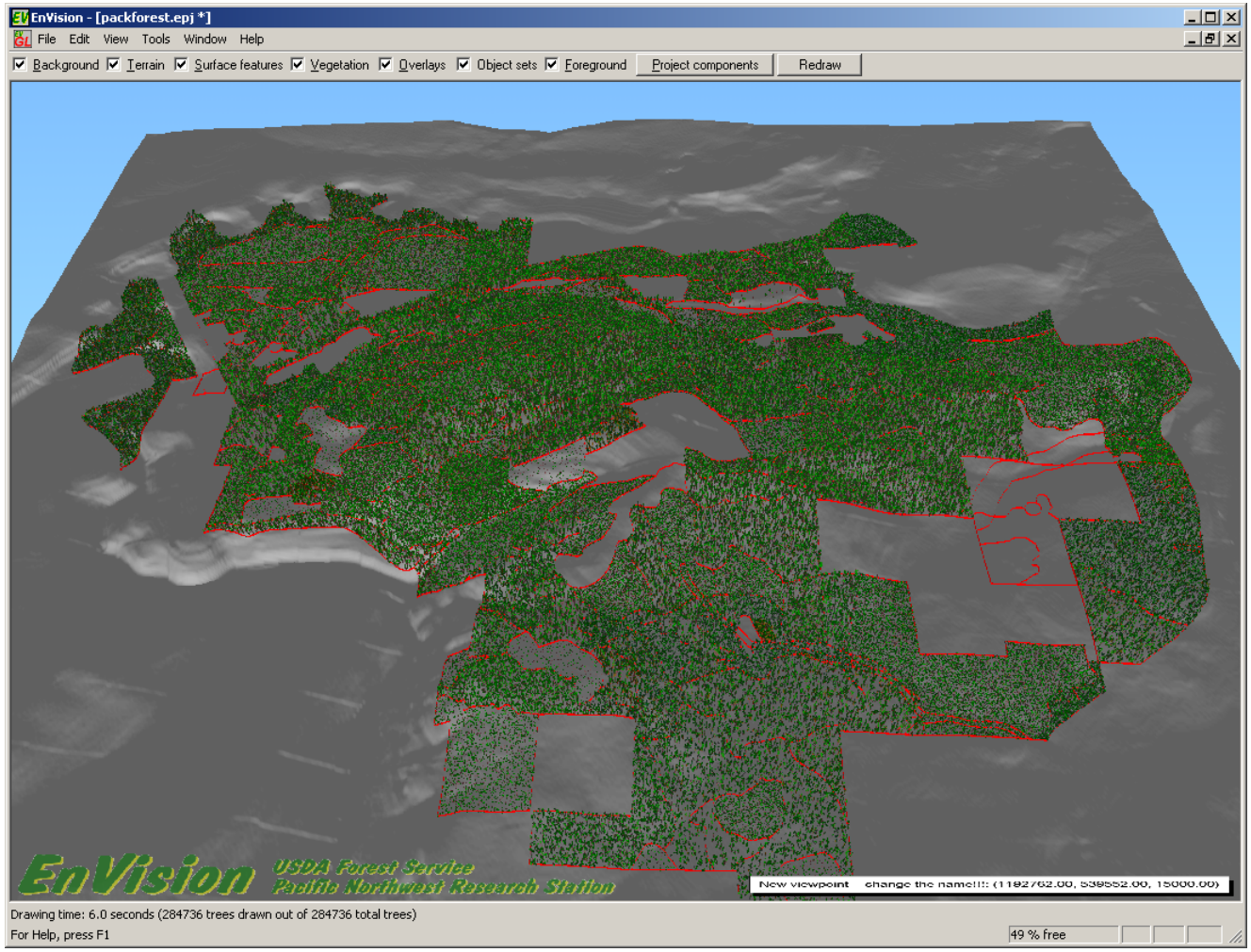
Click Add file…

EnVision – Add stand boundaries

Add the stands_rmz.shp file. Confirm that the Display method is Walls, Feature width is 1, and change Height above ground to 35. Click OK to close the dialog and the scene will redraw.

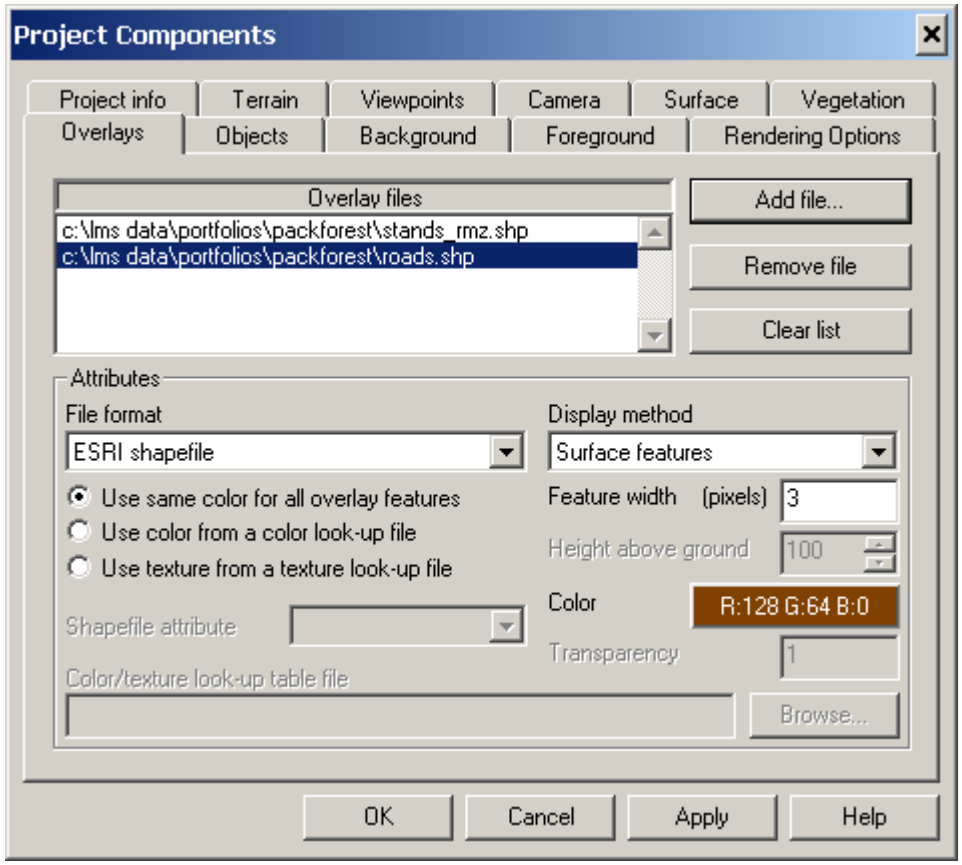


Pack Forest – Stand boundaries

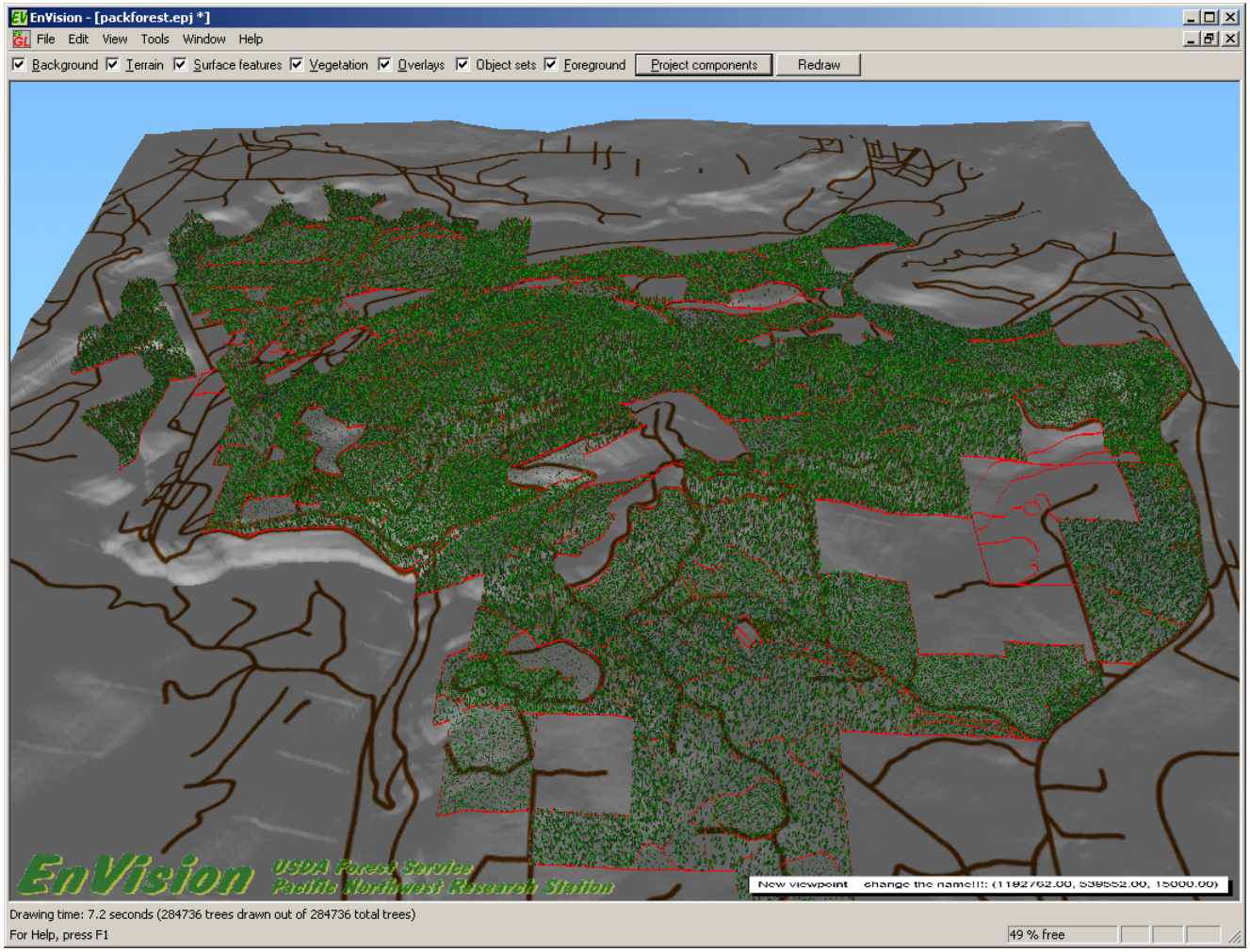


EnVision – Add roads

Go back to Project Components/Overlays and add another overlay. This time select the roads.shp file. Change the Display Method to Surface Features, Feature width to 3, and change the color to brown. Click OK when done.

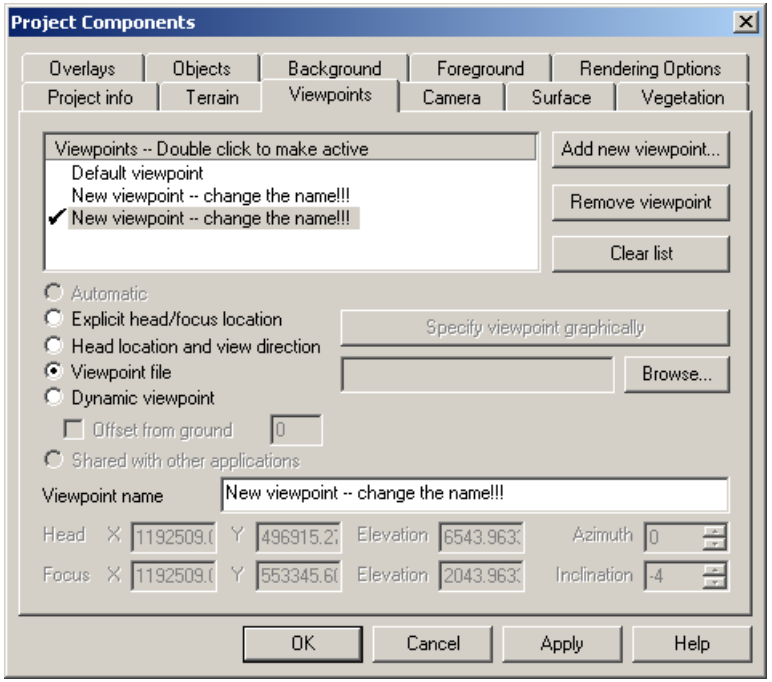


Pack Forest – Stands and Roads



EnVision – specify viewpoint graphically

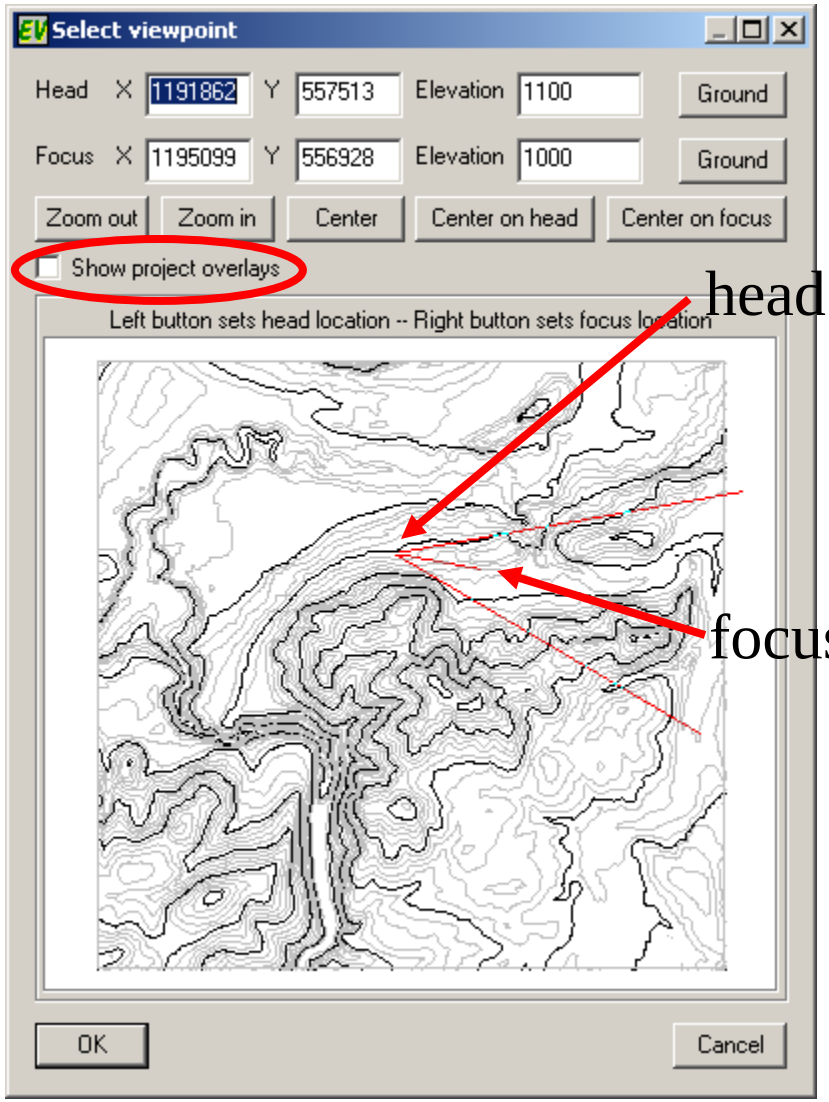
Viewpoints can also be specified graphically. Change the viewpoint to either “Explicit head/focus location” or “Dynamic viewpoint”, and the “Specify viewpoint graphically” button becomes available. Click it to open a planimetric map view that is used for changing the currnet viewpoint.



EnVision – Graphical Viewpoint

The select viewpoint dialog allows you to move around, changing where you are looking from (head) and where you are looking to (focus). You can reset the values by entering numbers or clicking in the planimetric view. Use the left mouse button for the head location and the right mouse button for the focus location.

Overlays can also be display on the planimetric map by checking Show project overlays.



Viewshed Analysis

For our next exercise we want to specify an explicit viewpoint and determine if a specific stand can be viewed from that location.

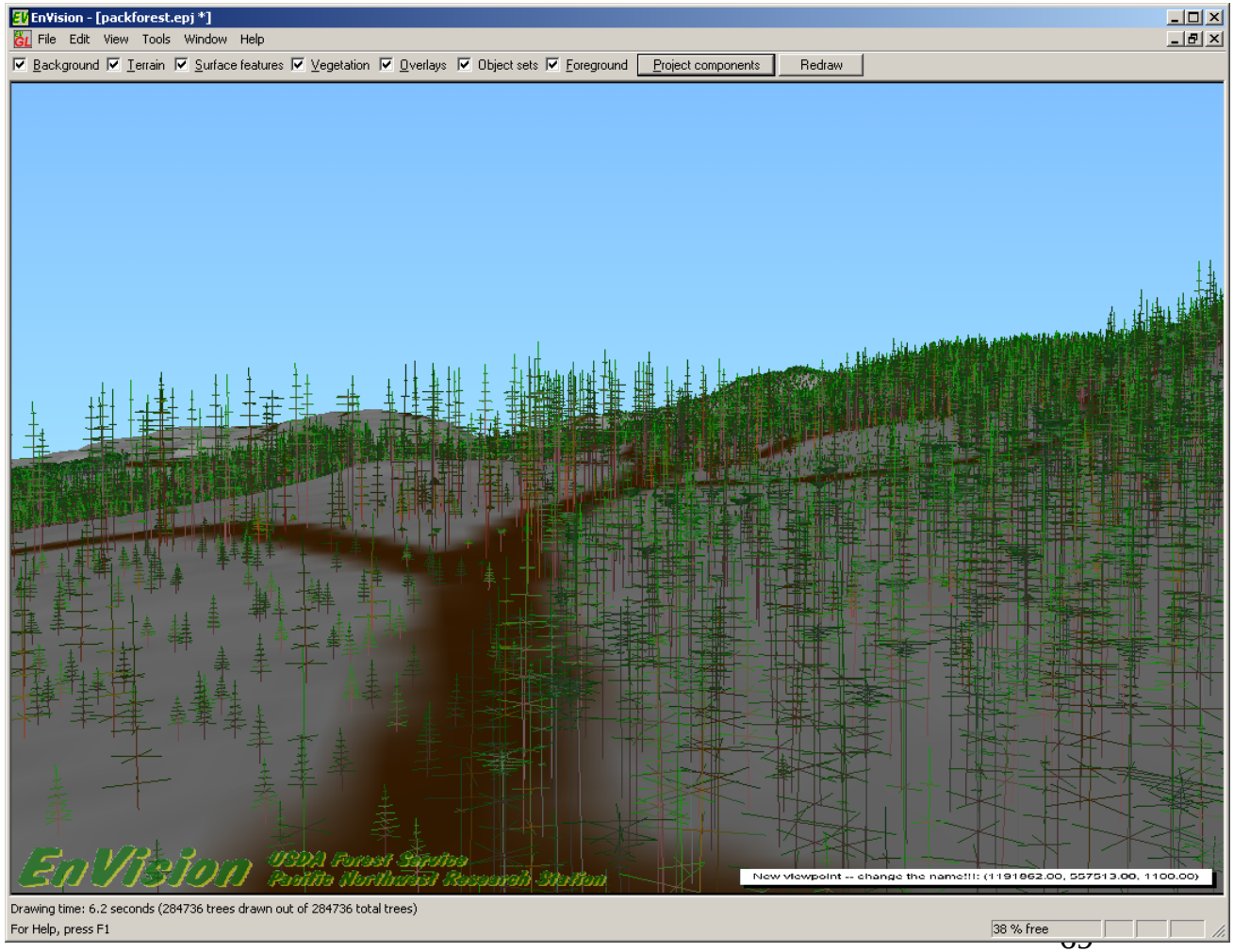
First go into Project Components and remove the Overlay for stands.

Then go into the Viewpoints tab and add another viewpoint, select viewpoint file, and then browse to select the PackForest_ViewshedAnalysis.vpt file.

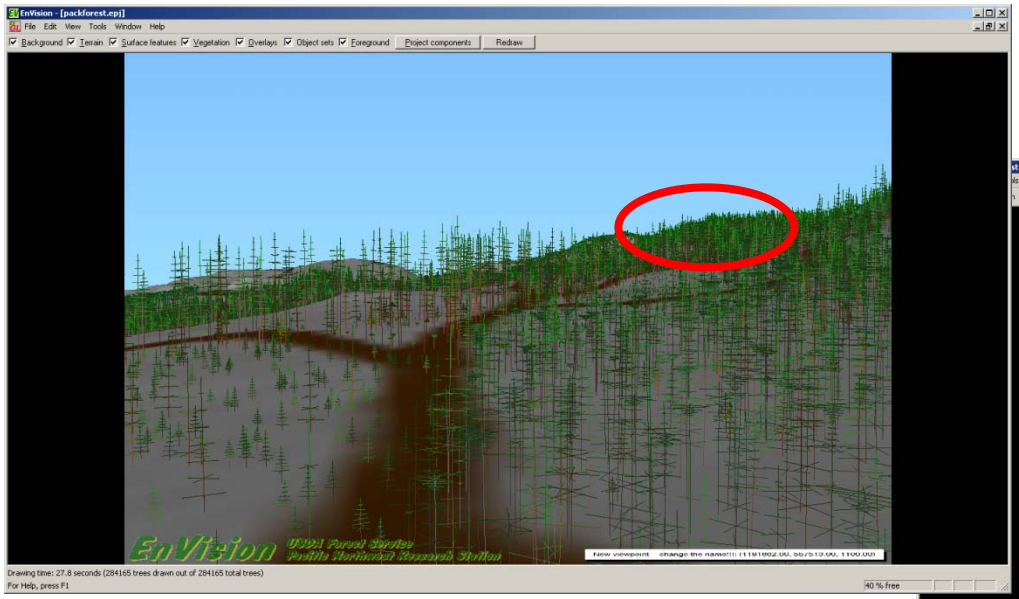
Viewshed Analysis

The scene now draws from the new viewpoint.

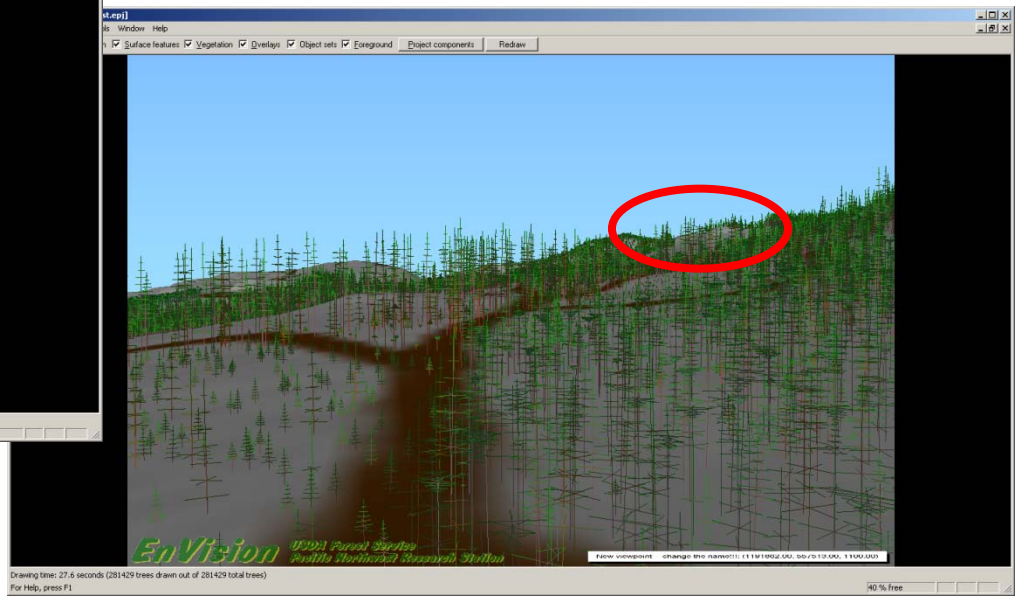
The question now is if we harvest the BR_UP_MURPHY stand, is it visible from this location?



Viewshed Analysis



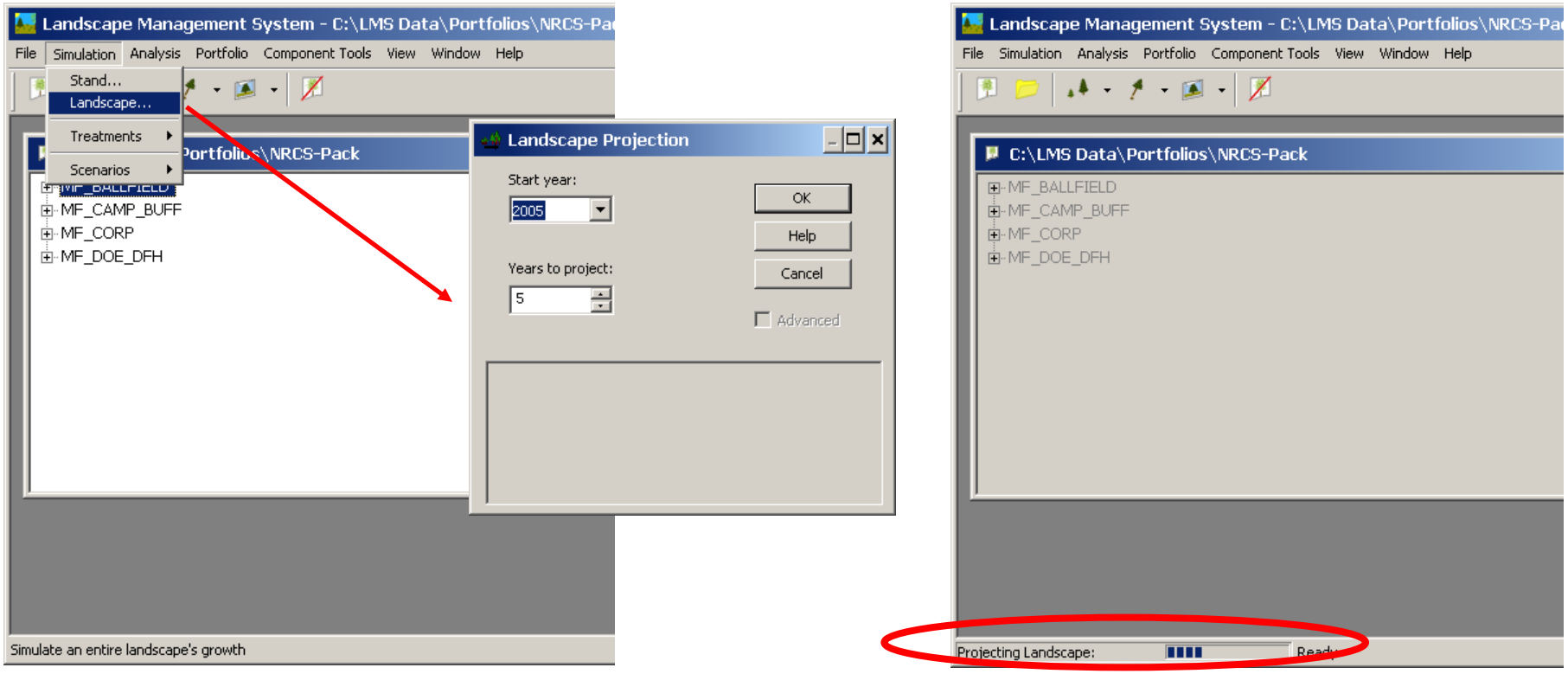
BR_UP_MURPHY 179 TPA.



BR_UP_MURPHY 0 TPA.

Growing Landscapes

Growing Landscapes



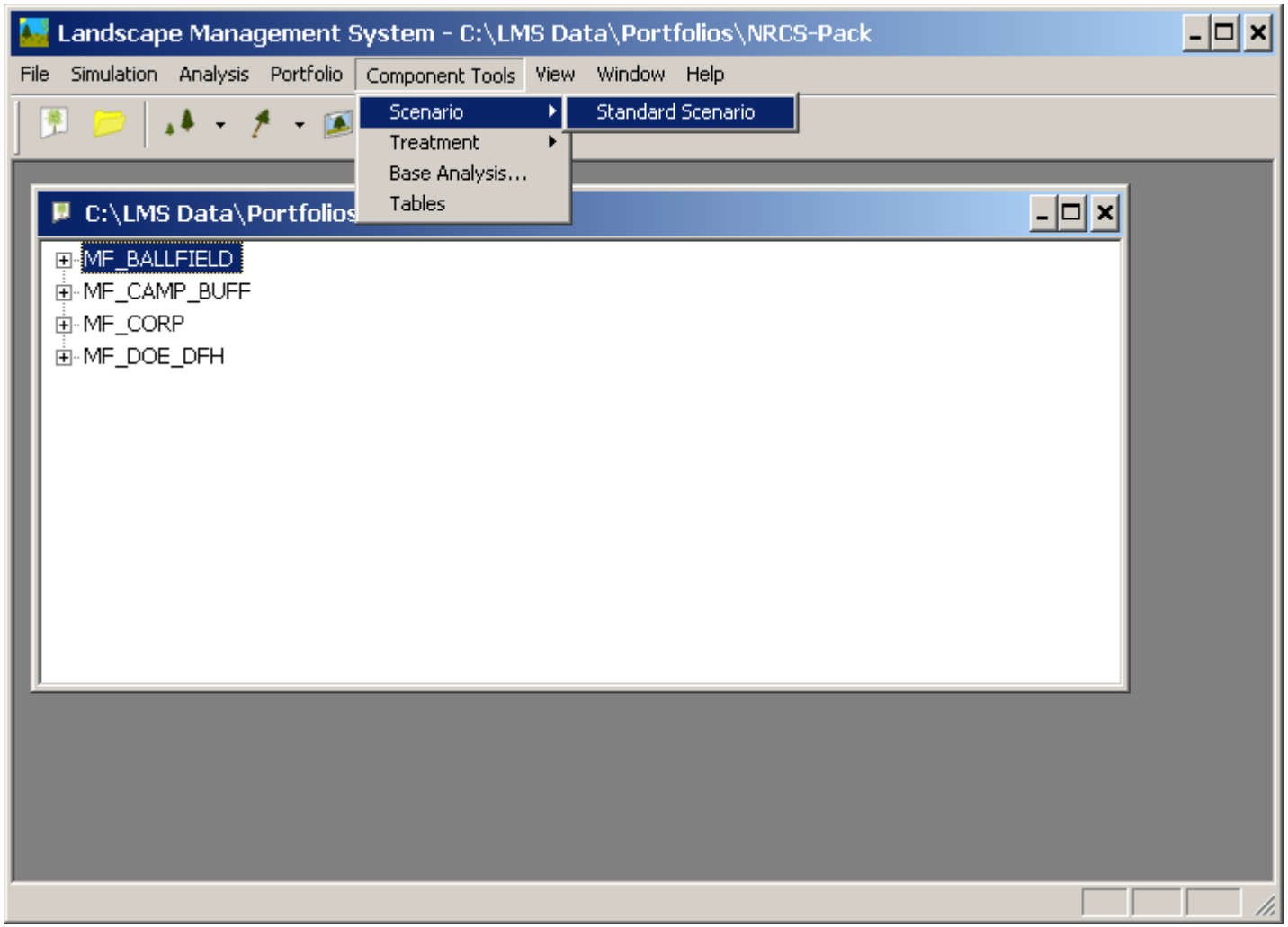
Select Simulation/Landscape… then confirm starting year and Years to Project and click OK. You will see the progress indicated on the bottom of the main interface.

LMS 3.1 Scenario Files

LMS 3.1 Scenario Files

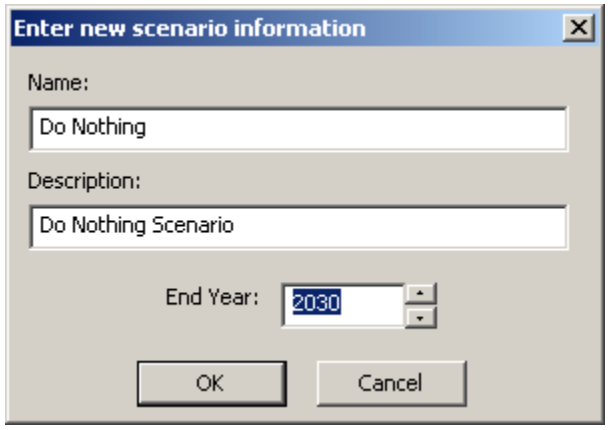
- Scenario files are the “batch” method for running LMS.
- Scenarios files define a starting and ending year.
- Scenarios files include treatments for any stands that are treated or have disturbance during the planning horizon.
- All stands not specified for treatments are automatically run with a no management scenario.

Create Scenario File



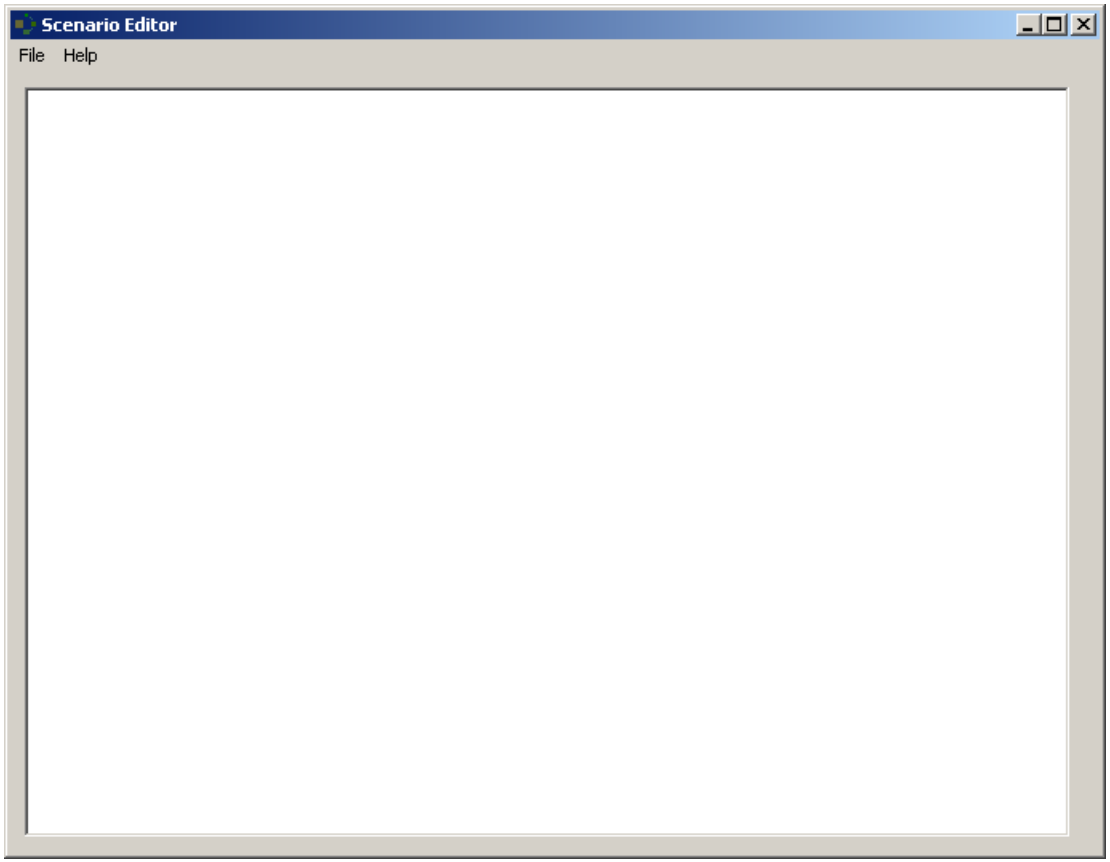
Use Component Tools/Scenario/Standard Scenario to open the Scenario Editor.

Create Scenario Files



When creating a new scenario you will be prompted to specify a name and description for the scenario. You can also change the end year for the simulation.

Scenario Editor

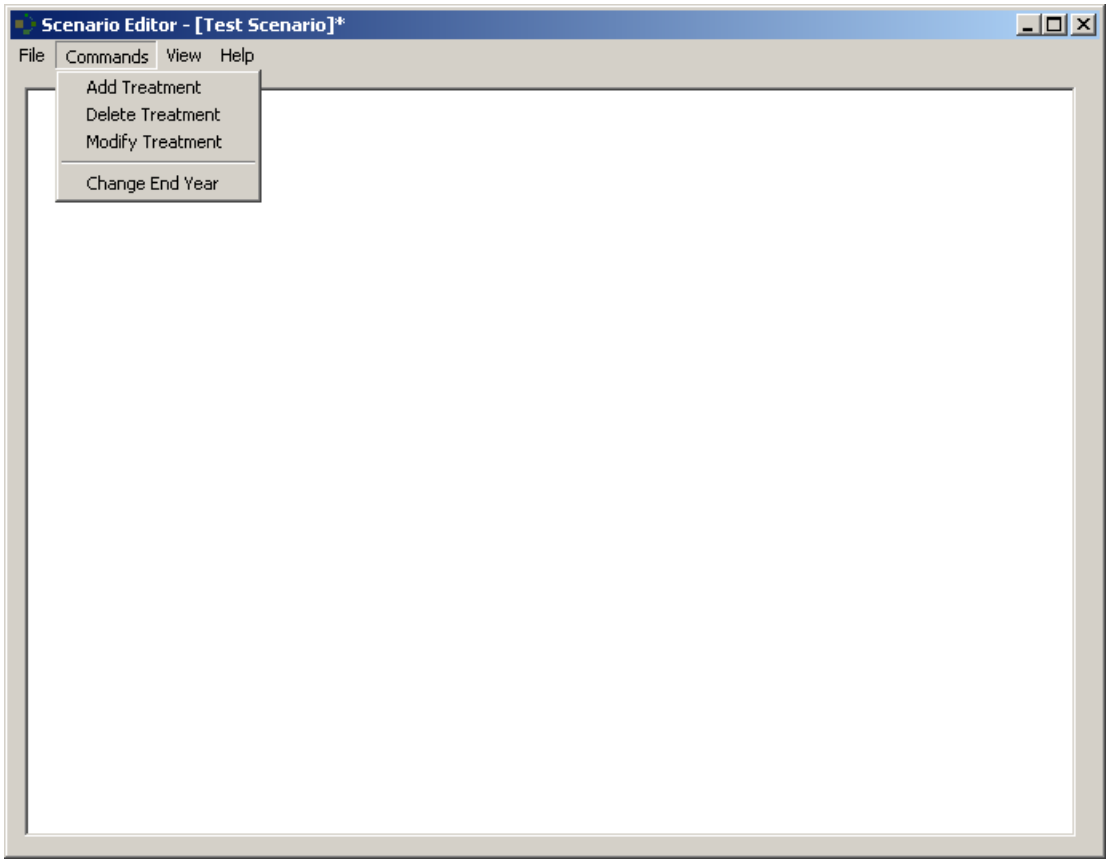


The Scenario Editor will open a blank dialog. When treatments for stand are specified the Scenario Editor will display the stand and years of treatments, depending on the view options.

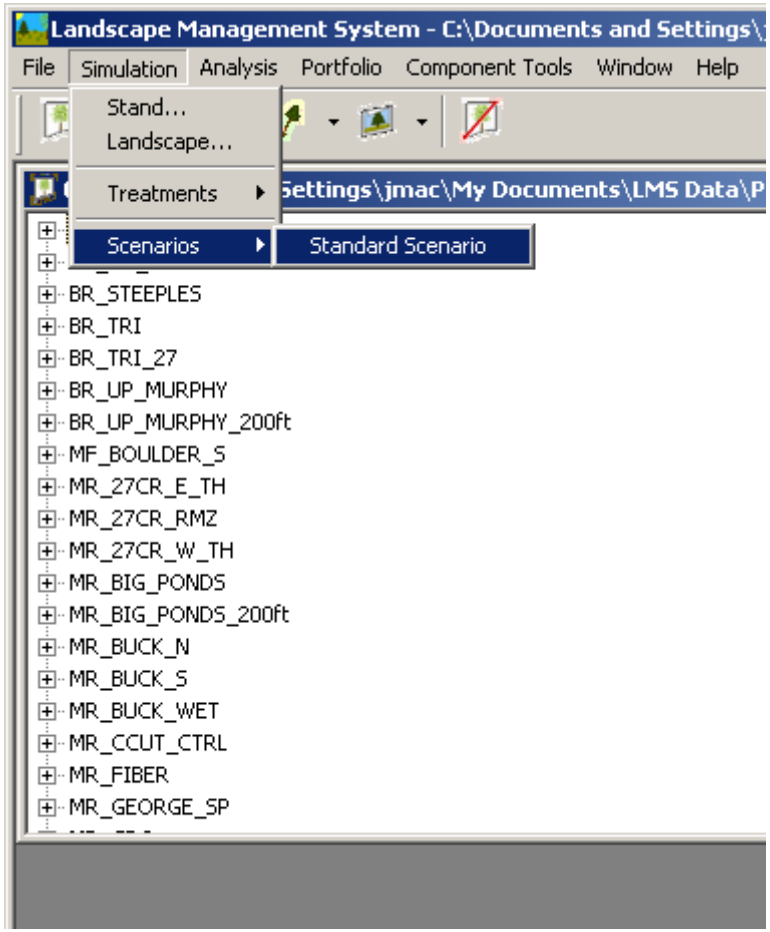
Scenario Editor – Add/Delete/Modify

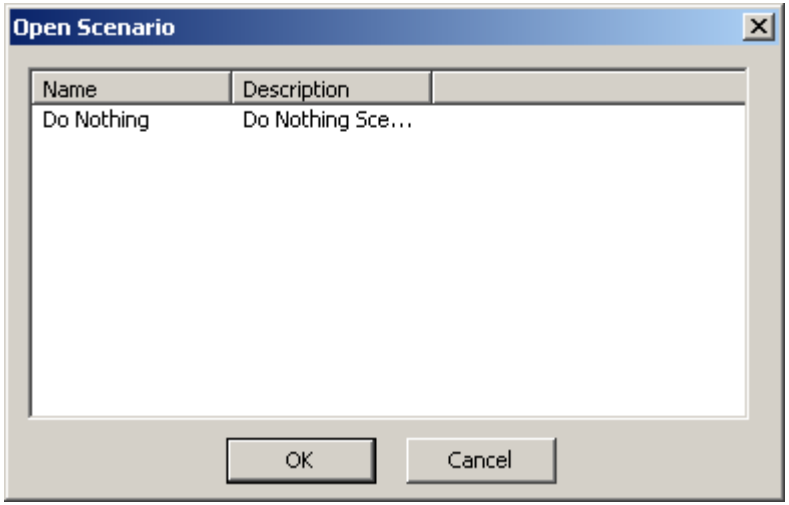
The scenario editor can be used to Add, Delete, or Modify treatments.

For our example we are going to use an empty scenario with no treatments specified.



Run Scenario



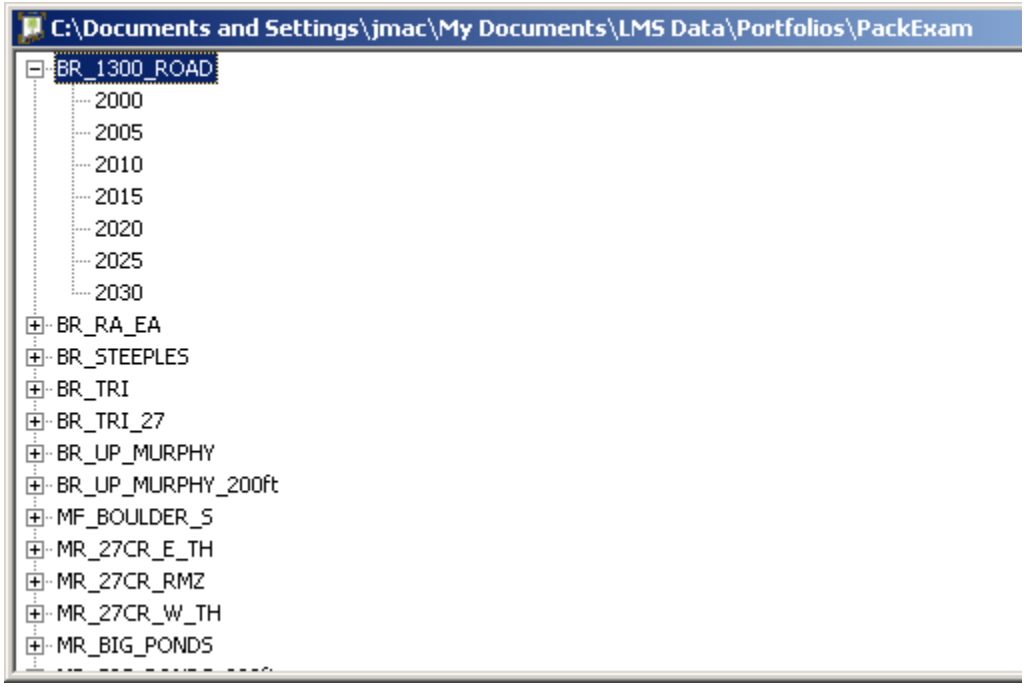


To run the scenario use the Simulation/Scenarios/Stand Scenario menu command. You will be prompted for which scenario you want to run. Select the "Do Nothing" scenario and click OK.

Run Scenario

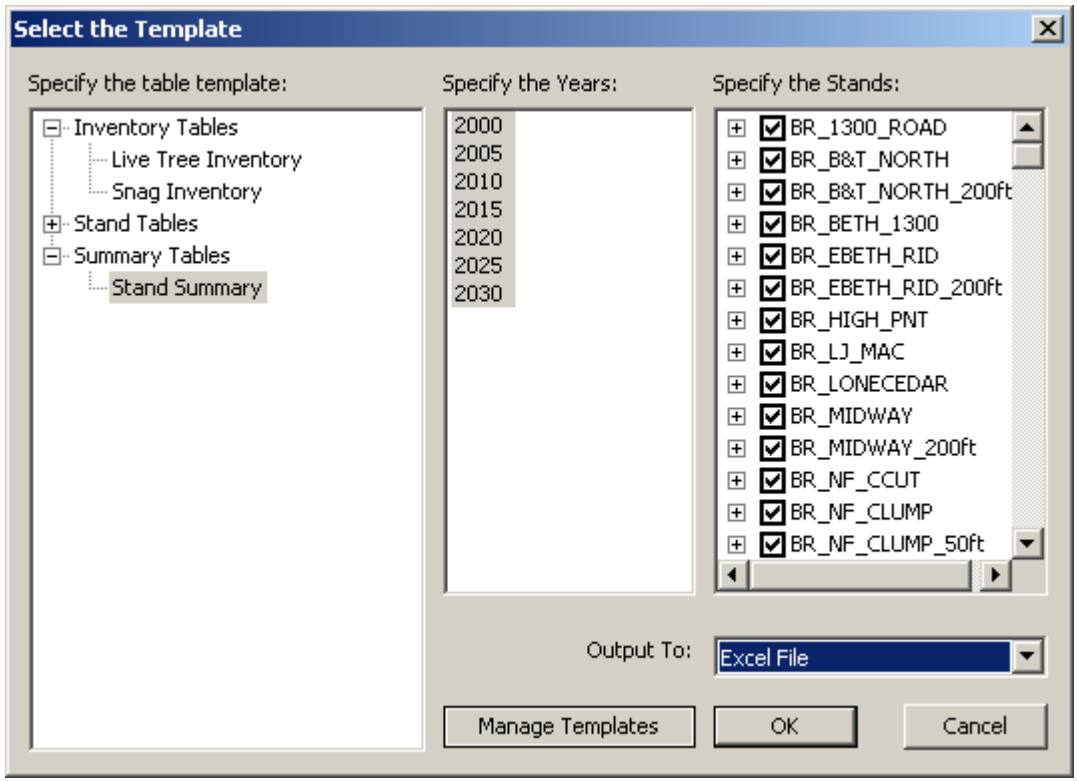
After the scenario has finished running you can open the tree view to see that each stand has been simulated until 2030.

Visualizations and tables are now available for all stands in the portfolio for all years in the simulation.



Landscape Level Tables

Summary information for all stands can be viewed using the Stand Summary Total table. Use Analysis/Tables to open the Select the Template dialog. Select the Stand Summary Total table template and output to Excel File.



Stand Summary Total Table

The resulting table will be displayed in Excel, showing columns A thru N filled in with information.

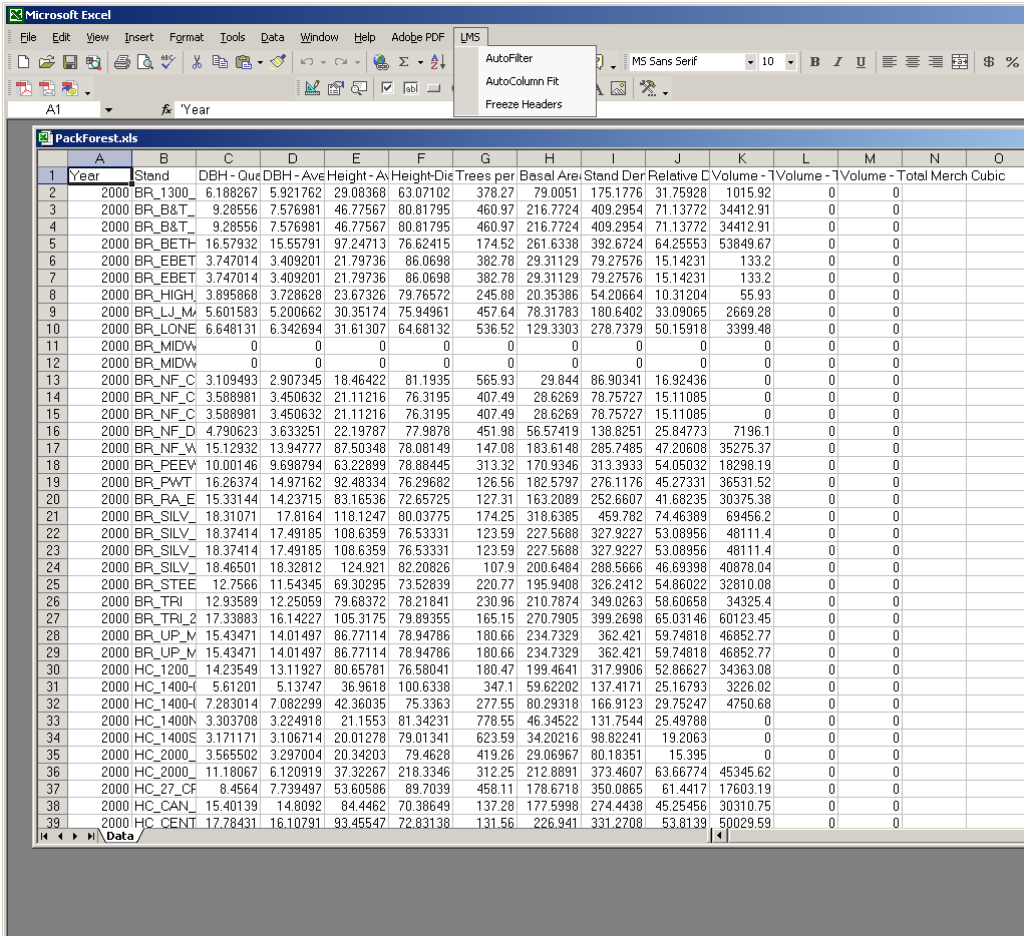
PackForest.xls

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Year	Stand	DBH - Qua	DBH - Ave	Height - Av	Height-Dia	Trees per	Basal Area	Stand Den	Relative D	Volume - T	Volume - T	Volume - Total Merch Cubic				
2	2000	BR_1300_	6.188267	5.921762	29.08368	63.07102	378.27	79.0051	175.1776	31.75928	1015.92	0	0				
3	2000	BR_B&T_	9.28556	7.576981	46.77567	80.81795	460.97	216.7724	409.2954	71.13772	34412.91	0	0				
4	2000	BR_B&T_	9.28556	7.576981	46.77567	80.81795	460.97	216.7724	409.2954	71.13772	34412.91	0	0				
5	2000	BR_BETH	16.57932	15.55791	97.24713	76.62415	174.52	261.6338	392.6724	64.25553	53849.67	0	0				
6	2000	BR_EBET	3.747014	3.409201	21.79736	86.0698	382.78	29.31129	79.27576	15.14231	133.2	0	0				
7	2000	BR_EBET	3.747014	3.409201	21.79736	86.0698	382.78	29.31129	79.27576	15.14231	133.2	0	0				
8	2000	BR_HIGH_	3.895868	3.728628	23.67326	79.76572	245.88	20.35386	54.20664	10.31204	55.93	0	0				
9	2000	BR_LJ_MA	5.601583	5.200662	30.35174	75.94961	457.64	78.31783	180.6402	33.09065	2669.28	0	0				
10	2000	BR_LONE	6.648131	6.342694	31.61307	64.68132	536.52	129.3303	278.7379	50.15918	3399.48	0	0				
11	2000	BR_MIDW	0	0	0	0	0	0	0	0	0	0	0				
12	2000	BR_MIDW	0	0	0	0	0	0	0	0	0	0	0				
13	2000	BR_NF_C	3.109493	2.907345	18.46422	81.1935	565.93	29.844	86.90341	16.92436	0	0	0				
14	2000	BR_NF_C	3.588981	3.450632	21.11216	76.3195	407.49	28.6269	78.75727	15.11085	0	0	0				
15	2000	BR_NF_C	3.588981	3.450632	21.11216	76.3195	407.49	28.6269	78.75727	15.11085	0	0	0				
16	2000	BR_NF_D	4.790623	3.633251	22.19787	77.9878	451.98	56.57419	138.8251	25.84773	7196.1	0	0				
17	2000	BR_NF_W	15.12932	13.94777	87.50348	78.08149	147.08	183.6148	285.7485	47.20608	35275.37	0	0				
18	2000	BR_PEEW	10.00146	9.698794	63.22899	78.88445	313.32	170.9346	313.3933	54.05032	18298.19	0	0				
19	2000	BR_PWT	16.26374	14.97162	92.48334	76.29682	126.56	182.5797	276.1176	45.27331	36531.52	0	0				
20	2000	BR_RA_E	15.33144	14.23715	83.16536	72.65725	127.31	163.2089	252.6607	41.68235	30375.38	0	0				
21	2000	BR_SILV_	18.31071	17.8164	118.1247	80.03775	174.25	318.6385	459.782	74.46389	69456.2	0	0				
22	2000	BR_SILV_	18.37414	17.49185	108.6359	76.53331	123.59	227.5688	327.9227	53.08956	48111.4	0	0				
23	2000	BR_SILV_	18.37414	17.49185	108.6359	76.53331	123.59	227.5688	327.9227	53.08956	48111.4	0	0				
24	2000	BR_SILV_	18.46501	18.32812	124.921	82.20826	107.9	200.6484	288.5666	46.69398	40878.04	0	0				
25	2000	BR_STEE	12.7566	11.54345	69.30295	73.52839	220.77	195.9408	326.2412	54.86022	32810.08	0	0				
26	2000	BR_TRI	12.93589	12.25059	79.68372	78.21841	230.96	210.7874	349.0263	58.60658	34325.4	0	0				
27	2000	BR_TRI_2	17.33883	16.14227	105.3175	79.89355	165.15	270.7905	399.2698	65.03146	60123.45	0	0				
28	2000	BR_UP_M	15.43471	14.01497	86.77114	78.94786	180.66	234.7329	362.421	59.74818	46852.77	0	0				
29	2000	BR_UP_M	15.43471	14.01497	86.77114	78.94786	180.66	234.7329	362.421	59.74818	46852.77	0	0				
30	2000	HC_1200_	14.23549	13.11927	80.65781	76.58041	180.47	199.4641	317.9906	52.86627	34363.08	0	0				
31	2000	HC_1400-(	5.61201	5.13747	36.9618	100.6338	347.1	59.62202	137.4171	25.16793	3226.02	0	0				
32	2000	HC_1400-(	7.283014	7.082299	42.36035	75.3363	277.55	80.29318	166.9123	29.75247	4750.68	0	0				
33	2000	HC_1400N	3.303708	3.224918	21.1553	81.34231	778.55	46.34522	131.7544	25.49788	0	0	0				
34	2000	HC_1400S	3.171171	3.106714	20.01278	79.01341	623.59	34.20216	98.82241	19.2063	0	0	0				
35	2000	HC_2000_	3.565502	3.297004	20.34203	79.4628	419.26	29.06967	80.18351	15.395	0	0	0				
36	2000	HC_2000_	11.18067	6.120919	37.32267	218.3346	312.25	212.8891	373.4607	63.66774	45345.62	0	0				
37	2000	HC_27_CF	8.4564	7.739497	53.60586	89.7039	458.11	178.6718	350.0865	61.4417	17603.19	0	0				
38	2000	HC_CAN_	15.40139	14.8092	84.4462	70.38649	137.28	177.5998	274.4438	45.25456	30310.75	0	0				
39	2000	HC_CENT	17.78431	16.10791	93.45547	72.83138	131.56	226.941	331.2708	53.8139	50029.59	0	0				

Data

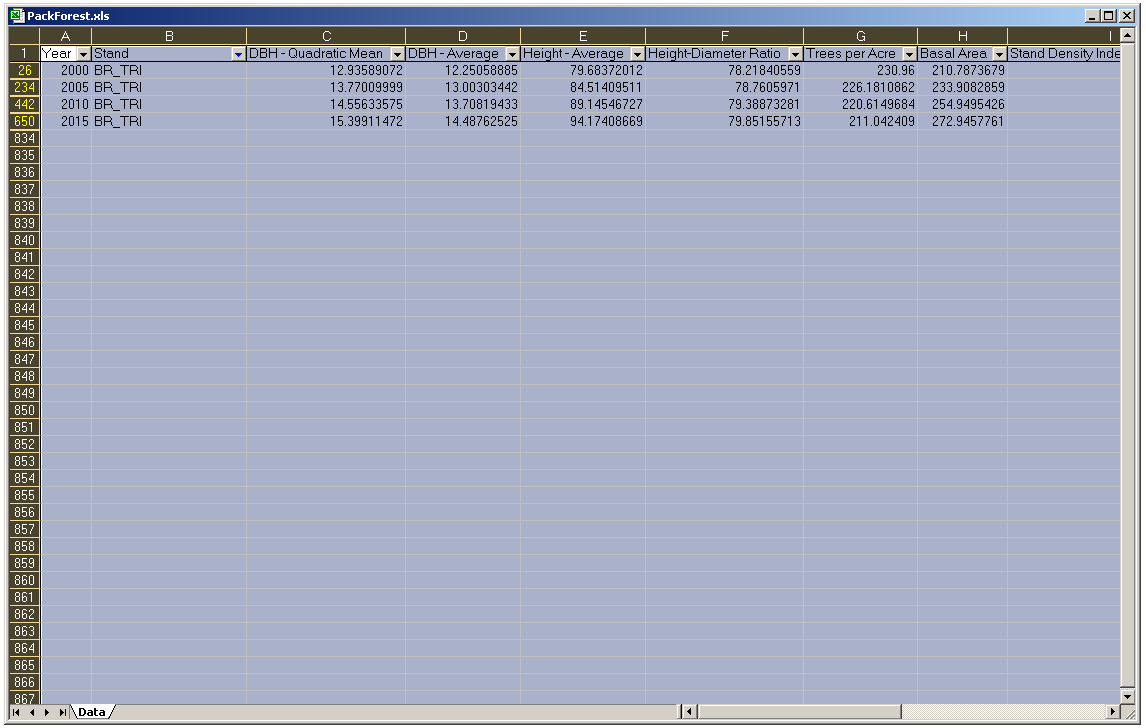
Stand Summary Total Table

Use the LMS Menu to use AutoFilter, AutoColumn Fit, and Freeze Headers to make it easier to examine the information.



Stand Summary Total Table

Once AutoFilters are turned on you can select a single stand name and examine how that stand changed in DBH over the simulation period.



PackForest.xls

	A	B	C	D	E	F	G	H	I
1	Year	Stand	DBH - Quadratic Mean	DBH - Average	Height - Average	Height-Diameter Ratio	Trees per Acre	Basal Area	Stand Density Inde
26	2000	BR_TRI	12.93589072	12.25058885	79.68372012	78.21840559	230.96	210.7873679	
234	2005	BR_TRI	13.77009999	13.00303442	84.51409511	78.7605971	226.1810862	233.9082859	
442	2010	BR_TRI	14.55633575	13.70819433	89.14546727	79.38873281	220.6149684	254.9495426	
650	2015	BR_TRI	15.39911472	14.48762525	94.17408669	79.85155713	211.042409	272.9457761	

Data